



DEFENCE TURKEY

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I NMS 4x4 – ANOTHER GAME CHANGER BY NUROL MAKİNA

I ECOSYSTEM PYRAMIDE IS TRANSFORMING AND GETTING STRONGER WITHIN
I THE LEADERSHIP OF AYESAŞ AND VESTEL DEFENCE COMPANIES

I TURKISH UTILITY HELICOPTER PROGRAM – AN INDUSTRIAL
I PARTNERSHIP EXPECTED TO SPAN AT LEAST 3 DECADES

I ROLLS-ROYCE – COMMITTED AND INVESTED IN TURKEY WITH
I A VISION ALIGNED WITH TURKEY'S AMBITIONS

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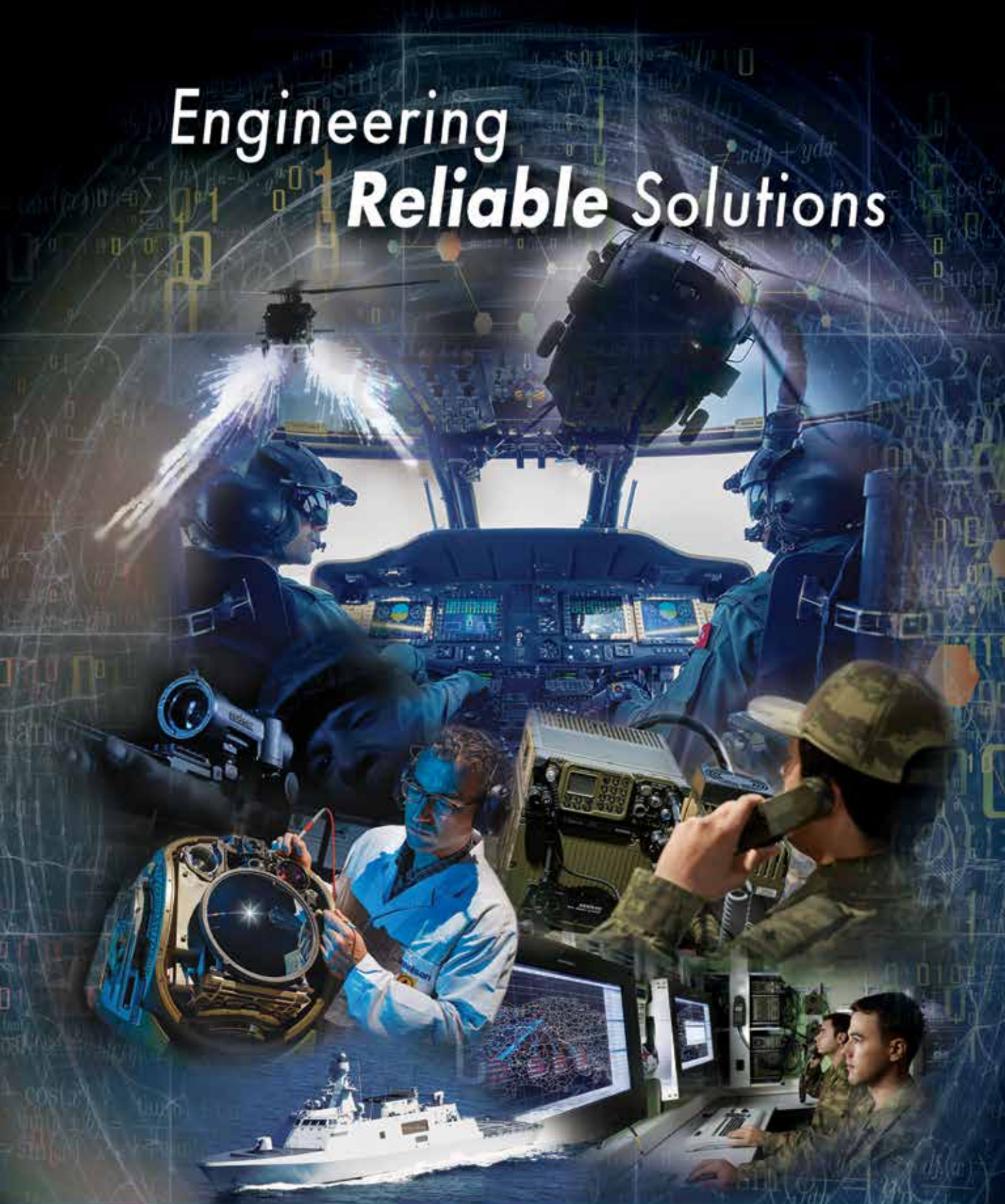
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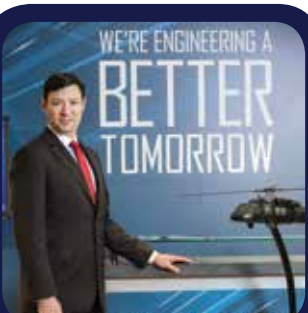
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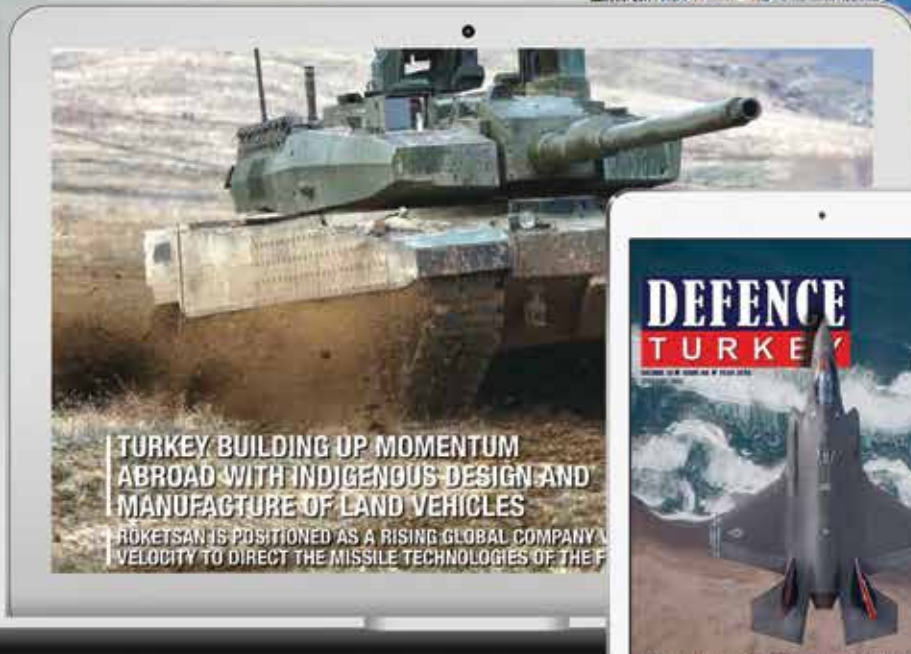


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Global Helicopter Market Gaining Momentum Despite Defense Budget Cuts

Ayşe Evers
Publisher & Editor in Chief



The global helicopter market across military and civil end-user segments is facing a growth in demand, reaching a potential market size of nearly 24,000 platforms over 2011-2020. The key factors contributing to this industry growth are upcoming replacement cycles in the military worldwide and state-run fleets, growing disposable income in emerging markets and the structural growth of the global economy. However, it is the military that continues to be the main driver for helicopters. On the assumption that the market conditions are likely to remain favorable, the military will account for more than 60 percent of the global helicopter demand over the next 10 years (in terms of market value), generating revenues of nearly US\$200 billion, and creating orders of nearly 9,000 platforms between 2011-2020. This demand for military helicopters is driven not only by a desire to obtain new, modern helicopters but mostly by the need to replace/upgrade a large global fleet of ageing helicopters of all types and sizes, both in western countries and emerging markets.

Despite the expected growth for military helicopters, the industry faces significant challenges, including defense budget cuts in some of the traditionally strong western markets, but also in some emerging markets where the end-users may be exercising caution in terms of procurement, both operationally and financially. The impact of the global economic turmoil is visible across the majority of programs in military helicopter segments, as they generally tend to be large procurements.

Military forces across the globe, particularly in emerging markets, are currently undergoing major acquisition and upgrade programs in their helicopter fleets. Overall modernization also means that nations are considering filling capability gaps and procuring helicopters in different segments to cope with multiple operational requirements. Analysts believe that the industry needs to be innovative, not only in business models and operational support such as through life contracts in order to support the end-user segments, and in turn drive new programs and procurements.

Turkey is carrying out 27 projects as of today covering the Turkish Utility Helicopter, T129 “Atak” Advanced Attack and Tactical Reconnaissance Helicopter and “Özgün” Multi - Role Helicopter programs. The “Atak” project is amongst the essential milestones considering the establishment of a helicopter industry infrastructure in Turkey. TAI accomplished the delivery of 22 T129 “Atak” Helicopters to the Land Forces Command. Thanks to these programs, Turkey strengthens its position in Global Helicopter Market.

Enjoy this issue. ■



SSM Contributing to Turkey's Helicopter Industry & Increasing Local Industry Capability

In an exclusive Defence Turkey Interview, Undersecretary for Defense Industries, Head of the Helicopters Department Mr. Hüseyin Avşar shares concrete examples of how SSM is constantly paving the way for the defense industry companies to become more competitive in markets abroad, while benefiting local industry



Defence Turkey: Dear Mr. Hüseyin Avşar, first of all we would like to thank you for your time. You have been assigned as the Head of the Helicopters Department. What type of a structure will you adopt throughout this new era that started upon your assignment? What are your comments on the existing personnel structure and responsibilities as well as the vision that you plan to set for this upcoming period?

I was previously assigned as a project manager at the Helicopters Department where extremely crucial projects for our country are being conducted. Currently there are two project directorates within our department consisting of the Helicopter Development Projects Group and the Helicopter Joint Production/Development Projects Group. I can state that the staff numbers in both of these groups are below the desired level when taking into consideration the number as well as the scope of the projects we have been executing. Thus, the reinforcement of our human resources will be amongst our priority objectives for the upcoming period.

We are carrying out 27 projects as of today. All the Service Commands under the auspices of the Turkish Armed Forces, Gendarmerie General Command, Security General Directorate and numerous other public institutions are amongst the users to whom

we are providing services. This fact puts huge responsibilities on us while offering prominent opportunities towards the development of the sector. Within this context, through the projects we have been conducting, we will be striving to fulfill the requirements of our users in an effective and efficient manner while contributing to the development of our country's helicopter industry and increasing the capabilities of our local industry.

Defence Turkey: Mr. Avşar, the Turkish Utility Helicopter Program was dispatched to Turkey to be utilized in the test and development program in the last couple of months and the activities for this helicopter were launched at Aselsan's facilities. What would you like to say regarding the activities to be conducted over this prototype within this context and what are your comments on the integration, test activities and project schedule?

As you know, as part of the Turkish Utility Helicopter Project (TUHP) for the first time the cockpit design will be developed by a Turkish company for a leading helicopter manufacturer. These Black Hawk helicopters to which this Aselsan design cockpit will be integrated will be marketed and exported worldwide apart from United States. I would like to underline that this is a great achievement on behalf of Turkey.

As you also mentioned, in March we witnessed the arrival of the S70i helicopters that will be transformed into the T70 Basic Helicopter Configuration at the Aselsan facilities. The disassembly of the avionic equipment of the helicopter was accomplished and the activities are on their course as planned. We are expected to accomplish the maiden flight of these helicopters with integrated Aselsan avionics within March 2018. The cockpit integration can be considered as the first step of the transformation of the S70i helicopter into the T70 Black Hawk. The completion of the activities regarding the Aselsan cockpit and approval of airworthiness of the prototype helicopter are planned to be finalized by September 2019. After that, a series of activities as part of the Completion Center such as the V/UHF-HF radio integration, armored pilot and co-pilot seat integration will be dispatched at the facilities of TAI.

Defence Turkey: What type of cooperation is planned between both the main contractor, the sub-contractors and subsidiary industry specific to this project toward establishing an effective life cycle management process within the scope of the T70 Black Hawk program, comprising various users and different configurations? What sort of a structure is intended to be built over a project model?

As part of the Turkish Utility Helicopter Project (TUHP), we will be catering to the requirements of our 6 different users for 109 Utility Helicopters in 2 main configurations. This implies that these 6 users' deployment of these helicopters in various regions all around the country, as well as the planned/unplanned maintenance requirements and planned/unplanned spare part requirements of the users. Our activities are being conducted for the establishment of a mutual equipment repository capable of serving all TUHP fleet in various configurations, repair, coalescence of the consumable materials, and for building an Integrated Logistics Support System (ILSS) for tracking and sharing the joint requirements. In the future, the ILSS will have a flexible structure which will be able to cover the existing Black Hawk helicopters as well. We envision a model which will include numerous local sub-contractors under the guidance of TAI. We believe that this model to be established will set an example in respect to the management of the requirements of various users through a single center within the scope of the logistics support activities. We aim to finalize the related activities in the near future.

Defence Turkey: How is the delivery schedule proceeding regarding the configurations for the Turkish Armed Forces as part of the T129 "Atak" Advanced Attack



and Tactical Reconnaissance Helicopter program? How many helicopters have been launched into utilization operationally up until this point? Moreover, how many deliveries are planned on a yearly basis for the second quarter of 2017 and beyond?

The "Atak" project is amongst the essential milestones considering the establishment of a helicopter industry infrastructure in Turkey and we all regard it as a source of pride, reaching the level we have achieved up until today. As part of the project, we have accomplished the delivery of 22 T129 "Atak" Helicopters to the Land Forces Command. We will complete either 23 or 24 helicopters by the end of the second quarter of this year and our delivery schedule is resuming at full pelt. Currently, we are striving to increase delivery from an average of a single helicopter per month to two helicopters per month. We predict that the total number of deliveries to be attained to at least 29 helicopters by the end of this year. We plan to finalize a total of 59 helicopters, bound by contract, to be delivered in 2019 by reaching our target of around 50 helicopters by the end of 2018.

Defence Turkey: The Ministry of Interior Affairs plans to procure 6+3 optional T129 "Atak" Helicopters. When will the deliveries of the systems to be procured within this context take place? Additionally, what

type of payloads will these systems be equipped with?

The export licenses regarding the procurement of the aforementioned helicopters have been recently approved. We will launch the project schedule as soon as possible. We will aim to accomplish the delivery of the first helicopter following the completion of the required pilot and technician training. In respect to their configuration, the crucial difference of these helicopters from the existing helicopters will be the image transfer system from air to ground which will be included according to the requirements of the user. Other than that, we can say that they possess the same capabilities of the existing "Atak" helicopters.

Defence Turkey: Are there any requirements of the Naval Forces Command for the T129 "Atak" Helicopters' Naval Forces Configuration to be utilized especially in the Landing Helicopter Dock (LHD)? What would you like to say on this subject?

We are aware of the fact that our Naval Forces Command has been planning to procure T129 "Atak" helicopters. Currently there are no tangible requirements submitted to the Undersecretariat for Defense Industries at this point. We are pleased with the interest shown in the "Atak" Helicopter from different users and we would like to forthwith procure the "Atak" helicopters to





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meet the requirements of security forces. We will plan to conduct an array of joint activities in order to expand upon the issue in the upcoming period specific to the Turkish Naval Forces.

Defence Turkey: A comprehensive test campaign was accomplished for the export of the “Atak” Helicopter to Pakistan and the helicopter received full marks from Pakistan’s procurement authorities. The purchasing country has not announced its final decision yet. Are there any change in the purchasing country’s approach to the procurement strategy regarding the sales of these platforms? Can we say that we have reached a point of sharing this good news that has resulted from close cooperation built with Pakistan, particularly in the recent period?

Our efforts in respect to the sales of our T129 “Atak” Helicopters to Pakistan are on course. A far-reaching technical evaluation was managed fruitfully between the related parties and the T129 “Atak” has accomplished a harsh test campaign in Pakistan. The activities to clarify the administrative and financial terms are resuming. The Undersecretary for Defense Industries is constantly paving the way for the defense industry companies to become more competitive in markets abroad. We constantly encourage and support the local companies in overseas markets comprising incentive implementations such as using the intellectual property rights that the government acquires through the projects. Within scope of these export activities we are aspiring to share good news soon.

Defence Turkey: Regarding the “Atak” Helicopter program, how are the activities proceeding for the indigenization of the turreted gun? There are some speculations that the indigenization plan has been postponed. What are your remarks on this issue as the procurement authority?



As you know, the turreted gun is one of the primary components of the Attack Helicopters and we intend to manufacture this weapon system with the contribution of local resources. The postponement of the indigenization of the turreted gun is definitely out of the question. There have been certain amendments to the project model and the project is currently on its course under the responsibility of TAI. If there any changes in the progress of the project we will clarify the latest situations publicly via your magazine.

Defence Turkey: The integration of the UMTAS (Long-Range Anti-Tank) missiles to the T129 “Atak” Helicopters and their qualification have recently been completed successfully.

Within this context, what will the process look like regarding the initiation of mass production of these missiles and the launch of their fully operational utilization in the T129 “Atak” Helicopters?

As you know, we initially accomplished the integration of the Laser - UMTAS (LUMTAS) missiles as part of this munitions group. We launched the utilization of the LUMTAS with the existing ammunitions in the inventory. Subsequently UMTAS’ integration tests have been accomplished and their utilization was authorized. Currently, there are no obstacles regarding their utilization in the “Atak” Helicopters operationally. The mass production activities of this munitions are being executed by Roketsan.



UMTAS /LUMTAS missiles and launcher system was exhibited in Roketsan’s Booth in IDEF 2017

Safkan Denizci

AW101

Dünya çapında en zorlu açık deniz ve kıyı kesimi ortamlarında görev yapan Leonardo Helikopterleri, Donanma Komutanlarına kuvvet projeksiyon aktarımı sağlayarak hareket sahasının ufkunu genişletmektedir.

Gemi konuslu bu çok rollü platformlar, su üstü ve su altı hedeflere karşı otonom tespit, teşhis ve angajman ile aynı zamanda Arama Kurtarma (SAR) ve insani yardım desteği için hızlı görev değişimi kabiliyetine de sahiptir.

Leonardo, büyük usta mucidin vizyon, merak ve yaratıcılığından esinlenerek yarının teknolojisini tasarlamaktadır.



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Defence Turkey: The first prototype as part of the “Özgün” Multi - Role Helicopter program debuted at the IDEF 2017. According to the existing project schedule, The New Generation Multi-Role “Özgün” Helicopter is expected to make it’s maiden flight on 6 September 2018. Turkey will possess a new generation helicopter platform for the first time within this program. Within such a framework, which new generation capabilities will be attained by this program? Moreover, how will the schedule and process proceed in respect to the test, qualification, certification and production of this platform?

We have made great strides in a short span of time. The program was initiated in 2013 and as of today we have proceed to the critical design stage within 4 years. The mock-up of the platform debuted at IDEF’ 17 and the official delegations and visitors showed great interest throughout the exhibition. We evaluated that this achievement is invaluable for Turkey. If we consider the entirety of the capabilities that we acquired as part of the “Özgün” Multi-Role Helicopter program it may take up hours to discuss, however I would like to underscore a few crucial points. The mobile components such as transmission and rotor that have numerous complex structures and required advanced engineering skills were

designed by TAI engineers. We accomplished the Automatic Flight Control System that reflected the flight characteristic of the helicopter and elevated the skills of our pilots again as part of this project. The production and test activities of this systems are sensitively being conducted under our responsibilities. Within the scope of the program schedule, the production and test activities of some critical parts have been completed and some of them are in progress. Within the qualification and certification stage, Turkey will acquire crucial elements and the platform will possess a civil airworthiness certification. The type certification is expected to be completed in March 2020 and thereafter we will aim to acquire the military certification within the following year.

Defence Turkey: The regional requirements for the Multi-Role Helicopter for the upcoming period is expected to be 250 to 300. Within this context, following the certification to be received from both civil aviation and the European aviation organization with the requirements of the civil, V.I.P and Public Institutions, do you already have any preparations for replacing especially the UH-1 helicopters as part of Turkish Armed Forces’ requirements? Do you have a plan over the potential orders that would both act as a development program and reduce the costs throughout the mass production process over various military configurations with the Armed Forces and Main Contractor?

When designing the “Özgün” T625 Multi-Role Helicopter, one of our priorities was forming a basis that can fulfil both military and civil requirements. The certification we will be receiving from the European Aviation Authority will be our greatest advantage in the global market. We have already reflected the requirements to the design in order to obtain this certification. We altogether had the opportunity to scrutinize the V.I.P model cabin at IDEF. I believe that our helicopters having such features will attain a place in the market. Moreover, we have been receiving



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support from the Turkish Armed Forces (TAF) ever since the design stage for the manufacturing of a helicopter that would fulfil the military requirements. We have been developing a multi-role helicopter that would cover the various requirements of TAF with the help of their feedback.

We are already adopting the measures that would reduce the costs without compromising safety and quality. Even though the prototype production stage is different from the mass production stage, we currently make investments by envisaging the future plan and in a way to support our subcontractors in the highest extent. As you also mentioned, the placement of the orders for mass production, from this point forward, bears importance toward the reduction of costs. Our negotiations with our potential users continue to this end.

Defence Turkey: The proposal evaluation report conducted in the beginning of February 2017 within the scope of the Naval Forces Lot-III and Coast Guard Command Helicopter Procurement Project was launched in order to procure a total of 12 S-70B SeaHawk helicopters (six helicopters for Naval Forces Command and six for the Coast Guard Command) and their relevant logistics support components resulted unfavorably. Is the program postponed as a result of this evaluation process or is there a new study planned for the procurement?

As a result of the negotiations that we have been conducting with the Coast Guard Command, a will to reassess the project in the medium term has emerged as the project bears no urgency at this stage. The utility helicopter requirement of the Naval Forces Command continues. We are still conducting our activities on S-70B SeaHawk helicopter's alternatives in this respect. We try to handle this issue through a far-reaching perspective in order to enable various options for our

Naval Forces Command regarding their requirements.

Defence Turkey: How many helicopters have been delivered up until now as part of the Multi-Mission Helicopter launched to procure the CH-47F Chinook Helicopters from Boeing through Foreign Military Sales? When will the remaining of the helicopters be delivered?

Chinook helicopters have been a long-felt need for the Turkish Land Forces Command. We fulfilled this expectancy by delivering 6 Chinook helicopters to our Land Forces Command last year. I firmly believe that you are following this development and these helicopters started to show up in the theatre and they cover a crucial gap in the range of capabilities.

The remaining 5 helicopters are planned to be delivered by the end of 2018 and in the beginning of 2019.

Defence Turkey: Mr. Avşar, could you please inform us on the new programs and the new tenders to be launched in this new period?

As you know, in line with the mission of our Undersecretariat, we have the will to launch domestic development programs instead of launching direct procurement tenders. To this end, we are working on projects both for development opportunities regarding the helicopter

requirements and the acquisition of various critical sub systems and in some cases the various maintenance capabilities of the platforms that are being utilized. Among these, various projects including a domestic helicopter project in a different tonnage may come up on the agenda in the upcoming period.

There are requirements notified by various user authorities for the upcoming period. We aim to avoid implementing the off-the-shelf procurement method unless it is compulsory and to fulfil all requirements through local resources as much as possible.

Defence Turkey: Lastly, is there any message you would like to convey to our readers?

The recent developments that have emerged both in our country and in our region indicate the importance and indispensability of a powerful defense industry for our country's independence and future. Within such a context, the Defense Industry projects increasingly take part on our country's agenda. Therefore, presenting accurate information to the public regarding executed projects is of great importance. Hereby, I would like to thank you and Defence Turkey for granting us the opportunity to provide first-hand information regarding the projects we have been conducting ■



Mr. Hüseyin Avşar – Head of Helicopter Department of SSM met up with Mr. Cem Akalın – Managing Editor of Defence Turkey Magazine in Headquarter of SSM

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28th Ordinary General Assembly Meeting of the Defense and Aerospace Manufacturers Association

The Defense and Aerospace Industry Manufacturers Association's (SaSaD) 28th Ordinary General Assembly Meeting was held in Ankara

Minister of National Defense Mr. Fikri Işık, Undersecretary for Defense Industries Prof. İsmail Demir, Chairman of the Board of the Defense and Aerospace Exporters' Association Mr. Latif Aral Aliş, TAFF (Turkish Armed Forces Foundation) General Manager Lieutenant General (Retired) Mr. Orhan Akbaş, military officials and SaSaD members attended the meeting.

Mr. Selçuk Yaşar: "The funds Turkey allocated to defense in 2016 was 1.69% of the GDP. We would like this percentage to be revised in the upcoming period."

At the first session of the meeting, the Chairman of the Board of SaSaD made an opening speech. SaSaD Chairman Mr. Selçuk Yaşar: "The resources Turkey allocates to defense decreases each year. While it was 2.06% of the GDP in 2009, in 2016 it regressed to 1.69% of the GDP, yet in Europe it is in the level of 2.4% of the GDP. This percentage needs to be increased again due to the threats we perceive in our region and the geography in



which our country is located. We wish for this to be re-evaluated. Where Turkey used to achieve a defense turnover at the level of \$ 5 billion according to the data of 2015, the foreign export revenue reached \$1.655 billion once again according to data of 2015. In light of these figures, Turkey ranks 12th amongst the world's top 15 exporter countries."

Following Secretary General Mr. Hüseyin Baysak's briefing on the 2016 working report and financial statement, the report of the Supervisory Board was read and the Board of Directors and the Supervisory Board were acquitted. After the negotiations on the Working Plan for 2017 May - 2018 April Period and the Annual Budget Plan and following its ratification, the meeting was recessed.

In the second session of the meeting in which the members of the protocol also participated, the Minister of National Defense took the floor following the speech of

SaSaD Chairman Mr. Selçuk Yaşar and made assessments on the current status of the defense and aerospace industry, the geography surrounding Turkey, the risks and near future issues. Minister of National Defense Mr. Fikri Işık stated "We achieved a fourfold increase in the Defense and Security budget within 14 years. I can claim that there is a strong will toward increasing these defense budget. We do not have a resource problem here, but there are problems in the effective and efficient utilization of resources. We are monitoring an increase in the quality of the products manufactured by the Turkish Defense Industry. The off-set participation at the level of 24% in national programs now has reached up to 60%. Then again, due to the embargo and restrictions we have been going through in this period, we need to attach more importance to local production and development. Yet, we also need to outdistance



Mr. Fikri Işık – Minister of Defense

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the single-handed manufacturing modality and we should be open to cooperation opportunities with international partners. Today we witness our Main Contractor companies reaching a level of certain maturity and power. We have to support our SMEs more and support them further especially in test and certification aspects.”

Stating that they aimed to expand the Defense Industry all around Anatolia and to various parts of Turkey, Minister Mr. Işık continued: “We are exerting utmost efforts to this end. At this point I would like to underline our effort to create a structure that functions well from the bottom to the top.” Mr. Işık particularly warned the foundation companies and stressed the requirement for robust functioning Medium Sized



according to the Undersecretariat for Defense Industries’ (SSM) Award Rating System. This year, within the scope of the Defense Industry Awards as per the

company in the competition.

Defense Industry Special Awards were presented as noted below:

Entrepreneurship Category: E-Poli Kollo Boya Kimya Sanayi, RFTR Elektronik and Ottoman Medikal Companies

Successful Product Delivery Category: Akxa Run-Flat, Roketsan/Baykar Makina/ Kalekalp and Aselsan

Technology Development Award: Roketsan, TAI, DowAkxa and Havelsan

Export Achievement Category: STM and BMC

Most Rapidly Growing Cluster: SAHA İstanbul

Promotion Category: OSSA

Following the award ceremony, Head of Strategy Development Department of SSM Mr. Yasin Polat made a presentation on SSM’s Strategic Plan Activities for 2017 - 2021 period ■



companies among SMEs and Large Scaled companies toward achieving a dynamic pyramid in Turkey and added: “Unfortunately our main contractor companies perceive our medium sized companies as their rivals and react to impede them from overgrowth. Our large scaled companies should be able to see the medium sized companies as important ties with the SMEs. We have to achieve this and I will be in hot pursuit of this issue.”

Financial Data, TEI was ranked in first place followed by TAI, and Samsun Yurt Defense Industry company coming in as the third

Winners of the SaSaD Defense Industry Awards

During the event, awards were presented to the companies that succeeded in the competition



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Nurol Makina – Proudly Providing a National Service - An Ambitious Vision Coming to Fruition

With incredible sales growth reaching \$100 million, Nurol Makina's General Manager Mr. Engin Aykol talks with Defence Turkey Magazine about the company's sustainable path, with projections to soon exceed current sales. Within the next five years, additional new orders are anticipated for vehicles delivered both to local and foreign markets

Defence Turkey: Dear Mr. Engin Aykol, first of all we would like to thank you for your time. You have been the General Manager at Nurol Makina for almost 5 years now and it seems that you've been making your mark with your staff throughout this period. Nurol Makina has become a prominent brand both locally and worldwide with its products and high-tech technology. We observe the signs of work produced by a team with a systematic point of view and which has identified its direction well. What type of changes have unfolded at Nurol Makina throughout this five-year period?

In 2012, at the beginning of my assignment, our product range was considerably different under existing circumstances. We noticed that we had to alter our product range to keep up with the times and also to stay up-to-date within the current conditions of Turkey in order to become a more competitive player in the defense industry market. Our TOMA production has been ongoing but today we manufacture the 4x4 Ejder TOMA which is a unique platform developed over our own chassis, standing out with its high-level terrain capability and ballistic protection. As Nurol Makina, we used to have an organizational structure that adopted the production of a single vehicle yet today we are capable of managing the concurrent operation of five various products. I can claim that the sales we achieved are concrete indicators of our achievement and improvement. Surely, we are still not at the level we aspire to attain but we are striding out to become a crucial player on the global scale. I can sum up our mission as: catering to the requirements of our military and security forces, providing high added value to our Defense Industry, training qualified staff and thus contributing to future generations.

Defence Turkey: Taking into consideration your sales figures at home and abroad within this five-year period between 2012 and 2017, how do you assess your growth curve? Can we discuss a robust and sustainable structure in which balanced sales can be achieved at home and abroad?



At the onset of my assignment at Nurol Makina in 2012, we set aggressive and long-term goals. Nurol Makina has accomplished essential accretion within this period so that today's sales figures are ten times bigger than the sales figures from 2012. I would like to state that attained business volume is sustainable and will be ascending. I can candidly clarify that we have already reached the projected ambitious figures for the 2020 vision. Without doubt, this does not mean that we would be reducing our aims. Nurol Makina enlarged its assembly line by two-fold and procured cutting-edge technology devices and equipment which are in limited availability in Turkey. Ejder Yalçın Tactical Wheeled Armored Vehicle has great potential and we will enhance the manufacturing capacity of this vehicle in the upcoming period. We will find out the responses to all these topics in time but we are already conducting the preliminary steps in coordination with our Executive Board.

Defence Turkey: What is Nurol Makina's annual budgeted target for 2017 considering sales at home and abroad? In addition, what are your expectations for the year 2018 when you analyze the conjuncture of the world?

Ejder Yalçın Tactical Wheeled Armored Vehicle entered foreign markets for the first time through this period and we accomplished the first export sales of these vehicles. The deliveries of the vehicles started to our export customer and also we keep the deliveries to the Turkish Security General Directorate and Turkish Armed Forces.

We are putting forth our utmost effort to participate in numerous tenders launched at home and abroad. In light of the recent developments, our serial production line will be fully loaded in 2018. Surely the aforementioned high production rate does not apply only to our Ejder Yalçın vehicle. I would like to underline that first exports of "Ilgaz-II" and Ejder TOMA vehicles' were also realized in 2017.



4X4 Ejder TOMA

We envision that our Ilgaz-II, Ejder TOMA, Ejder Kunter vehicles as well as NMS 4x4 vehicle that was unveiled during the IDEF'17 Fair will be sold in high volumes in the forthcoming period.

Defence Turkey: The Ejder Family has become a crucial platform used by Turkish Security Forces with various configurations. Could you please share more with us on the R&D and design activities as well the gathering of a devoted team that was conducted within the scope of the development process of the Ejder Yalçın vehicles which have proved themselves at the theatre?

Ejder TOMA and Ejder Kunter vehicles have the same chassis. Ejder Kunter was designed as a Multi-Purpose platform both for personnel and for carrying other payloads. We displayed the Armored Personnel Carrier configuration of this platform at IDEF 2017. Within the context of this APC configuration, Nurol Makina teamed up with the Aselsan and BITES companies on the integration of a "multi-copter" over the vehicle to enable reconnaissance and surveillance capabilities at border and urbanized terrain operations. We displayed the Ambulance configuration of this vehicle at the multi-national Efes 2016 drill. We are open to all manners of cooperation with potential and eager technology companies. Revealing more utility platforms is merely a matter of our efforts.

As for the development of Ejder Yalçın, the feedback provided by Turkish Security General Directorate was as essential as the R&D studies. This precious information paved the way toward how the vehicle could perform more effectively in the theatre.

Defence Turkey: The Family of Ejder Yalçın initiated development in 2012 and turned into various configurations and was revealed in various configurations, as Ejder Yalçın I-II-III. Currently, which security forces have these derivative Ejder Yalçın Armored Vehicles Configurations in their inventories? Could you please inform us about who has ordered which vehicles and also by which security forces up to date?



Ejder Yalçın 4x4 Tactical Wheeled Armored Vehicle

Ejder Yalçın vehicles remains in the inventory of the Police Special Operations Department, the Turkish Armed Forces as well as the Gendarmerie General Command. The vehicles we have delivered up to date have proven themselves against mines, improvised explosive devices and ballistic threats thanks to survivability and outstanding terrain capabilities. Ejder Yalçın can be designed in numerous configurations thanks to its high payload carrying capacity. We endeavored to exhibit a similar instance of this at the IDEF Fair. We displayed three different configurations throughout the fair; Pedestal Mounted "Cirit" Launcher of Roketsan, Improvised Explosive Devices detection /destruction system and the "jammer" system mounted on these vehicles. Due to the high payload capacity of Ejder Yalçın, these vehicles can be easily outfitted with diversified high-tech systems required by Turkish Security Forces.

Defence Turkey: Nurol Makina received a record order of 180 vehicles for the 7.62mm SARP Weapon Turret integrated Ejder Yalçın-III from the Turkish Security General Directorate in the last period. Could you please inform us about the delivery schedule of these vehicles as well as the user who will gain superior capabilities with these vehicles?

Aselsan's 7.62mm Stabilized Advanced Remote Weapon Platform and Ejder Yalçın Armored Vehicles has shown great interoperability in the field. Consequently, this configuration was used for the purpose of integration over the total 180-vehicles bound by contract from the Turkish Security General Directorate. Nurol Makina has accomplished entire deliveries and received additional orders by the Turkish Security General Directorate. We are proceeding with the manufacturing of these additional vehicles.





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Defence Turkey: The Ejder Yalçın Armored Vehicle is a highly desired platform for security forces and this fact is already apparent with the number of orders placed. You have various rivals at home and abroad. Could you please enlighten us on the details that are making you stand out against the competitor?

As Nurol Makina, we are aware of Turkish End User's requirements. When we design these vehicles, we considered that the greatest deficiency in our country was a vehicle with high protection and this was our starting point. Nurol Makina's engineers exerted exhaustive efforts to this end. We revealed the first prototype of the vehicle towards the end of 2012 and launched the vehicle at IDEF 2013. Soon after the launch ceremony we initiated the challenging test campaign under various peripheral and weather conditions and the vehicle accomplished whole test process with high success.

As a result of the test campaign, Nurol Makina continued its product development activities and manufactured the first configuration of our vehicle in 2014. We received the first order from the Special Forces Department of the National Police to which we now deliver hundreds of these vehicles. With the help of its high protection level against mines, Ejder Yalçın offers unmatched superior mobility to its users under all manners of terrain and weather conditions.

Defence Turkey: Mr. Aykol, Nurol Makina signed the first export contract regarding Ejder Yalçın 4x4 Tactical Wheeled Armored Vehicle in March 2017 with the Defense Ministry of Tunisia. Could you please briefly elaborate more about this contract?

After a tough business development process, we were able to accomplish the first export sale of our Ejder Yalçın vehicle to Tunisia. We initially had to make an extensive introduction of Nurol Makina and Ejder Yalçın vehicle to the decision makers of Tunisia. Following this explanatory activity, our vehicle had to attend a rough test campaign on the various



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routes and conditions set by the Tunisian officials. The Ejder Yalçın was one of the last three vehicles that is accepted to the desert tests. Nurol Makina attended the test campaign that lasted for a couple of weeks with a highly qualified team and Ejder Yalçın was the sole vehicle able to fulfil the criteria of the Tunisian Land Forces Command in the consequence of the desert test. I would like to convey my gratitude to all our employees that contributed to these tests via your magazine. We accomplished the deliveries of the first lot of our vehicles and we will continue to deliver the remaining lot in the upcoming months.

Defence Turkey: Nurol Makina signed cooperation agreements in various fields with crucial local engineering companies such as FİGES, BİTES, NANOBİZ, ATEL at IDEF 2017. Moreover, Nurol Makina reinforced its vehicles with the new generation SARP Weapon Systems. If we evaluate

these prominent collaborations established during the fair within an integrated approach, which acquisitions will these contracts provide to you on the path toward excelling and indigenoussness?

We are a company aiming to supply armored vehicles with the highest level of performance in their class for our armed forces and security forces. To this end, we team up with various technology companies of various scales in order to enhance the efficiency of our platforms. Revealing successful and unique products that effectively fulfil the requirements of the end user could be achieved only through the establishment of such robust ecosystems that allow the gathering expertise within these companies that are positioned at different levels of the supply chain. As a matter of fact, we are accomplishing fruitful projects with the aforementioned companies and other companies within this context.



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The New Generation Light Armored Vehicle (NMS 4x4 Vehicle)



Defence Turkey: You unveiled the NMS 4x4 vehicle launched as the New Generation Light Armored Vehicle at the IDEF 2017. Which requirements were envisaged when designing this vehicle? What are your market expectations for this vehicle at home and abroad?

The New Generation Light Armored NMS 4x4 is designed indigenously by NuroI Makina and it stands out with its V-shaped monocoque body and an unmatched military chassis. The lower weight of the vehicle, its outstanding protection against mines and ballistics offer its users high survivability even against aggressive and asymmetric threats and this makes the vehicle superior in the course of operations.

The quite low turning radius of the modular NMS 4X4 promises its users great advantages through urbanized terrain operations. NMS 4x4 is designed and equipped with readiness to multi-role capabilities and also features a series of capacities ranging from the transportation of weapon systems in combatant units to reconnaissance and surveillance tasks.

Through the New Generation Light Class Armored Vehicle NMS 4x4, we are working on solutions for the diversified protection and security requirements of the Turkish Armed Forces and National Police as well.

Defence Turkey: Fulfilling a critical demand for the Turkish Armed Forces and National Police, what kind of capabilities will the Ejder “Kunter” Armored

Vehicle bring to our military and security forces. What type of operational requirements are under consideration. Could you please inform our readers about the demands and requirements that you have received within this context?

In addition to the local market, there is also a request for these multi-purpose platforms abroad. The Ejder Kunter features a chassis designed specially by our engineers. It has 4x4, 6x4, 6x6 long and short chassis options. The chassis could be customized in accordance with the traction level demanded depending on the task to be performed. Our 4x4 vehicle offers a payload carrying capacity up to 7 tons, and 6x4 and 6x6 versions offer payload carrying capacities up to 14 tons. The feasible traction and carrying capacities

provide a versatile capability to the vehicle. The vehicle can be customized according to various task requirements such as Logistic Transportation, Tanker, Weapons Carrier Truck, Command Control Vehicle, CBRN Vehicle, Internal Security Vehicle, Personnel Carrier Vehicle, Patrol Wagon, Armored Money Transfer Truck, Ambulance and Scout Vehicle.

Defence Turkey: Another platform as effective as your Ejder Yalçın vehicles is the Ilgaz-II 4x4. This platform is requested both by local and overseas markets. What kind of flexibilities does Ilgaz-II Armored Vehicles provide the users?

I have to point out that the Ilgaz-II vehicle is quite different than its previous configuration. We have accomplished the first export sale of the Ilgaz-II vehicle, which



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Ejder Kunter

was modified according to the customer requirements, to an East African country. Regaining public order by military units and security forces, rapid reaction, responding to illegal demonstrations and Anti-Riot activities are among the tasks that the Ilgaz-II vehicles will be utilized for. Ilgaz-II offers highest operational efficiency in all types of terrain, as a light armored vehicle. Ilgaz-II can be designed and manufactured as an Ambulance, Anti-Tank Vehicle, Combat Vehicle, Command and Control Vehicle, Reconnaissance and Surveillance Vehicle, Anti-Terrorism Vehicle, Internal Security Vehicle and Crime Scene Investigation Vehicle.

Defence Turkey: Mr. Aykol, what type of growth do you envision for the next five-year period when you take into consideration the sales figures of the last five years regarding sales at home and abroad?

As I mentioned previously we achieved crucial growth in the last five years. Our sales figures reached up to \$100 million annually. I would like to underline that this growth that we've experienced is a sustainable one and we will exceed \$100 million. Within the next five years, we will be receiving additional new orders for the existing vehicles and also orders from new vehicles from both local and foreign markets. Moreover, we will be extending our operations by broadening our product range with the inclusion of our new vehicles which will be pioneers within their own classes. I would like to note that foreign sales will be significant in this growth.

Defence Turkey: Dear Mr. Aykol, it appears that your sister affiliate FNSS and our major companies such as Aselsan have established joint venture companies with the local foreign companies they conducted sales in, as a result of the major collaborations they achieved over time. Is Nurol Makina conducting joint activities in order to establish similar structures in the countries with which you have close contacts? Have you made any proposals to this end? And regarding this, which type of a model do you offer to these countries within this context?



Our foreign sales will be an essential part of our growth. We require permanent structures in the aforementioned countries in order to promote sustainable growth in these markets and actually we have certain studies to this end. The affiliates of Nurol Holding and FNSS in the international arena compose a prominent reference for us as well.

Defence Turkey: Nurol Makina have decided to extend its mass production lines in order to comprising the local and foreign market requests its receive and initiated working on the construction of the new assembly line. How are the construction activities proceeding to this end? With the activation of this facility, which type of an increase will there be in the production, integration and the installation capabilities? Will the different configuration demands of both local and foreign customers be simultaneously accommodated? Could you please inform us on the details?

The construction of the new assembly line was completed last year and it was launched into operation. The capacity of the assembly line was doubled. Additionally, a new paint shop facility was established within this line. These decisions were realized by taking the current and future orders into account. We currently understand how accurate the decisions were that we made. If we had not made the decision on this investment, it would have not been

quite easy to cater to the requests coming in.

We have completed the deliveries to Police Special Forces. The production of the vehicles for Tunisia and the Turkish Armed Forces continues and the deliveries are being accomplished in lots. We are capable of fulfilling all request through our existing infrastructure and production capacity. We went through certain improvements in our functioning in order to efficiently fulfil the various configuration request of both our local and foreign enriched customer portfolio. We made significant investments in human resources, processes as well as the relevant software to this end. At this point, we are capable of effectively conducting multi program management from design stage to procurement, assembly and test stages.

Defence Turkey: Lastly, would you like to convey any messages for Defence Turkey readers?

Our government's determined struggle against terrorism continues and we are going through a quite critical period. In this period, as Nurol Makina, serving our security forces, from designing new vehicles to providing logistic support to the vehicles existing in the field is a kind of sacred responsibility. I would like to express that we will be supporting our courageous security and armed forces in the coming period for our country.

Defence Turkey: Thank you for your time ■



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EcoSystem Pyramide is Transforming and Getting Stronger within the Leadership of AYESAŞ and VESTEL Defence Companies

An exclusive Defence Turkey interview with Mr. Öner Tekin - General Manager of AYESAŞ & VESTEL Defence. With the zeal and a desire to constantly acquire advanced technology and added value through Unmanned Air Vehicles, Land and Naval Systems, AYESAŞ & VESTEL Defence have become a pioneer and model to shareholders on a global scale



KARAYEL-SU

VESTI

Defence Turkey: Dear Mr. Öner Tekin, first of all we would like to thank you for your time. In the beginning of last April, you were appointed as the General Manager at VESTEL Defence Industry and AYESAŞ companies under the auspices of the VESTEL Group of Companies. Since your assignment, what are the pros and cons that you've observed, and as an expert within the sector what is your opinion on the status of your companies as well as the sector? Could you please share your assessments?

I was not far removed from the sector on account of my previous assignment; I was partially included in the sector and in the part of the businesses that related to the defense industry. Upon my appointment I endeavored to work on the issues that related 100% to the sector, and I can make an unprejudiced and objective assessment from an outsider's view. Upon analysis, it is apparent that progress in the defense industry increased especially in the last 14-15 years. From a country lacking indigenous products and an external dependent structure, Turkey has become a country capable of designing and manufacturing unique products through local resources, endeavoring to diminishment of its foreign dependency, and demonstrating willful determination. We once again witnessed this improvement at IDEF 2017. Surely, we still have deficiencies to be addressed and several bureaucratic processes need to be improved. Especially the existing legal hurdles in the areas comprising high-tech must be effectively overcome. I rely on the fact that we will be improving these in time. To sum up briefly, I can say that our defense industry possesses fantastic potential.

Defence Turkey: Dear Mr. Tekin, what is your vision and which strategies will you identify for this new era starting with your assignment? Which areas and programs will you prioritize in order to further advance VESTEL Defence and AYESAŞ companies?

I am aware of the fact that the existing structure of the VESTEL Defence and AYESAŞ companies was expandable in terms of human resources and processes. This has been one of the factors that I was



very pleased with. Both companies have a robust infrastructure and great potential. Moreover, the power of the Zorlu Group, to which we are affiliated, renders us more powerful in respect to growth and progress. Therefore, when considering all of these parameters, I can say that AYESAŞ and VESTEL Defence companies have promising futures.

If we need to position our companies within the sector, we remain in the medium scale company category between the main contractors and SMEs in the ecosystem, a point which is constantly underlined by our Minister of Defense Mr. Fikri Işık. There is a great gap in this pyramid amid the main contractors and SMEs in this ecosystem. We position our companies near by the major players with our competences, capabilities, financial structure. On this point, I would particularly like to emphasize that we aim to identify a key strategy which we plan to launch with our main contractor companies and mostly our foundation companies. In line with this strategy, we aim to render

the AYESAŞ and VESTEL Defence companies as the permanent strategic partner of the major players. Instead of direct contact of the main contractors with the SMEs, the management of the SMEs has to be executed by the medium scaled companies and the medium scaled companies should facilitate and speed up the process and secure an essential position among the main contractors and SMEs. In my opinion, such a structure would both enable the energy efficiency and enable the sector players, which are struggling with the major platform programs, to keep their focus at the platform level. While the medium scaled companies execute the management of the SMEs, they will be providing an essential amount of efficiency to the sector as they will be managing all the requirements of the various companies from a single point. On the other hand, this structure to be set up will capacitate significant advantages toward the institutional development of SMEs. As AYESAŞ and VESTEL Defence, we are collaborating with a total





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CONCEPTUAL DESIGN



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ENGINEERING DESIGN AND DEVELOPMENT



VIRTUAL PRODUCT



MODEL & PROTOTYPE MANUFACTURING



TESTING & VERIFICATION



PRODUCT RELEASE



PRODUCTION ASSISTANCE



number of 2968 local -foreign suppliers and sub-contractor companies. We have a robust structure in this respect. With the competence that we possess, we are in a position that enables us to manage SMEs in the best manner and provide system based solutions to the main contractors. Occasionally the large-scaled companies fail to sustain SMEs due to their overall rigid rules (payment dates, pay after acceptance, etc.). We undertake the role of being a buffer zone at this point. I believe that the medium-scaled companies such as AYESAŞ and VESTEL Defence will play a key role in respect to maintaining the sustainability of the subcontractors and also in offering the most optimal solutions to the sector through managing the structure effectively.

Defence Turkey: Turkey's requirement of an eco-system is spreading throughout the region and its importance is constantly acknowledged by sector players. You have a similar approach and you have essential experience particularly in the area of R&D that would carry us further. What type of a plan is required to attract a more qualified labor force, to cultivate a higher level of expertise in the qualified labor force and what is needed to utilize our combined expertise more efficiently and effectively?

Turkey has the capability to provide R&D services and support all over the world. I would like to share an instance that I experienced in the past, when a problem arose regarding a project conducted in Brazil; they consulted our engineers even late at night and thus we were capable of providing them with the necessary solution within 3 hours. I believe that this constitutes an extraordinary indicator of a development level. As I mentioned, we have the competence in Turkey and this must be utilized effectively through an envisioned plan. The qualified engineers should not be utilized in unskilled tasks. However, the players in the sector cannot achieve this unaided. We need to identify a strategy in this area accompanied with the governmental institutions, universities and the stakeholders of the sector. We need a macro plan that comprehensively addresses who should work in which



section of the sector starting from the technical and industrial vocational high schools. These types of plans have been initiated and have been partially handled yet we need more of a macro plan in this area.

We are utilizing slightly more qualified personnel in the projects we conduct as AYESAŞ and VESTEL Defence and we are lucky in this regard. We execute high precision programs and as a result we need to employ a qualified skilled labor force. We develop software for an aircraft with high costs, we manufacture the circuit board, thus we enhance our standards. Besides, we conduct wiring harness production together with wiring engineering. Wiring architects are also employed at our facilities. We develop Link 16 Tactical Data Link software of the F-16 jets in Turkey as well and this requires a very significant accumulation of knowledge.

In the realm of VESTEL Defence, we have been conducting R&D studies on Hydrogen and Fuel Cells Technologies for over 13 years (they are unique in Turkey and the

mass production of which has not been initiated in the world yet). We are running collaborations with the notable universities of Turkey in this field and conducting R&D studies within the framework of university and industry cooperation.

We stand out amongst the mid-size rivals with the assistance of our qualified human resources in R&D. We believe these assets in all our operations will create more value for us in the medium scale company category.

Defence Turkey: What are your growth targets within the scope of the vision you will be putting forward for the upcoming period?

We are eager to set up a flexible, trend-tracking vision to our companies that would foster expansion, widen the product range and one that is open to joint production and development at home and abroad, adopting a more initiative understanding. I can say that our competence is suitable for a flexible and modular structure. As a company relying on the eco-system initially within our existing structure,



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we aspire to proceed by expanding the subcontractors within our eco-system. If the efficiency of the eco-system increases, we too will also thrive. You cannot single-handedly achieve an endeavor from a to z, and if you try to do so then success will not be possible. I have seen the results of such efforts quite clearly during my previous assignments and as a result we will be displaying the vision and behavior that would create a robust eco-system. Instead of selecting the companies based on whether or not they are efficient, we aim to proceed with the approach that leverages them while building this eco-system. If we identify any deficiencies regarding quality, then our quality experts will provide training in the required fields to improve the quality of experts in the particular field.

Defence Turkey: Do you have any plans to identify a niche area in the upcoming period? Are there any activities planned regarding critical technologies that Turkey is open to and that have not been performed by AYESAŞ or VESTEL Defence so far?

We aim to self-enhance our area of specialization, yet we are open to assuming different or converging projects as well. Within this context, we identified certain strategic topics, we have not clarified them yet but soon we will be disclosing them to the public. Since our establishment, we have been one of the pioneering companies of the sector that has been active in areas requiring high technology and in many areas considered to be the technology of the future such as Unmanned Aerial Vehicles. At the same time, we are capable of providing the subsystems which are required by great platforms and which require high technology with our know-how, infrastructure and human resources. We will have a good position in every area of our expertise with all of our structural power in the upcoming period.

Defence Turkey: Are any acquisitions planned within the scope of your growth strategy in the upcoming period?

This is not a decision that could be made properly at this stage. This drops beneath our radar at the time being, then again there may be such an acquisition as a result of a project



Major Customer Chart of AYESAŞ

or a different strategic formation. This should not be perceived as if we are against company acquisitions but we are unwilling to monopolize through the acquisition of companies within the eco-system. If we ever adopt a strategic decision in this area, I can say that we will proceed with sensitivity and consideration.

Defence Turkey: How do you assess the export performance of VESTEL Defence and AYESAŞ? What would you like to say regarding your sales as well as the regions that you are efficient in?

The United States companies are at the top of the list of the countries and regions that we conduct sales with and the European companies follow them on the second row. The products and systems that we manufacture for these companies are being dispatched to the end users all over the world. We conduct all our exports to the United States and Europe and over 50% of our turnover for the past five years consists of exported products.

The technological products we export are composed of electronic cards, wiring harness, electro-mechanical units, Command Control software and avionic software. The world's greatest OEM manufacturers such as Lockheed Martin, Sikorsky, Thales, Airbus, Boeing constitute the primary customer segment of AYESAŞ. The work we undertake from such companies do not merely arise from off-set implementation; an important part of them comprise work packages and development projects we won through our own attempts, non-affiliated with the projects conducted in Turkey.

Within the scope of the F-35 JSF program, we conduct the production of the panoramic

cockpit display electronic circuit card assemblies of the F-35 to L3 Technologies as well as develop its software. We have a production capacity of 1500 electronic circuit cards annually. We also execute the design and production of the circuit card assemblies of the Missile Interface Unit to the GE Aviation Systems. As part of the JSF project, we are proud to be the only Turkish company, involved in design manufacturing of electronics and software development in the F-35 JSF Program

We manufactured wiring harnesses and kits for power panels of the F-16 for Lockheed Martin. We also procure wiring harnesses for the Boeing NATO AWACS aircrafts. Moreover, wiring harness assemblies of pioneer rotary wing platform manufacturers of the international defense market.

Besides, we are providing services to worldwide giant defense companies regarding underwater and surface platforms. Our collaboration on the design and production of Kongsberg multi-function consoles, production of multi-function console and cabinet for Atlas Elektronik, Airbus Defense & Space, the current Hensoldt company's underwater periscope system cabinet supply, underwater electronic battle system console production to Thales Aerospace Systems UK, Thales Underwater Systems, the production of the connection boxes of the underwater sonar system and Integrated Platform Control and Monitoring System (IPMS) are on-going.

Defence Turkey: What would you like to mention about the regions in which you are active and details about your sales?



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There are no medium scale companies working directly with world giants like AYESAŞ. Complying with the international standards and passing the comprehensive audits is not an easy task but we accomplished all these processes successfully.

One of the crucial markets that we attach importance to as AYESAŞ is the Azerbaijan market and Turkic Republics in general. Our close contacts with Azerbaijan have been going on for a few years. There is a certain amount of technological accumulation in Azerbaijan. I believe that they are ahead of many countries in terms of academic know-how. As we assessed that joint development projects and technology development activities could literally be conducted with Azerbaijan, we made an agreement during last ADEX'16 with the Azerbaijan National Sciences Academy (ANAS). These activities still continue.

The HTAWS - Helicopter Terrain Awareness and Warning System that we designed in order to reduce the risk of controlled flight into terrain (CFIT) accidents of rotary wing aircrafts and our Digital Moving Map drew great interest from the Azerbaijan Air Forces and from the rest of the Azerbaijan delegation. During IDEF, both Azerbaijan's Minister of Defense and Air Forces Command visited our booth and gathered detailed information on the products.

On the other side, VESTEL Defence, the Armed Configuration of the Tactical Class "Karayel" Unmanned Aerial Vehicle System and our UAV platforms in different categories are drawing intense interest from foreign countries. I can say that we have significant opportunities regarding the products in our UAV product portfolio and their export to overseas markets.

Defence Turkey: Returning to the projects, you possess a tactical class unmanned aerial vehicle such as "Karayel" that has proven itself. The weapon integration was accomplished to the "Karayel" UAV system and its test flights were completed successfully last June. How have developments proceeded within this one-year period regarding



VESTEL Defence unveiled "Karayel-SU" configuration at IDEF' 17

"Karayel"? What kind of studies were conducted considering the systems' localization and indigenusness? Could you please inform us?

"Karayel" is a source of pride for us and it bears crucial capabilities. We possess a platform that was designed in line with NATO standards - this is a crucial point that features all the characteristics required for international aviation safety and finally that it was designed and produced in Turkey. We turned this platform into a product family subsequent to the final firing tests. Currently, there is a configuration of the "Karayel" platform utilized for reconnaissance and surveillance in the tactical class. In addition, we revealed an armed configuration of this platform. By extending the wingspan, we enhanced the endurance up to 20 hours with this configuration and debuted the "Karayel SU" configuration at IDEF' 17.

The family of Karayel UAVs consist of 4 different configurations. The first configuration is "Karayel" UAV system used for tactical reconnaissance and surveillance operations, we refer to the other configuration which was developed and armed in the sequel as "Karayel-S" and we have accomplished the test firing last year. We developed the configuration with the extended wingspan enabling it to carry more payload and we refer to it as "Karayel-U". Finally, we manufactured "Karayel-SU" which is an armed and extended winged configuration which we have demonstrated it, at IDEF 2017.

"Karayel SU" reached the capacity of performing with a total of 120 kg of munitions with 4 stations each carrying 30 kg of munition. It became a novel product capable of carrying almost 200 kg of payload together with its high-tech camera positioned on it or with different other payloads. The stations over the spans were developed in modular structure and it became capable of carrying various payloads besides the ammunition.

"Karayel" has already been used in the command of our armed forces through the service procurement and has proven itself during those flight tests. "Karayel" became a unique product family composed of different configurations.

Moreover, we continue our activities on the UAV systems in different types and classes. VESTEL Defence has an in-depth know-how and capability on Unmanned Aerial Vehicles. We are one of the very few companies with such capabilities in Turkey and throughout the world.

Defence Turkey: VESTEL Defence possesses the proven "Karayel" platform. AYESAŞ is a significant subsystem company with an essential know-how in its area of expertise. Both of your companies complement each other with their existing capabilities. In light of your diverse capabilities, what type of an approach will you be adopting for the joint development and production with local partners in those regions, primarily Europe and other Western countries and for the export of these products to third party countries?

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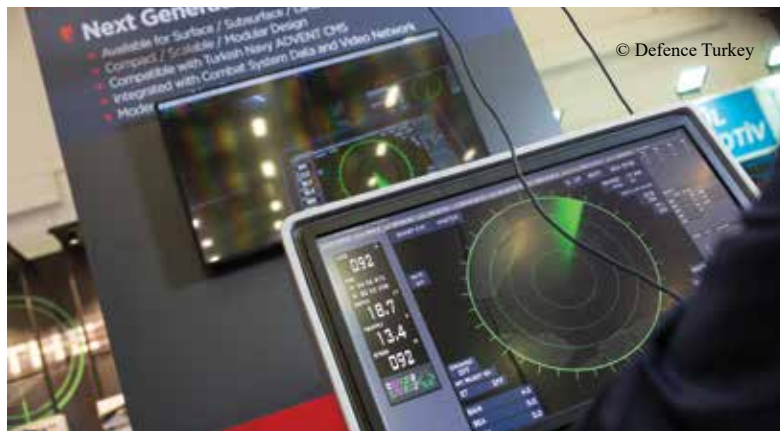
We do have such an approach. Our competence is gaining recognition not only in Turkey but also in the world as the capabilities and achievements of the platforms have been proven through flight demonstrations, etc. We started receiving various offers to conduct joint cooperation regarding this point. We are open to all of these proposals and we are presently negotiating with each of them.

As a person who has worked for many years in the area of R&D, I have gained essential experience considering technology transfer between companies or technology transfer to countries and I am well aware of the fact that trade proceeds in this way. Therefore, we currently assess all the requirements that we receive and all of our ideas through an integrated perspective. We will launch our activities soon to this end.

Defence Turkey: Mr. Tekin, as a system company, AYESAŞ has been undertaking crucial responsibilities in foreign countries especially in the European and American markets in the areas of command control and avionics. From a general perspective, do you consider that a company possessing such depth of field such as AYESAŞ is assuming a sufficient amount of projects both in our country and abroad? Is this company fully reflecting its potential? What are your assessments in this context and what would you like to say about your future projects?

In my opinion, AYESAŞ has already assumed all the projects it could assume. Then again, with its high potential surely there are other projects it may undertake. When we analyze the current status of the sector, AYESAŞ needs to be involved in more projects on account of its competence and depth of field. In my opinion, our competencies can be utilized in numerous projects, the Turkish Fighter Jet (TF-X) program first and foremost.

Moreover, there are many ongoing naval projects. I assess that the New Generation Multi-Function Operator Consoles which we introduced at IDEF and which were designed for the underwater and surface platforms can take part in those projects. With the vision, I mentioned previously, we have a potential enabling us to



New Generation Multi-Function Operator Consoles

be involved in the major projects, by using the depth of field, and quality processes we possess in delivering the sub systems in one piece in grand platform projects. We aim to launch all of these in the upcoming period. I would particularly like to underline a point. We have a very qualified company with numerous outputs and depth of field but our company failed to explain itself sufficiently. AYESAŞ remained as a humble company and I believe that we have to promote its competencies more. Without doubt we expect the support of the associations such as you that promote the sector. As part of the F-35 JSF program, AYESAŞ is the only company involved in design and manufacturing of electronics and software development assemblies apart from United States. With its proven quality AYESAŞ has been conducting the design and production of the circuit card assemblies of the panoramic cockpit display and LRU integration and circuit card assemblies manufacturing and designing of missile interface unit as part of the F-35 JSF program and has been undertaking crucial responsibilities. These competencies need to be promoted much more.

Defence Turkey: Dear Tekin, the OEMs such as Boeing and Airbus have different expectations from the subcontractors in recent years. There is a transition from the first-tier approach to super tier approach.

Does AYESAŞ have a plan for this new concept that involves the subsidiary industries as well?

We adopt this approach. We are the super tier of worldwide giants like Boeing and Sikorsky. Moreover, we are both the tier-1 and tier-2 of some

of our clients. Actually, this is a result of our flexible structure. I rely on the fact that AYESAŞ will be a pioneer on this subject if it is requested, because we periodically make direct sales to OEM's, besides we also sell to the suppliers and to the suppliers of the suppliers.

Defence Turkey: Would you like to convey any message through this platform to your local and foreign shareholders regarding the costs of the products you offer to the sector as well as your flexibility?

Recently, we initiated focused efforts to emphasize our cost-efficient and competitive structure within the sector. We are going towards the game changer position in the sector, as we always believe in competition and we do not have extensive budgets. The saying 'Money does not grow on trees' also applies to our sector. We have to be compatible with this dynamic as well. Thus, we conducted a very serious revision on both of our costs and the cost structures of our suppliers accordingly, and this brought us to a different position.

Defence Turkey: During IDEF, AYESAŞ signed an MoU with Navantia Company on the transfer of know-how and capabilities regarding the IPMS (Integrated Platform Management System) which is amongst the critical components of the LHD (Landing Helicopter Dock) platform and this MoU enables the leadership of AYESAŞ in other local and foreign programs with the support of Navantia through accumulated know-how. What would you like to say about the details and what is acquired as part of this agreement?

You touched upon a subject to which we attach great importance. In my opinion, localization and indigenization are amongst the crucial topics of Turkey. Therefore, the indigenous and domestically developed critical technologies should initially be marketed in the region and then to the world. We tried to act in line with this vision project. We initially signed an agreement with Navantia on the development of a national and unique IPMS system for the LHD platform to be manufactured for Turkey. The content of this agreement has been extended at IDEF and it has been transformed into a cooperation agreement regarding the utilization of our competencies for Navantia's other surface platforms in the world. This agreement should set a model for the sector, I hope that all companies functioning in the robust indigenization groups of foreign companies adopt this vision and put their signature on new collaborations that open to the world by starting through the process of indigenization.

Defence Turkey: The endeavors towards the integration of the Helicopter Terrain Awareness and Warning System for the helicopter platforms within the inventories of the TAF and other institutions gained momentum open the topic of the recent tragic helicopter incident where our 13 troops were casualties. We know that you have been working on the development of a unique solution in this area. What type of an indigenous solution do you offer to the procurement authorities?

We feature a detection and warning system named as HTAWS - Helicopter Terrain Awareness and Warning System. Actually, this system was an R&D study that we launched years ago through our own resources. We designed it as an R&D project and it was on the table. Then, we realized it as a project and then displayed the final version of the product at IDEF' 17 as well. Numerous local and foreign customers seized the opportunity to experience this product throughout the Fair. The product is deliverable at the moment. Here, we are speaking

of a system that is designed in a way to be certified with the DO-178 B that is compatible with the international aviation standards. I would especially like to emphasize at this point that although this is perceived as a simple thing, the incompatibility of a system as per the standards utilized in aviation is unacceptable. The alignment with these types of international standards should be continuously emphasized especially in aviation software. We developed this product fully in compliance with the aforementioned standards. Customization may be required depending on different types of helicopters or there may be special requirements from the client, but in the end, since all design activities and all codes of software are completed by our companies, we will be able to fulfill all types of requirements.

Defence Turkey: Mr. Tekin, what are your medium and long-term expectations and targets identified for VESTEL Defence and AYESAŞ companies? Where will you position your companies within the global scale?

As I mentioned previously, within the eco-system pyramid, we would like to position ourselves among the system providers and the sub-system providers beneath it. We aim to develop ourselves in the areas that we have depth of expertise and become a pioneer to the sector in points in which we have technological depth. We endeavor to constantly acquire

advanced technology and added value through the Unmanned Air Vehicles, Land and Naval Vehicles through our avionic solutions and become a pioneer and model to our shareholders in the sector.

Defence Turkey: Would you like to convey any message for Defence Turkey readers?

I would initially like to thank you. I have been closely following Defence Turkey magazine and it provides many benefits to the sector with its stance and with the value of the information relayed. I believe it will be continuing to do so. I would like to thank you once more. Regarding your question, I would like to convey the following message to the industry stakeholders:

The human resources potential in Turkey, as well as the wisdom and intelligence can make us an international player. I have been involved in R&D management for 8 different countries of the world from Turkey for many years and I can say that an engineer in Turkey is not much different from an American or European engineer. For this reason, I would recommend to the Turkish engineers, especially to the youth and my colleagues who will join the sector recently that they should believe in themselves. With our engineering power and intelligence, we can achieve everything. If we can take action, keeping this in mind. We can release unique local products and render them marketable to the world.

Defence Turkey: Thank you for your time ■



Mrs. Ayşe Evers, Mr. Öner Tekin and Mr. Cem Akalin

SSI Ordinary General Assembly Meeting and Export Awards Ceremony Takes Place in Ankara

The Defense and Aerospace Exporters' Association's (SSI) 2016 Ordinary General Assembly Meeting and the Ceremony for the 2016 Export Awards were held in Ankara with the participation of Defense Minister Mr. Fikri Işık and his accompanying delegation

At the Ordinary General Assembly Meeting, initially the election of the Presidency Council and the relevant items of the agenda were discussed and ratified. Following the finalization of these topics, a presentation was given on the defense and aerospace industries' 2016 export performance.

According to the Defense and Aerospace Industry Exporters' Association data, defense industry exports summed up to \$ 1.677 billion in 2016, with a 1.4% increase compared to the previous year. The breakdown of the countries to which the export activities were conducted according to the data for total export for 2016 is as follows: As it was in the previous year, Turkey accomplished most of its export activities to the US. While \$ 556 million in exports were made to the US in 2015, in 2016 this figure reached \$ 587 million, an increase of 5.5%. Germany followed the US on the list of countries with the highest exports. The value of exports to Germany was \$ 103 million in 2015 and in 2016 reached a total of \$ 185 million which is a 79.8% increase. The Azerbaijan - Nakhchivan exports, which were \$ 58 million in 2015 increased by



44.5% in 2016 and went up to \$ 84 million. Exports to England which were \$ 37 million in 2015 reached \$ 64 million, an increase of 71.2%. The export activities related to Tunisia were \$ 20 million in 2015 increased to \$ 37 million, which demonstrated an upsurge of 91%. The most striking ascent in exports occurred in the exports to Qatar. The exports to Qatar were \$ 10 million in 2015 and this figure went up to \$ 52 million in 2016 with an increase of 403%. Moreover, India entered the list for the first time in 2016 with exports worth \$ 47 million.

Malaysia, which was positioned on the top of the list with \$ 122 million in defense industry exports in 2015, saw an 18.3% decline in 2016, with exports valued at \$ 99 million. Italy, France, the UAE, Saudi Arabia, Kuwait and Pakistan were the other countries with declining export figures when compared to the previous year. The \$ 77 million in exports to the UAE in 2015

decreased by 19.2% in 2016 with a decline of \$ 62 million. Exports to Saudi Arabia which were \$ 105 million in 2015 displayed a 54.3% decrease to \$ 48 million. Exports to Italy decreased by 35.3% and slipped to \$ 34 million from \$ 53 million in 2015. Defense industry exports to France, which were \$ 89 million in 2015 declined to \$ 30 million, decreasing by 65.9%. \$ 25 million in exports to Pakistan in 2015 declined by 15.2% in 2016 and resulted in a total value of \$ 21 million.

Upon this presentation, speeches were made by the



Mr. Latif Aral Aliş- Chairman of the Board of Directors of the Defense and Aerospace Exporters'



Mr. Fikri Işık – Minister of Defense



Chairman of the Board of Directors of the Defense and Aerospace Exporters' Association Mr. Latif Aral Aliş, Undersecretary for Defense Industries Prof. İsmail Demir and Minister of National Defense Mr. Fikri Işık.

Minister of National Defense Mr. Fikri Işık stated that Turkey became a technology-based country rather than merely a technology using country as a result of its investments over the last 14 years and underlined that they attached great importance to the defense industry's development and thus they have exerted utmost efforts toward achieving the best results to this end.

Mr. Işık noted that the defense industry could not be developed only through the government and the companies which have organic ties with the government,

and added that a bright future for the sector depends on the increase of the private sector's share in the defense industry. Minister Mr. Işık expressed that they strived to focus maximum effort in this area as the government, in order to create a robust eco-system based mostly on the private sector considering the defense industry, underlining that the private sector structure in defense industry without export sales would not be sustainable.

Minister of National Defense:
"We are working on a credit mechanism which will not be subject to the restrictions of Eximbank"

"Unless this sector enhances its exports and if it remains in a structure that focuses on only home demands, it will always be

vulnerable to developing risks", said Mr. Işık and asked the private sector to focus on exports as a whole. Drawing attention to the determinant role of government to government cooperation in exports regarding the defense industry, Mr. Işık added, "In this respect, we are working on new mechanisms especially geared toward raising our exports". Mr. Işık mentioned that they initiated the establishment of liaison offices in countries with high export potential and said: "The civil servants assigned at those offices are your trade representatives. We do not discriminate among any of the companies".

Stating that they were also working on a new credit mechanism that would not be subject to the restrictions of Eximbank, Minister Mr. Işık continued: "Soon we will be launching a case study. We aim to generalize a mechanism at this point which would not be subject to the restrictions of Eximbank".

Following the speeches, the awards were presented to the first five Defense Industry companies achieving the highest export figures in 2016. The top five companies achieving Export Awards in the Defense and Aerospace Industry in 2016 were as follows: TAI was the company achieving the highest export levels in 2016 followed by TEI, and MKE came in third and FNSS was fourth, followed by Aselsan.

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Turkish Utility Helicopter Program – An Industrial Partnership Expected to Span at Least 3 Decades

Mr. Jason Lambert, Program Director - Turkish Utility Helicopter Program Sikorsky, a Lockheed Martin Company elaborate upon the latest information on the TUHP program and collaboration for Turkish partners

Defence Turkey: Mr. Jason Lambert, first of all we would like to thank you for your time. The contract signed between the Undersecretariat for Defense Industries (SSM) and TAI and the main sub-contractor Sikorsky and other domestic sub-contractors within the scope of the General Purpose Helicopter Program officially entered into force in June 2016 upon the completion of the efforts for USA's export licenses. The official launch of the contract was behind the planned schedule. What was the cause of this delay? Could you briefly assess this process?

Thank you for the opportunity to discuss the program. The Turkish Utility Helicopter Program (TUHP) will establish the Turkish Defense Industry as a global leader in Rotorcraft production given the unprecedented volume of technology that will be transferred to Turkey. You are correct that the official launch of the Program was delayed beyond the initial anticipated schedule. Given the TUHP scope and strategic importance, both the U.S. Government and the Turkish Government provided a significant level of oversight to ensure that the Export Licenses were structured in a manner to enable the full execution of the Program. I am pleased to say that the collaboration between the U.S. Government, Turkish Government and Sikorsky ensured that we obtained the export licenses to successfully launch the program in June 2016. These licenses will serve as the foundation for our industrial partnership which will last for at least three decades.

Defence Turkey: Dear Mr. Lambert, what will be the differences between T70 configurations which will be manufactured for Turkey and the S-70 model? Could you please inform us on the configurations that will be procured by Turkey?

The T70 helicopter will be a variant of Sikorsky's S-70i Black Hawk helicopter. As the prime contractor, TAI will manufacture the T70 aircraft under a license agreement with Sikorsky. TAI will customize the T70 helicopter in two configurations, utility, and firefighting for use by six Turkish end users. Additionally, TAI will also manufacture



the S-70i Black Hawk for export sale by Sikorsky to the international market.

Defence Turkey: The delivery of the 109-piece lot was planned to be completed within a 10 year period. Could you please share with us the latest updates regarding the delivery of the first helicopter as well as regarding the subsequent deliveries?

The TUHP contracted delivery schedule is subject to the successful completion of several conditions, one of which was securing export licenses. These conditions were successfully fulfilled in June 2016, launching the delivery calendar for the Program. To initiate the development and production of the T70, Sikorsky delivered over 185,000 pages of technical data to TAI, on-time in Q4 2016. Additionally, in Q1 2018, Sikorsky will deliver the initial kit of T70 component parts to TAI for use in the Final Assembly of T70 #1 which will begin production in Q2 2018. The first T70 helicopter is scheduled for delivery in 2021 with the 109th unit scheduled for delivery in 2026.

Defence Turkey: Turkey's demand for T70 Utility Helicopters was identified as 300 for the following 20 year period and a consensus was reached between the parties on the procurement of 109 + 191 optional helicopters to this end. What kind of a plan is on the table regarding the utilization of the other 191-piece lot which will be procured optionally in addition to the 109-piece lot? Could you inform us on the latest developments?

You are correct that the initial

procurement and current program of record is for 109 T70 helicopters and that options exist for an additional 191 units. TAI is licensed by Sikorsky for production for a total of 300 T70 units (109+191). Should SSM decide to procure optional T70 aircraft, these options would be added to the current program of record.

Defence Turkey: According to the contract of TUHP and in line with the requirements of the institutions in Turkey, Sikorsky committed to manufacture a helicopter at TAI facilities in return for each built helicopter and to export every helicopter produced in Turkey. Within such a framework, which type of a business model will come out between the parties regarding the export of the S-70i model to third countries? On the other hand, the initial amount of helicopters to be exported was 300, is an increase in this figure possible?

Under TUHP, for every T70 helicopter that TAI assembles for the Turkish end users, TAI will also assemble an S-70i helicopter that Sikorsky will purchase from TAI for Sikorsky to sell to the international market. Sikorsky and TAI will partner together to identify export markets for these helicopters. At present, the initial number of helicopters to be exported is 109 units however, that number could reach as high as 300 units depending on the T70 options exercised by SSM.

Defence Turkey: Could you also please inform us on the studies conducted and plans built regarding the production line to be established at TAI facilities?

TAI has built a world-class assembly facility that will be used to produce the T70 and S-70i helicopters. In preparation for the start of T70 production, Sikorsky has been providing Technical Training and Technical Assistance to TAI in the areas of Manufacturing and Engineering. Our support will continue throughout TAI's production of the T70.

Defence Turkey: What would you like to say on the responsibilities and business portions of the main contractors and sub-contractors in the development, production and integration processes?

TAI, as the prime contractor, will perform the final assembly, customization, and flight test for each T70 aircraft. Additionally, TAI also will manufacture the helicopter fuselage, empennage, and composite rotor blades.

Sikorsky is the main subcontractor to TAI, delivering the technical data, technical training, technical assistance, aftermarket support, and helicopter components in the form of Kits to enable TAI to build the T70 helicopter based on the S-70i Black Hawk platform.

Sikorsky is also collaborating with Aselsan on the development of a new avionics suite for the T70 known as the Integrated Modular Avionics System (IMAS). IMAS is a collaborative design by Aselsan, Sikorsky, TAI and pilots serving the Turkish Armed Forces to meet the requirements of Turkish T70 operators and other potential customers. This enhanced digital cockpit will provide Turkish pilots with powerful smart displays, point-and-click functionality to speed input of pilot commands, and ergonomic enhancements to the Pilot Vehicle Interface that will reduce pilot workload. Navigational improvements tailored to Turkish requirements will include an integrated Terrain Avoidance Warning System, an integrated advanced digital map, and coupled flight control functions for guided approaches to landing zones. As you may know, in March 2017, Sikorsky transferred to Aselsan an S-70i helicopter, which was built by our PZL Mielec factory in Poland. This helicopter will be used as the prototype for the integration, test and

qualification of the IMAS. After the qualification of the cockpit, Sikorsky will deliver this Prototype helicopter to TAI.

Alp Aviation will perform precision machining of the T70 helicopter's dynamic components, mechanical flight controls, transmissions and landing gear assemblies.

TEI will build the engines for the T70 under license from General Electric.

Defence Turkey: Which type of a plan is envisaged to increase the domestic participation level aimed for the initial 5 helicopter lot to be delivered by you and the deliveries which will follow?

For the first five T70 helicopters, Sikorsky will provide kits of aircraft components to TAI for Final Assembly. Over time, as TAI and Turkish Industry increase their capabilities to produce the components, Sikorsky's kit content will decrease and the percentage of Turkish manufactured components will increase. Our collective production schedule outlines the Turkish industry phase-in timing for the various T70 components.

Defence Turkey: What are your comments on the transformation of the active cooperation within the scope of the program built with the domestic sub-contractor companies into potential cooperation in other programs in the medium and long term?

When SSM developed the concept for the Turkish Utility Helicopter Program, a principal objective was to increase capability of the Turkish Aerospace & Defense industry. Sikorsky's industrialization proposal met this expectation

and we are proud to partner with the Turkish companies to develop a world class rotorcraft industry here in Turkey for the production of the T70 and S-70i. This effort is a true international industrial partnership that will set the foundation for the future. For example, in March of this year, TAI announced our recent agreement to produce airframe components for Sikorsky; and here at IDEF, we are announcing an agreement with Alp Aviation which will become the first international supplier of main landing gear assemblies for Black Hawk helicopters. These are just two examples of recent cooperation and I am confident that there will be many more examples to come in the years ahead.

Defence Turkey: Lastly, is there a message you would like to convey to the readers of Defence Turkey Magazine?

Sikorsky is now a Lockheed Martin company, following the purchase of our organization in November 2015. Since that time, the integration of the two companies has progressed very smoothly. I am very pleased to say that the TUHP program has the full support of Lockheed Martin senior leadership.

Additionally, the integration of Sikorsky within Lockheed Martin is also good news for the Black Hawk platform as we are looking to integrate different types of sensors, systems and weapons produced by Lockheed Martin. Those benefits will become increasingly evident in the years ahead as the Black Hawk helicopter becomes even more capable and takes on new missions ■

Mr. Jason Lambert,
Program Director
- Turkish Utility Helicopter Program
Sikorsky, a Lockheed Martin Company met up with Mrs. Şebnem Akalin, International Relations Director of Defence Turkey Magazine at IDEF' 17



Kale Group and Rolls-Royce to Develop Unique Engine for Turkish Fighter

Kale Group and Rolls-Royce which is one of the world's greatest engine manufacturers shook hands to develop aircraft engines for Turkey. Turkish Air Engine Company (TAEC) to be established with the partnership between Kale Group with 51% of the shares and Rolls-Royce with 49% aims to develop the unique engine of the Turkish Fighter Program

The signing ceremony between Kale Group and Rolls-Royce was held on May 8th, 2017- the day before the IDEF event- at Ritz Carlton Hotel İstanbul.

The Vice President of Kale Group Mr. Osman Okyay attended the signature ceremony on behalf of the Kale Group and Director of the Defense Group of British Rolls-Royce Company Mr. Chris Cholerton attended the ceremony. Kale Group's President & CEO Mrs. Zeynep Bodur Okyay and British Ambassador to Turkey Mr. Richard Moore attended at the ceremony as well.

The name of the new company to be founded with a share ratio of 51% Kale Group and 49% Rolls-Royce was determined to be TAEC (Turkish Air Engine Company). With TAEC, Kale Group and Rolls-Royce aim to develop the aircraft engines required by Turkey's civilian and military projects, primarily for the Turkish Fighter Program.

Taking the floor at the ceremony, Kale Group Vice President Mr. Osman Okyay stated that Kale Group entered the Defense and Aerospace Industry in 1987 as part of the Stinger Missile Consortium and underlined that the company acquired a significant amount of design and production capability up to date through major global and local programs, adding that this partnership built with the Rolls-Royce will be a breakthrough in the Turkish Aerospace and Defense Industry. Mr. Okyay continued: "Today we are greatly pleased and proud to unite our energy with one of the world's greatest air engine manufacturers Rolls-Royce". Emphasizing that Kale Group was the contractor of the Turbojet Engine Development Project which is one of the milestones of Turkey's indigenous engine production efforts, Mr. Okyay added that in the consequence of stride out the industry, it has been one of the most important factors leading them to a strategic partnership



with the Rolls-Royce. Mr. Okyay continued, "We are experiencing the excitement of fulfilling our country's strategic requirements for many years through this partnership that we have built."

Director of Rolls-Royce's Defense Group Mr. Chris Cholerton expressed that they were happy to seize the opportunity to collaborate with Kale Group within the scope of the Turkish Fighter Program to develop an indigenous engine, the Intellectual Property Rights of which will entirely be possessed by Turkey and which will not be subject to export restrictions. Mr. Cholerton stated that as Rolls-Royce, they took the initiative to establish an Advanced Manufacturing Technology Centre (AMTC) in 2015 and added that Kale Group put forth Turkey's faith in becoming a global player in Defense and Aerospace industry. Mr. Cholerton continued, "Turkey's enthusiasm in this area thrills us as well. We believe that we will be playing a key role in Turkey's establishing a worldwide powerful Defense and Aerospace Industry."

British Ambassador to Turkey, Mr. Richard Moore, mentioned that this agreement is of importance both for Turkey and England. Stating that the countries have always been in close cooperation and allies, Ambassador

Mr. Moore added, "This friendship needs to be represented especially in the Defense Industry. Building a partnership with a giant company such as Rolls-Royce is a significant move. England gives full support to this partnership. I congratulate both companies."

TAEC to Employ 400 Engineers

The TAEC Company, which will be employing 400 engineers, aims to fulfil the engine requirements of not only the Turkish Fighter Program (TF-X) but also for all civilian and military platforms in Turkey. Aiming to reveal an exportable engine, this new establishment will launch activities initially for developing a jet engine which will be the main component of the TF-X program. Within this scope, an R&D center will be built in İstanbul and following these steps a production facility is intended to be built. Aiming to manufacture an engine for the TF-X program from square one, TAEC is expected to launch the test flight with the developed engine in 2023, if everything is on track. Following a long design, development and test process, the first engines with completed certification are planned to be put into serial production in 2030.



Aselsan Signature on “Blackhawk” Helicopters, Turkey Continues to Gain Exposure in the Global Market

Aselsan has signed a contract with both Sikorsky and TAI for development, production and integration activities of critical mission, navigation, communication and electronic warfare systems which will be used within the scope of Turkish Utility Helicopter Program (TUHP). The existing flight management system of the Sikorsky S-70i International BlackHawk Helicopter will be replaced with the “Aselsan Integrated Modular Avionics System (IMAS)”, whose hardware and software is developed by Aselsan as completely national and indigenous endeavor. This suite will be offered both to end users in Turkey, and to the world market as standard avionic solution of Sikorsky S-70i helicopter. According to the agreement signed with Sikorsky, IMAS will be used not only in 109 helicopters that Turkey is purchasing, but also it will be used in at least 164 helicopters which will be sold to third countries by Sikorsky.

After the completion of development activities of the IMAS equipment, these systems will be installed on the S-70i helicopter which was brought to Aselsan on 1 March 2017 by Sikorsky. Thereafter, flight tests will be performed by Sikorsky pilots with the participation of Aselsan engineers. Development activities will be accomplished by obtaining Sikorsky approval for airworthiness. By means of IMAS, mission computers and

multifunctional displays will be combined on a single equipment and navigation, communication, mission and flight management will be realized from a single center.

All the systems to be developed by Aselsan within the context of program are as follows:

- › IMAS (Integrated Modular Avionics System)
 - › SMFD-810 Smart Multi Function Display (Flight Management Software, Digital Map/including TAWS Software)
 - › VMFD-810 Video Multi Function Display
 - › KDU-45 Keyboard Display Unit
 - › Multi-Function Slew Controller
 - › Avionic Control Panels
- › ANS-511 Inertial Navigation System
- › DHS-201 Digital Intercommunication System
- › AVCC Active Vibration Control Computer

Production of critical mission, navigation, communication and electronic warfare systems to be used in helicopter and system/software integration activities will also be performed by Aselsan. After the mission equipment integration on the S-70i Base Helicopter by Aselsan, this helicopter in the final configuration will be referred as T-70 Helicopter.

Thanks to the Turkish Utility Helicopter Program, a global utility helicopter will be generated by combining Sikorsky’s helicopter-level system engineering capabilities and Aselsan’s experience in software/hardware development and system integration, which will gain a seat in the world market. By this project, the avionics systems designed by Aselsan engineers will serve pilots and users all over the world.





AYESAŞ - Helicopter Terrain Awareness and Warning System (HTAWS)

AYESAŞ is getting ready to offer users the Helicopter Terrain Awareness and Warning System (HTAWS) solution for rotary wing air platforms

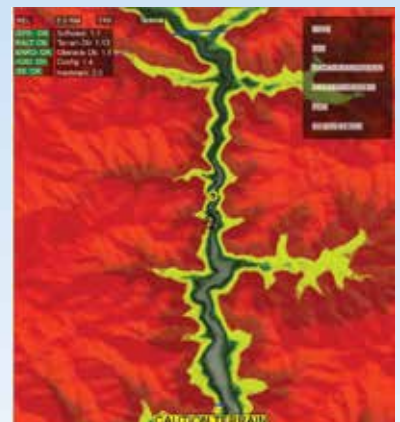
HTAWS is designed to reduce the risk of Controlled Flight Into Terrain (CFIT) accidents of rotary wing aircraft by providing increased situational awareness of the surrounding terrain and obstacles, mainly during the cruise phase in Visual Meteorological Condition (VMC) and in Instrument Meteorological Condition (IMC) under Instrument Flight Rules (IFR). The HTAWS awareness and warning system developed for the helicopter platforms is in compliance with RTCA DO-309 and DO-178B. The system also has ARINC 653 compliant interface.

HTAWS take input such as

position, flight data, and terrain and obstacle information, and is able to generate display information, aural alerts and visual alerts. HTAWS software can be integrated on any avionics computer and display system through the use of its well-defined ARINC 653 compliant interface.

The developed software can be used also on commercial helicopters and if demanded, it can also be used on the Turkish Utility Helicopter Platform, the development activities of which are still resuming. Similarly, it can also be designed to be used on various helicopter platforms taking part in military fleets, Mi-

24 and Mi-17 helicopters of the Azerbaijani Air Forces being in the first place.





Rolls-Royce - Committed and Invested in Turkey with a Vision Aligned with Turkey's Ambitions

Mr. Alex Zino, Director of Strategy & Future Programs, Rolls-Royce discusses with Defence Turkey Magazine, in an exclusive IDEF 2017 interview, the latest developments on how the UK is demonstrating its commitment to Turkey for the long-term with Industrial and G2G cooperation. He provides insight on the Advanced Manufacturing Technology Centre (AMTC) which is a key enabler allowing manufacturing processes to be developed, enabling more production, and allowing for research with Turkey through Alp Aviation, Kale Group, other suppliers and manufacturers within the TF-X program and beyond

Defence Turkey: Rolls-Royce has a history as a supplier to the Turkish Armed Forces, could you please assess your activities in Turkey over the years?

We have a significant presence in country with our air, marine and land presence. My focus in my role is defense aerospace; we've been here for roughly 50 years focused mainly on transport, back to the C160 the C130 and in transport coming on board now is the A400M which we're part of with the TP400 engine. We've also got the CTS800 in the "Atak" helicopter and most recently in the TLUH program as well. I think we have a strong presence and hopefully we can build on that through the Turkish Fighter in the coming years.

Defence Turkey: It is well known that Turkey has the TF-X program on its agenda and that BAE Systems and TAI are in partnership with this program. It is expected that the engine will be selected very soon. Could you please inform us about your approach to this program and how do you assess your position in this program?

The news yesterday of the announcement of the Rolls Royce - Kale joint venture, where we have partnered with Kale a great Turkish company that's already involved in aerospace both in manufacturing for civil and defense components, for both the airframes and the engines. We are looking to work with them, establish a partnership that is here for the long-term that allows us to co-develop an engine with Turkey in Turkey. This approach allows us to optimize the engine for the platform and transfer the capability through joint venture. Together those two things will allow Turkey to export.

Defence Turkey: What is the dynamic with the Eurojet side, considering the joint venture with Kale, for example?

Rolls-Royce is involved in two of the offerings. The Eurojet and the co-developed engine through the Rolls-Royce - Kale Group joint venture. Clearly there's a competition so we have very clear firewalls inside Rolls-Royce, 2 very separate teams to make sure



there's no transfer of information between the two, and that we fulfill all of the regulatory requirements for the competition.

Defence Turkey: Rolls-Royce and Kale Group, a major partner in global and national defense and aerospace industries, have announced the formation of a joint venture company to aspire the indigenous aero engine in Turkey. Could you please inform us about this joint venture in detail?

It's 51% Kale 49% Rolls-Royce, so therefore a Turkish company based in Turkey. We will use that to create capability through the transfer of data from the UK from Rolls-Royce. Through the TF-X program which will be the first catalyst project, we will create about 350 Turkish engineers in Turkey, that to us is the unique feature of the offer as it is creating design capability in Turkey for Turkey. This design capability will then allow the engine to be manufactured in Turkey using the supply chains in Turkey and creating ecosystems around it. It will also enable the engine to be supported out of Turkey. That's clearly what we hear from SSM and from the government, it is the aspiration to have the indigenous capability, and it is fully supported by the UK government and that's really important. The government, the political connections, the bilateral relationship supports that cooperation because ultimately it

allows that transfer of technology. The UK has stepped forward in a fairly unprecedented way on the engine as it has already granted us export licenses to allow us to do that, and that's before a contract. The UK is looking to demonstrate its commitment to Turkey and to ensure that Turkey understands it is here for the long-term with industrial cooperation and government to government cooperation.

There's a number of cooperation agreements with Turkey: there's security, the military cooperation agreement, and there's the recent Turkish Fighter government to government. Providing the assurances builds a confidence on both sides that we can make that work through the program on TF-X and then future programs thereafter.

Defence Turkey: What type of training programs are on the radar regarding building up of qualified human labor in Turkey?

There's clearly a military cooperation between the UK and Turkey, where the governments are looking to collaborate across training, across joint operations, etc. For the government to government it's best to speak to them. At an industrial level with the joint venture with Kale we are focused on bringing across Turkish engineers to the UK, training using Rolls-Royce expertise, transferring that knowledge to those engineers and then bringing them back into Turkey so they can start to create

self-sustaining capability, which in time can be transferred within the ecosystem that is Turkey. Absolutely we'll share training, tools, processes, that's part of building that capability and putting it into the joint venture. What we are setting up is a joint venture that can run the program. If we are successful it will take the contract, it would run the program, design the engine and in time build up other capabilities such as procurement and finance. It's a business. Clearly the engineering design capability is the key feature that I know aligns to Turkey's aspirations, but it's a business.

Defence Turkey: At this point are there other new markets opening up, or new cooperation on the horizon related to Turkey and the global supply chain?

What we're doing through TF-X is building that capability both in design, but also in supply chain. I think we've had some of these conversations where people say the joint venture is going to do the manufacturing. That's not necessarily the most economic and efficient way, as there is a Turkish and global supply chain out there that we could pull on. The joint venture will buy and manufacture depending on its most efficient, most cost-effective options and customer requirements. Clearly there's a desire to do as much of that in Turkey and we'll support that, but there are third party items that are not made in Turkey today, and we've had these discussions with the customer, the joint venture will procure them from those parties. I think it's important for the joint venture to have the autonomy to get the most efficient cost-effective solution for SSM and the Turkish government that meets their requirements, but recognizes that its doing as much of that in Turkey as possible, so it's a balance. Rolls-Royce today sources only about 20-30% in house the rest is from the outside. There's cost efficiency in balancing that this.

Defence Turkey: Can you provide any details about the timeline for the Prototype?

We're confident we can meet the timescales. We're confident that



Mr. Chris Cholerton - President of Rolls-Royce Defence Aerospace; Mr. Alex Zino - Director of Strategy & Future Programs, Rolls-Royce

there's a good capability in Turkey, such as the Kale - Pratt Whitney manufacturing JV, Alp Aviation, so it's how we build on that using the AMTC and use this joint venture build design capability. I think we're in the early stages, I think that ambition and the vision is alive, it's going to take time. Ultimately, we'll line up with the airframe, that's part of the design process. The good thing about a new engine is that you can match the airframe and engine, and that's delivers the best capability, along with what I've talked about with raising the engineers and self-sufficiency in Turkey, then you build the autonomy to export, and that's ultimately what we understand the ambition is, to see Turkey creating that capability

to export. By matching the engine with the aircraft, we can fit that.

Defence Turkey: What are your plans for New facilities in Turkey?

It's in the early stages but, if selected, we would be looking to potentially put new facilities in place. At the moment, our thinking is probably an office in Istanbul and also an office in Ankara as we've got to be close to TAI, SSM and we've got to have that very collaborative relationship between the parties. The clear ambition in line with Turkey's ambition is to build production capability and the supply chain within Turkey. In 2015 Rolls-Royce signed an MOU to develop an AMTC. That's a key enabler for this project as it



allows manufacturing processes to be developed and enables more production in Turkey in 5-10 years time. That's really all about Rolls-Royce's commitment and investment in Turkey and the alignment of its vision with Turkey's ambitions.

Defence Turkey: Logistics Service has become one of the priority targets of Turkey; Rolls-Royce offers a comprehensive suite of services to ensure its customers all enjoy the benefit of renewed engine life and enhanced performance for years to come. Therefore, could there be any cooperation considered in this field?

As part of the TF-X program we've spoken a lot about support in meetings with the Air Force in Turkey, SSM and government officials. It's very important, and while it may seem that the support phase is many years away, it's important to design your engine to match your service solution - and a new engine allows you to do that. There's also opportunity on current products whether it's the A400M coming into service or some of the legacy products to change those support solutions and ultimately that's about collaboration. We've done that in the UK and the US and customers around the world are starting to show interest in adapting their support mechanism. It's a partnership and it takes time.

Defence Turkey: Rolls-Royce is the first industrial lead and founder member of Turkey's Advanced Manufacturing Technology Center (AMTC), a project led by Turkey's Ministry of Science, Industry & Technology and with the endorsements of the Ministries of Defense, Transportation and Energy. Could you please enlighten us on the developments made in this program?

Rolls-Royce spent £ 1.3 billion on research & development last year. Our R&D is set up around 3 time frames: Vision20, Vision10 and Vision5 - for e technologies that we will field in 5, 10 and 20 years. Many people think about research being product-based, but research

into manufacturing processes is equally important. The AMTC brings that to Turkey and allows us to do research with Turkey with Alp, Kale and other suppliers and manufacturers to develop capabilities and technology for TF-X and beyond in Turkey. I think we can do some research today with Turkey and who knows what tomorrow brings.

We've been working with TÜBİTAK to evolve the concept and we are working with key government and industry stakeholders to establish the AMTC platform in Turkey. We're on track to establish the AMTC platform in the coming years.

Defence Turkey: What are your other strategies and plans regarding cooperation, joint production, R&D activities in Turkey to strengthen collaboration with the Turkish Authorities, Defense Industry and Universities?

You have to take these things step by step. Turkey's ambition and vision are very well in line with our vision in Turkey. The first step is to get design capability into Turkey through the joint venture, getting 350 engineers trained working on the TF-X program raising that indigenous capability, using those to then to work alongside universities to do research. I believe there's already research going on in Turkey on gas turbines, we need to better understand that, what's in the ecosystem, and then in time collaborate with these parties. The AMTC will be a key part of this and enable research across various areas of manufacturing. Clearly we need to work to win the TF-X competition and have the joint venture secure the contract first, then we can start building from there. It's an indigenous capability that we recognize is required, and we will work together with Turkey to create the ecosystem that delivers this. We have experience of doing this in various countries, including for example Singapore, and we also support a global network of 31 University Technology Centres, which position Rolls-Royce engineers at the forefront of scientific research around the world

Defence Turkey: Rolls-Royce has signed a MoU with Aselsan to develop cooperation in the field of engine control and monitoring systems. Could you please inform us about the steps taken in this program?

We've had a variety of conversations with Aselsan and TF-X is a great opportunity to build that into something that can really benefit Turkey in terms of the program and we are looking to re-engage in that conversation and expand that conversation now if we are successful with TF-X. You've got to have a tangible program to bring it together, to integrate it and to pull it through into the market and I think that's what we hope with TF-X through the joint venture we can pull that in and create the focus.

Defence Turkey: Would you like to add something and give a message to our readers?

We are very excited about what Turkey's ambitions are and what we can bring and our experience in partnerships and cooperation, willingness to share that technology and create that capability in Turkey. We hope that vision that we are bringing is seen by Turkey and we have an opportunity to create real programs, real tangible projects that will be last further than over 5-10-20 years. The UK and the industry are here for the long term, we want to be partners, we want to cooperate with Turkey 🇺🇰



Mr. Alex Zino met up with Mrs. Ayşe Evers- Editor in Chief of Defence Turkey Magazine at IDEF' 17

EUROJET



EUROJET – “We Want to Invest, We Want to Team up”

Turkey's Ambition to Build the Best Fighter in the World has EUROJET Saying that the 'Best Fighter' Needs the 'Best Engine'

“In an exclusive Defence Turkey interview at IDEF 2017, Mr. Clemens Linden, CEO of EUROJET, and Mr. Mutalle Uluçay, Senior VP, Turkey, discuss their tangible dedication for doing business in Turkey. Mr. Linden shares details about EUROJET’s new local office and Team in Ankara that is now interfacing with all the key stakeholders. EUROJET competes in the TF-X Program Engine Bid with their ideal candidate engine for the new military aircraft market and for re-engining existing fighters”

The EJ200 is a collaborative engine between Rolls-Royce, MTU, Avio and ITP – the shareholders behind EUROJET Turbo GmbH formed in the late 1980s to develop the engine for the Typhoon. The technology of the EJ200 makes it both smaller and less complex in layout than current engines of a similar thrust class, while giving it lower fuel consumption and an unprecedented power-to-weight ratio. The first series production Eurofighter Typhoon aircraft were flown in February 2003. In service, the EJ200 exceeds or matches the most demanding international standards for operational support required by the US, Europe and other International customers.

Defence Turkey: Rolls-Royce Holdings plc will soon finalize the purchase of the outstanding 53.1% shareholding in Industria de Turbo Propulsores SA (“ITP”) owned by SENER Grupo de Ingeniería SA (“SENER”). Has this new development had an impact on any structural changes for EUROJET?

Clemens Linden (CL): As was stated in the press, SENER decided that they would like to sell



EUROJET Turbo GmbH Displayed the EJ200 engine at IDEF 17'

their shares. As Rolls-Royce was already a 47% shareholder of ITP, it had the right to become the first purchaser. ITP offered their shares to Rolls Royce and Rolls Royce made the smart move of saying yes to the purchase. The European commission process was finalized in April giving the green light to the acquisition and now the Spanish national aspect needs to be concluded. Once every review has been finalized, I fully expect that Rolls Royce will be able to conclude the formal steps of the purchase, but this will not change anything in our structure. ITP will remain ITP – just wholly owned by Rolls Royce. But, you know, Avio is also wholly owned by GE. When this development occurred around 3 years ago, it brought up similar questions, which we spoke about a that time. Although the developments in our industry may sound very strange, it is in fact quite normal. On one hand, in some areas partners can be collaborating with each other and in other areas competing with each other. This occurs not only in the aero-engine industry, but also in the aircraft industry. I was speaking to a colleague and friend of mine in Italy last night and he said to me, “I made a presentation 2 weeks ago in Rome, and I put up who my partners are, for instance in the Typhoon program those are BAES, Airbus, and then I wanted to say who are my competitors. I put the same companies up and the audience said...‘what’s that?’

That’s our daily business. On one hand we compete and on the other hand we partner, it’s simply a matter of fact.

It’s important to note that we have a unanimous decision process in EUROJET. ITP will remain as Spanish partner so there’s no change in our contract.

Defence Turkey: There has been a big and significant development in Turkey’s agenda right now, as BAE Systems has signed a contract with TAI. Within this program, it seems that engine selection would be the next issue, the twin-engine was approved by whole related parties. What is the latest status on this program from your point of view?

CL: We are very glad about the recent developments and of course we were waiting for the signature of this contract, so therefore for us it is good news. It is a milestone which happened yesterday. So now there are three competitors in the race, there is GE, Rolls Royce on the other side of the firewall offering its own engine and there is EUROJET with the EJ200 and the enhancement of the EJ200. What we are currently doing here with the key stakeholders, on the basis of the lessons learned from the Typhoon program in the very early days, is to discover the right engine size. The size of the engine of course has a strong influence on the size of the aircraft. We are suggesting that stakeholders

look into all parameters, such as the mission profile and the mission points that the Air Force has defined. Then of course the life cycle costs – the bigger the aircraft the bigger amount of fuel you need, so costs are a factor and technology level is also a factor. Just to name some key elements and for all of these factors we are suggesting that they be taken into account in an optimization workshop, together here with key stakeholders, Undersecretariat for Defense Industries (SSM), TAI, Turkish Air Force now with BAE Systems, in order to address all of these critical future areas because this product should fly 40-50-60 years, so you have to make crucial decisions. In order to make these crucial decisions, we've suggested this optimization round and then we should know what the best size of engine is. Once we have achieved the best sizing we will make the final revision of our offer. We have already made various offers in which, we have offered variants from 3% thrust growth up to 30% – we have really come up with a variety of offers which we have grouped into 2 packages. One package is from an engine inlet diameter point of view where you could still achieve a thrust growth of up to 25% and this engine can be retrofitted in a Typhoon. Which of course gives a business case and you could achieve a higher number of production engines, i.e. it's another perspective. If you were to develop and enhance this engine and then only apply this engine in the Turkish Fighter Program, the budget would be really under pressure, but if you were able to sell this engine to Typhoon users, and we have 8 Typhoon users, as a retrofit option then there's a payback on the development costs. That's the reason why we have grouped our options into Package A retrofittable in the Typhoon and Package B 30% thrust growth if the optimization workshop ends up with a 30% thrust requirement. It means we are trying to give as many options as possible to TAI who in the end will make the aircraft.



Defence Turkey: What are your thoughts regarding engine development, such as ITAR free, involving industrialization in Turkey and also export plans to other markets? What is your offer in that respect to the Turkish Government?

CL: Still, as we said last year, we are very willing to involve Turkish industry into design activities to grow the engine thrust and a part of this will be to make the engine ITAR-free. With the design involvement of Turkish industry and local manufacture, we will be able to achieve much, but we are not talking about manufacturing to blue print. That was a discussion I had with Prof. İsmail Demir at the end of December and he said, "Don't come with an offer on blue print only, we have enough blue print production here in Turkey. We want to have knowledge and we are prepared and we are open."



Mr. Clemens Linden - CEO of Eurojet and
Mr. Mutalle Uluçay Senior VP, Turkey

Therefore, we are discussing the subjects with TEI, because from my prospective TEI is the key partner here in country in this regard.

Defence Turkey: Can you share some more recent details about your cooperation activities with Turkish companies? You mentioned TEI, we know you have cooperation with Aselsan. With this program are your activities expanding?

Because the Turkish Fighter is such an important program for us we have formed a local team in Turkey. Mr. Mutalle Uluçay here, a colleague from MTU, is heading up our local team here in Turkey. We have Rolls Royce in our team as well and so we also have our colleagues from the Rolls Royce office in Istanbul. We have rented an office in Ankara at Tepe Prime as a base for our in-country team. That was the message that we wanted to give to the market and the key decision holders: we are not coming here to make an approach by helicopter. We mean it. We take action. The action is that we have a local office and we have a team. This team is of course now keeping up with the interfaces with all of the key stakeholders, with SSM, the Turkish Air Force, TAI, TEI, Alp Aviation, BNA, Aselsan, Havelsan, Gür Metal, etc.

Mutalle Uluçay (MU): We are interested in a long-lasting relationship in Turkey. Therefore, we want to establish a permanent presence here. We've started and we have some good connection networks with all the stakeholders and we are also interested in the Turkish Aerospace Industries,

therefore we have already contacted with SAHA, OSSA and all the others, and our intention is not only for 5-10 years, our interest is more like 50-70 years. It is a fact that Turkey is dynamic and the strongest market in this area and we see big potential here. From Turkey, we can discover other markets. Together with our Turkish colleagues, hopefully we can become partners.

Defence Turkey: Are you planning for University relationships on the design? As with the Advanced Technology Center initiative from Rolls-Royce, can you elaborate on current and anticipated activities in this area?

CL: There's 3 pillars here to discuss: Pillar 1 - You offer the engine as is, to get the prototype into the air. Here we are speaking to TAI, TEI and Aselsan because the control system needs to be adapted, etc. This is the very first step. Pillar 2, the second step – the growth of the engine, where we have package A and package B – here we suggest involving a wider number of local industries. With the involvement of local industry we are looking at SMEs as well, and we are looking into institutes and universities. Rolls-Royce initiated the advanced technology manufacturing center. Our other shareholders would also like to invest into AMTC and we are talking to universities, Anadolu University in Eskisehir, ODTU-Middle East Technical University in Ankara, and that would be the third element. Because we see that in order to cooperate in country, it's not that you are just focusing on one entity, you need to go broad and that is our intention.

Defence Turkey: Do you have any investments or joint ventures like Kale Groups and Rolls Royce, and will something come up with TAI and TEI?

CL: I need to be cautious here, but the message very clearly is yes, we want to invest, we want to team up. It's not only a team up by signing a piece of paper, it's really kind of a joint venture and we are very flexible and



© Eurojet

EJ200 Team Center

we are currently in discussions here with local entities. I would say what Kale Groups and Rolls Royce has signed is impressive, it's an intention for a joint venture, it is not yet a joint venture, they have to take the next step. What they have formed now is a box, but the box is empty. What we can do is that we can create a box in a similar way and if you want to see it that way, we have projected the box because TEI is already a risk revenue partner with ITP on certain parts of the TP 400 engine, Rolls-Royce is in partnership and manufacturing programs with TEI and so is MTU Aero Engines. Actually, MTU just recently signed up for a long-lasting manufacturing contract on a helicopter engine with TEI so I would say we can install a box and put already real projects in it. There's a difference.

As you know, this kind of program always requires support from our governments. For Turkey, we have coordinated it so that Spain is supporting us as lead nation. Similar to the Typhoon program, it is very typical that one nation of the four partner nations is taking the lead. Spain already has a good interface with Turkey especially in naval aspects, i.e. there are already strong programs with the shipyards and the ships themselves and joint ventures are already set up here in Turkey. That was the reason behind the decision for Spain to be the lead nation to support us here in Turkey.

Defence Turkey: Do you have any final remarks for our readers?

CL: Everyone knows this is a proven engine with consistently overreaching performance.. The growth options we are suggesting are based on this stable product, and therefore we believe this is be best solution in terms of lower cost for the development program, lower risk in terms of the development program, not to mention technology gain due to the terms of our offer for involvement in Turkish industry. Mr. Kotil said yesterday (IDEF exhibition 10th May) at the TF-X Program signing ceremony 'We will make the best fighter in the world' and I say: 'Yes, the best fighter needs the best engine.' ■



Mr. Mutalle Uluçay, Mr. Clemens Linden and Mrs. Ayşe Evers

SSM 3rd Life Cycle Management Conference

This article was prepared by Logistics Department of the Undersecretariat for Defense Industries.

“SSM 3rd Life Cycle Management Conference” organized by the Undersecretariat for Defense Industries (SSM) was held at the JW Marriott Hotel in Ankara on 30 May 2017. The organization of the Conference coordinated by SSM Department of Logistics was conducted by SaSaD under the sponsorship of Aselsan, FNSS, Havelsan, Otokar, TAIS, BMC, Nurol, TAI, Roketsan, AYESAŞ, Meteksan Defense and Milsoft companies. Approximately 500 attendees from the Ministry of National Defense (MND), Undersecretariat for Defense Industries (SSM), Land Forces, Naval Forces and Air Force Commands, Gendarmerie and Coast Guard Commands, National Police, TÜBİTAK, Universities and Defense Industry Companies attended the conference executed in five sessions.

The following issues were addressed as the keynote presentations during the first session:

- › Though there are crucial activities previously initiated by the UDI on Total Life Cycle Management and Logistic Support System, due to the emerging status of our country's requirements, subject endeavors should continue in an accelerated manner with the most possible dedication. The coordinated studies of all shareholders within a systematic approach and establishment are deemed essential during the initiation and further execution for our overall achievement. UDI is willing and able to assuming the vital role for the subject coordination.
- › Throughout the procurement of the defense systems, we should focus all efforts solely on the readiness of the product received and utilized by the end user in accordance with the required performance level. The way to achieve this is extending the Life Cycle Management covering the acquisition and utilization phases as a whole, through which we can efficiently use our country's resources. In order to achieve a full



cooperation between interrelated projects, especially the cost overrun projects, The roles and responsibilities of each shareholder should be designed starting the initial phase. The integrity of total life cycle management should be targeted; the procurement of the defense systems and their logistic support should not be designed separately. The integrity of procurement of systems and their logistic support should never be impaired as though it would naturally be launched through different contracts .

- › The invisible parts of the upkeep costs of the defense systems should emerge as much as its visible parts. Otherwise the accurate expense comparison regarding the alternative methods could not be accomplished. An understanding to assign more responsibility to the private sector for providing logistic support should be adopted. Particularly, the Public - Private Sector Cooperation allowing the utilization of public sector's facilities and capabilities should be developed and enhanced.
- › Life Cycle Management is designed as a whole within the scope of the Özgün Multi-Role Helicopter, Altay MBT, Hürkuş B and C Basic Trainer Aircrafts, Karaok Weapon System, Weapon Carrier Vehicle, AKYA and SGRS Development/Mass Production Projects by the UDI. In addition to the Command Control Aircrafts, 2nd TIHA - Gözcü, JAIKU-IKU, Hürkuş-B TEU, STAMP, AEW&CS Aircrafts DSB,

PT-6 Engines, BORA Missile System, Kornet-E Anti- Tank Weapon System, EHTES, Long Horizon, Simulation Systems, EHDM and DEHTES Projects within the inventory, activities for the logistic support contracts/agreements for some other projects are being executed.

- › Necessary support is being provided to our national industry for the rendering of logistic support delivery capabilities, including the need to exclusive demands on the certification issues regarding the sub systems and spare parts to be manufactured through national resources.
- › For the precise forecast of Life Cycle Costs (LCC) and preparation of robust plans that extend years, the activities for the execution of detailed cost analyses have been launched. Through these activities, the timely and accurate adoption of the decisions that reduce the cost of ownership is aimed. The greatest challenge in this area is collecting accurate and reliable data, the changes occurring in the demands and need for time.
- › For the calculation of LCC, establishing a common database, the stipulation of LCC guarantee in the contracts, submission of cost items together with the proposals, proposal evaluation criteria, transparent monitoring of the expenditure items and data to be used in the analyses (manhours, workmanship, MTBF, etc.) are required.

- › One of the most important outputs of the conference will be the establishment of the “Turkish Defense Industry Life Cycle Management Platform” under the auspices and responsibility of the SSM. Through this platform in which all shareholders could participate, increasing the level of overall know-how/experience between the shareholders through the execution of scientific/practical studies on an effective Life Cycle Management required by the defense systems/platforms, developing approaches/applications that will constitute a basis to cultivate fruitful implementations and rendering these activities sustainable are aimed. With the documents to be generated by the platform and through the identification of approaches, methods, techniques and standards, more efficient resource and program/project management is aimed. For reaching the desired level of success regarding the Life Cycle Management, the expected level of support of the shareholders is of essence.
- › TÜBİTAK may provide support in the approaches that will execute the analysis and evaluation of the Life Cycle Management; in the preparation of the mission definition and feasibility reports of the Life Cycle Management.

Following points were noted by the defense industry companies in the Second Session:

- › Defense projects should be regarded as being in harmony from the start-up phase; the activities starting from the design to retirement stage should be executed in line with a master plan. SSM identified the aforesaid principles as a basis and advise the companies to constitute their structures accordingly. Within this frame, the system design was affected by taking into consideration the maintenance operation period requirements by either establishing the Integrated Logistic Support units or improving the existing structures at the companies. The aim here is to reveal a design that will enable the combat readiness level of the systems through low costs, production of prototypes, execution of mass production and furnishing timely and constantly logistic support throughout the service life.
- › In the current situation, the connection between the systems delivered to the end users’

inventories and the manufacturer is halted with the completion of the warranty period. Upon the completion of the warranty period, with the manufacturer’s assuming of the logistic support responsibility, it is assessed that a crucial level of contribution to the defense industry infrastructure in which the basic performance rates such as the operational and reliability will be protected, the OEM’s spare parts will be used, in which the connection with the sub-contractors will be maintained over the main contractor, the documents will be updated in a short span of time, the service life data for new designs/developments could be instantly reached and thus the user requirements in the upcoming period could be fulfilled at the desired level.

- › Our companies started to assume active tasks in respect to providing logistic support. Particularly, as in the “Euphrates Shield” instance, the capacity of the private sector regarding the logistic support provided to the operation was proven. Recently, there is an increasing tendency for our companies to participate in the procurement of logistic support services. In parallel with the satisfaction expressed by the user authorities, more tasks and responsibilities should be assigned to the companies involved in field activities.
- › Our manufacturer companies are providing services as part of the logistic support contracts to the systems/platforms within the inventories of foreign countries.
- › Taking into consideration the existing qualified labor of the private sector, their technical dominance over the products manufactured, and private sector’s know-how in supply chain management and business execution dynamism, more responsibility should be assigned to the private sector throughout the maintenance - operation period in a way to cover the PPC implementations.
- › The standards/specifications developed in way to regard the Life Cycle as-a-whole should be examined and included in the implementations of our country. To this end, the S series specifications identified/being identified by the ASD/AIA (Europe and U.S industrialist associations) should be kept up with and maintained and their implementation in our country should be extended.

- › A Life Cycle Management Platform in which all stakeholders assume tasks should be established by the SSM and through the maximum support provided by our companies, an environment in which we will cooperate and in which documents to be used by both public and private sectors should be established.

The following points were expressed by the User Authorities in the Third Session:

- › The increase of hazards in our South-East region and confronting a survival threat indicated the requirement for the retrofit of the logistic systems. The logistic systems should be restructured under the hybrid combat system against asymmetric threats.
- › Turkish Armed Forces need reliability; a system is required that is smooth functioning throughout peacetime and also in times of war. For the existing logistic infrastructure that is out of service, we need to rely on the system replacement.
- › The Ministry of Defense is no longer passive; it reached an active structure (through Statutory Decrees). There is a need for a platform in which all defense companies are able to effectively communication with the Ministry of Defense.
- › Defense expenses will increase due to the decision made at the Foreign Ministers Council stipulating that NATO member countries should allocate 2% of their GDP.
- › There are no hesitations regarding the implementation of Life Cycle Management in the Turkish Armed Forces (TAF) realm. Yet, the identification of the implementation method is required.
- › The errors in the NATO Stock Numbers are creating major problems in respect to logistic support. Both the private sector and the government should adopt the required measures on this issue.
- › The most crucial and unique characteristic of the naval forces is its capacity to stay at sea for a long time with its warships. The components providing logistic support should have the same level of facilities and capabilities that will provide uninterrupted and sufficient support to this force in the required time and place.
- › The maintenance-operation budget should be identified in proportion to the project budget, the conference management method should be implemented within the budget range

especially in the procurement of the spare parts, required importance should be attached to timeliness management and the utilization of the ASD Integrated Logistic Support Set (S Series) Specifications should be extended.

- › The crucial factor in designing defense systems/platforms and building logistic support is the clear definition of utilization and mission profiles. Integrated Logistic Support Analysis should be conducted with accurate and complete data.
- › According to the conventional logistic approach, and the reason for the preference of Performance Based Logistics (PBL) is that the maintenance-operation cost of a system corresponds to 70% of the total Life Cycle Cost, the request of the user to focus on his primary tasks, the technical features of the systems being used, the need for supporting the international operation, the complexity of the systems and the according dependency on the main contractors, continuous increase of the logistic costs and that there are difficulties in maintenance-operation. The scope of application is increasing day by day.

The following points were expressed by the General Directorates of the Ministry of Defense.

- › Against manufacturer's risk of losing its capabilities due to financial or legal problems, the replenishment and maintenance systems should continue to be improved. It should not be left up to the manufacturer/supplier companies or the patent ownership that will enable the production to be assigned to different companies, it should remain at TAF/SSM.
- › The systems to be procured should be in compliance with the systems being utilized, the work distribution should be clearly identified, NATO Stock Numbers should also be used by the manufacturer, effective role of the manufacturer company teams in maintenance and repair procedures should be tested under operational conditions, software for transferring the user feedback to the manufacturer should be developed, operation and maintenance criteria should be identified, performance evaluation system should be established, and a requirement that related legislation should be amended for the manufacturer's maintenance

support in cross border operations.

- › Life Cycle Management Analyses should be conducted in a detailed manner, separate forecasts should be made for procurement and maintenance-operation and the cost of the Life Cycle should be calculated and followed as-a-whole. The required infrastructure should be prepared.
- › The Military Factories General Directorate has been performing its activities with 27 military factories and over 17,000 staff. Enabling the depot level maintenance of the systems within TAF's inventory, manufacturing system/sub-system and spare parts for the TAF and providing Depot Level Maintenance and Production services to domestic and foreign institutions are amongst its responsibilities.
- › There are roles to be assumed by the military factories within the scope of the cooperation activities with the defense companies as part of the Life Cycle Management from the concept stage until the release from the inventory stage and plans are being prepared accordingly. To this end, an MoU was signed at IDEF with Airbus, Mechanical and Chemical Industry Corporation, TÜBITAK SAGE, TEI, Aselsan and Bilkent University.
- › Similar to the legislation regulating the military factories in the U.S. (Title 10); depot level maintenance and repair capabilities for the parts of the military equipment supporting the mission critical weapon systems or directly supporting the operation requirements should remain within an organic structure. According to the legislation in the U.S. there is a condition stipulating that 50% of the yearly budget allocated to the depot level maintenance - repair should be spent at the maintenance centers in an organic structure, and 6% of the budget should be invested in the improvement of the maintenance centers within an organic body.
- › Military factories and the defense industry are not the alternatives of each other but the complementary components of a whole. Taking the facilities and capabilities existing at the military factories into consideration, modernization of the aged machinery infrastructure and cost accounting systems of the military factories bear importance in respect to the procurement projects.
- › A new re-structuring is being executed under the auspices of the

Directorate General of Shipyards. Three shipyards (Gölcük, Istanbul and İzmir Shipyards) will be categorized based on their areas of expertise.

- › The shipyards enable the 7/24 operation of battleships all around the world and this capability should not be lost. There are no alternatives in our country that are capable of providing the repair services within this context.

During the Fifth Session, the following points on Evaluation, Results, Suggestions and Planning were stated:

- › All shareholders should objectively assess the activities conducted in the present system in terms of efficiency and effectiveness.
- › Joint action should be taken and the government should be backed with the power of the Industry.
- › Applications related to Performance Based Logistics and PPC models should be launched.
- › A Joint and National Logistic Information System Software is required. A comprehensive and detailed study should be initiated.
- › The activities regarding the Cost Analyses should be executed within a general discipline and the principles to which all shareholders contribute should be identified.
- › Fulfilling the legislative requirements is crucial for the related activities.
- › The Life Cycle Cost Analyses should be handled in a reliable and effective fashion.
- › In parallel with the activities and developments, the requirement for developing the legislation should be taken into consideration as well.
- › Actions should be immediately taken through related coordination and cooperation in relevant issues.
- › TÜBITAK may provide effective support in system establishment, analysis/assessment execution and providing consultancy services in relevant areas.
- › Through the joint endeavors of the shareholders, the "Turkish Defense Industry Life Cycle Management Platform" should be established under the auspices of the SSM through conducting studies on the LFM models that are compatible with our national body as well as the processes, methods, analyses, standards, costs, etc. As a result of the support provided by all shareholders to this platform, more effective results will be attained in Life Cycle Management.

In the conference the speeches on the following topics were delivered by distinguished speakers.

Opening Speeches

Prof. İsmail DEMİR, Undersecretary for Defense Industries

Mithat ERTUĞ, Deputy Chairman of Boards, SASAD

Panel 1 - Life Cycle Management Approach in SSM Projects: Development Projects and Logistics Support Projects

Moderator: Serdar Demirel, Deputy Undersecretary for Defense Industries

Objective of the Conference, SSM's Life Cycle and Logistics Management Objectives, Strategies

Abdullah Erol Aydın, Department Head, SSM

SSM Air and Land Logistics Activities; Demir Çiğdemöğlü, Manager, SSM

SSM Naval and Simulator Logistics Activities; Özgür Özdemir, Manager, SSM

SSM Industrialization Approach; Bilal Aktaş, Department Head

Cost Analysis / Life Cycle Costs of the Projects conducted by SSM; Bilkutay Yılmaz, Manager, SSM

Software Technologies and Research Institute Manager: TUBİTAK's Approach on LCM; Cemil Sağıroğlu, TUBİTAK

Panel 2 - Turkish Defense Industry's Life Cycle Management Approach and Product Support Strategy Model Suggestions

Moderator: Hüseyin Baysak, Secretary General, SaSaD

Behcet Karataş, Director, ASELSAN A.Ş.

Muammer Akpınar, Logistics Department Head, TUSAŞ A.Ş.

Savaş Yanık, Deputy General Manager, HAVELSAN A.Ş.

Dr. Mehmet Yavuz Aka, Deputy General Manager, ROKETSAN A.Ş.

Haldun Olgun, Business Development Manager, FNSS A.Ş.

Oğuz Korkut Kibaröğlü, Director, OTOKAR A.Ş.

Deniz Şişlioğlu, Manager, BMC A.Ş.,

M. Selim Buğdanoğlu, Defense Industry Projects Manager, TAİS

Panel 3 - Life Cycle Management Approach of the User Authorities

Moderator: Lt. Gen. Veli Tarakcıl, Deputy Undersecretary of Ministry of National Defense

Col. Zafer Kardan, Land Forces Command

Commander Ufuk Canöz, Naval Forces Command

Lt. Col. Cenk Yaman, Air Forces Command

Erdal Kılınc, Manager, Security General Directorate

Panel 4 - Activities of the Ministry of National Defense General Directorates and the Life Cycle Management

Moderator: Dündar Talazan, Ministry of National Defense General Director of Shipyards

Col. Mehmet Tahtabiçen, General Directorate of Logistics

Col. Faruk Bidev, General Directorate of Supply Services

Lt. Col. Numan Yöner, General Directorate of Military Shipyards

Commander Burak Gökalp, General Directorate of Shipyards

Chief Engineer Alper Tol, MKEK

Panel 5 - Conference Review: Conclusions, Recommendations and Planning

Moderators:

Prof. İsmail Demir, Undersecretary for Defense Industries

Serdar Demirel, Deputy Undersecretary for Defense Industries

Dündar Talazan, Ministry of National Defense General Director of Shipyards

Dr. Orkun Hasekioğlu, TUBİTAK Vice President

Hüseyin Baysak, Secretary General, SaSaD

Havelsan Becomes Raytheon's Three-Star Supplier

In 2016 Raytheon deemed Havelsan worthy of the Three -Star Supplier Award as Havelsan has been one of the best companies it collaborated with

At the "Raytheon IDS 10 Year Supplier Excellence Conference" event, within the scope of the New Type Submarine Project of the Naval Forces Command, Havelsan was deemed worthy of the Best Supplier

Company Award with its Project for the Integration of the MK-48 Torpedo to the ISUS K/K System.

According to the evaluation, Havelsan took one of the highest points in respect of the cost, quality,

process compatibility, project management and timely delivery criteria. The aforementioned award was granted only to 10 companies out of 250 companies Raytheon collaborates with across the US.

Otokar Establishes Ankara-Based Corporate Affairs Directorate

Following the assessment of the increase in business volume and potential project diversity, Otokar decided to establish the Corporate Relations Directorate in Ankara, where priority customers as well as decision authorities are located.

Through this Directorate, the aim to conduct customer satisfaction oriented studies in coordination with the related project units of the company for the business development activities of Otokar to expand the existing customer and project portfolio, and also to provide appropriate solutions for the current demands and requirements of the users / decision authorities expeditiously by establishing continuous and direct relations with them.

Mr. Mustafa Ertürk was appointed the Director of Corporate Affairs at Otokar. Mr. Ertürk has worked in various departments of Aselsan between 1991 and 2014.



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Biography of Mustafa Ertürk

Born in Ankara in 1965, Mr. Mustafa Ertürk started his career as a sales representative at Çukurova İthalat ve İhracat A.Ş. in 1990.

Mr. Ertürk worked at Aselsan between 1991 and 2014. Starting from 1991, he served as Administrative Personnel, then as Chief/Business Development

between 1997 and 2000, as Market Development Manager between 2000 and 2003, as Market Development Director between 2003 and 2010 and as International Marketing Director between 2010 and 2014.

In addition to the tasks that he has undertaken, he also served as a member of the Executive Board at Aselsan between 2006 and 2014.

Altay Mass Production Program Open up the Tender Process

Otokar made an important public statement regarding the Altay Project Period-II Mass Production results on 9th June. In Otokar's statement to the Public Disclosure Platform, it was stated that:

"Within the scope of the last special circumstances disclosure we made on 29.08.2016 regarding the Undersecretary for Defense Industries' (SSM)' Modern Main Battle Tank Production Project' (Altay Project), we announced to the public opinion that the BAFO (Best and Final Offer) was presented to SSM. In the memo notified today to our company by the SSM, it was stated that the administrative, financial and technical aspects of the offer were evaluated in detail yet the offer was not approved as no agreement was reached in the contract conditions, price factor being in the first place and that they decided to fulfil the need through a tender process.



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SSM's statements on the process will be followed and the necessary disclosure will be made by our company in accordance with the relevant regulations, in case our company decides to participate in

the tender."

Within the scope of the mass production of Altay MBT program, 250 Main Battle Tanks are planned to be procured at the first stage.

Collaboration Between TAI and Spirit Aerosystems Expands

\$ 292 million in export is anticipated through the cooperation between TAI and Spirit Aerosystems

TAI has signed a lucrative contract worth \$ 292 million comprising the continuation of the existing work packages and job creation with the worldwide leading manufacturer of aircraft structures, Spirit Aerosystems.

Through this contract signed with the Spirit Aerosystems, for which it has been manufacturing components since 2003, TAI will have accomplished exports of approximately \$ 292 million. Within the scope of the existing work packages, delivery of a monthly average of 35,000 assembly parts will be accomplished.

According to the contract, the production liability of the existing 737 MAX and Spirit Aerosystems LTA 1-5 work packages extends until



the end of year 2023. In addition to the increase in the existing scope, through the definitive agreement acquired on 14-19 May 2017, a new work package consisting mostly of 737 MAX-777X components, valid

until 2023 was acquired by TAI.

TAI was considered worthy of Spirit Aerosystems' "Outstanding International Supplier" award for the third time in 2016, amongst hundreds of suppliers.

Alp Aviation Signs Five-Year Agreement with Sikorsky to Build Landing Gear Assemblies for Black Hawk Helicopters

Turkish aerospace precision component manufacturer Alp Aviation has signed an agreement with Sikorsky, a Lockheed Martin company, to produce landing gear assemblies for Black Hawk helicopters.

Approved for an initial five years, the agreement will contribute export earnings to the Turkish national economy while providing Sikorsky an additional source of Black Hawk main and tail landing gears.

"This agreement is a direct outcome of Alp Aviation's leading role as the manufacturer of dynamic components and assemblies for the Turkish Utility Helicopter Program's T70 helicopter, and subsequent Black Hawk aircraft to be produced in Turkey for the international market," said Mr. Bill Gostic, Vice President of Sikorsky Global Military Systems & Services. "Alp

has become a valued international source of precision machined parts, and can produce these assemblies at a competitive price."

Sikorsky will continue to source Black Hawk landing gear assemblies from vendors in the United States.

Based in Eskisehir, Alp is a 50/50 joint-venture partnership with Sikorsky, and currently one of the largest aerospace companies in Turkey. Alp produces dynamic and other precision machined components for Black Hawk and Seahawk helicopters, as well as components for leading aerospace companies, including Lockheed Martin.

"We are proud of this accomplishment and to further strengthen our relationship with Sikorsky," said Mr. Senay Idil, General Manager, Alp Aviation. "We will continue to work hard in bringing

the most up-to-date technology to Turkey and increasing our work share in Sikorsky platforms. We have demonstrated our ability and are committed to meeting Sikorsky's high quality, cost and delivery standards. We have achieved this by investing in not only manufacturing technologies, but our people. As a company, we are eager to help Sikorsky capitalize on significant growth opportunities."

Alp will be the sole supplier of Turkish-built landing gear assemblies for the Turkish Utility Helicopter Program, a major industrialization initiative led by TAI, which will produce the Republic of Turkey's new T70 utility helicopter based on the Black Hawk platform.

Turkey has been operating Black Hawk helicopters since 1988, and currently has purchased more than 100 aircraft to date.

IDEF 2017 - 13th International Defense Industry Fair Gathers the Giants of Defense

13th International Defense Industry Fair was held on 09-12 May 2017 at the TÜYAP Fair and Congress Center in Büyükçekmece/İstanbul with the participation of 820 companies consisting of 503 foreign and 317 local companies from 50 countries

The opening of the event was conducted by Prime Minister Mr. Binali Yıldırım and 133 delegations, 637 delegation members, 1 President, 26 Ministers, 6 Chiefs of General Staff, 17 Deputy Ministers, 5 Deputy Chiefs of Defense, 10 Force Commanders, 14 Undersecretaries and many civil and military procurement authorities from 67 countries attended the event.

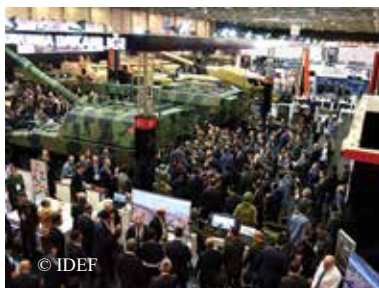
At the ceremony launched by Prime Minister Mr. Binali Yıldırım, following initial remarks made by the Turkish Armed Forces Foundation's (TAFF) Deputy General Manager Mr. Sadık Piyade: "For the first time, this year our event is being executed under the auspices of the Presidency of the Republic of Turkey and is hosted by the Ministry of National Defense and organized under the management and responsibility of TAFF. The fact that our event is being conducted this year especially under the auspices of our President, has honored and strengthened us. In order to develop both at home and abroad defense cooperation opportunities, negotiations between Turkish Procurement Authorities - Delegations - Participant Companies are planned throughout the event. During the previous event, over 2000 negotiations were accomplished at the IDEF. We assess that this fair will also become a platform for an intense traffic of negotiations and I would like to welcome you all."

Undersecretary for Defense Industries Prof. İsmail Demir said, "Global geopolitical developments altered the definition of 'security' and 'power' concepts in the new strategic environment. Within this framework, in line with the goals set for ambitious vision of



2023, by further developing our existing capabilities in Defense and Security technologies, we proceed with firm steps towards becoming a leader and pioneer country in international platforms and a country that fulfils its requirements mostly through indigenous and domestic facilities under the guidance of your esteemed selves. As the Undersecretariat for Defense Industries, we have been conducting 460 projects as of 2016. The total worth of our bound by contract projects reached up to \$ 123 billion TL (est. \$ 35 billion) and the total size of our potential projects volume went up to 200 billion TL (est. \$ 57 billion). Our defense industry reached a production capacity exceeding 21 billion TL (est. \$ 6 billion) and export figure exceeding 6 billion TL (est. \$ 1,7 billion) as of 2016. Our defense industry transformed into

an indigenous structure with the participation of over a thousand companies, SMEs, research institutions and universities. Two of our companies exist among the worldwide top 100 Defense Industry companies. Our companies are ascending to success rating year year at this list. We are conducting our cooperation and export activities with friendly and allied countries at all regions of the world. Within the scope of the international cooperation and export activities conducted under the auspices of our Undersecretariat, our country's promotion is performed while the cooperation processes with the allied countries are being developed. The cooperation built up with the relevant countries in defense industry is crucial in respect of strengthening our existing political relations as well. The progress displayed by the Turkish Defense Industry in the recent years accomplished in the enhancing demand for our companies' platforms, systems, sub-systems and capabilities in overseas markets in various fields. The platforms and systems that were manufactured by local companies and that used by Turkish Armed Forces and proved themselves in the field will be displayed at the IDEF '17 fairground.



Therefore, we believe that the IDEF '17 event is a highly important platform for promoting our unique capabilities on a global scale and for developing new collaboration opportunities."

Later taking the floor, Minister of National Defense Mr. Fikri Işık said briefly: "Each country's specialization in areas aligning with its own capabilities will both result in more contribution to that country's and world economy. However, there are certain sectors such as Defense, Energy and Food in which every society's seizing a level to fulfil its own demands is a key role. In the past, Turkey endured severe problems in this respect, particularly in Defense Industry. In the beginning of 2000s, Local content was insufficient and 80 percent of the Turkish Defense Industry was subjected to involvement abroad. With the vision and leadership of our Dear President, Turkey has made an inversion of that course in a short span of time. We initiated our journey with the aim of attain the top 10 most developed countries in World Defense Industry. We are proceeding with firm and powerful steps towards that end. Today our Defense Industry has transformed into an indigenous structure with the participation of over a thousand companies, SMEs, research institutes and universities. The rate of fulfilling Turkish Armed Forces' requirements through indigenous products has reached up to 60% level. Our sector generate over 60,000 qualified employment opportunities in this period. The annual turnover of our Defense Industry sector exceeded \$ 5 billion as of last year and our exports accomplished reached \$ 1.678 billion."

Prime Minister Mr. Binali Yıldırım addressed the topic of participation in the opening ceremony and said: "International Defense Industry Fair, 13th of which is being organized this year, has been continuing as an extremely successful and model event since 1993. With the courtesy of your intense interest, this event has become one of the leading gathering platforms of the Turkish and worldwide Defense Industry. Today, in respect to the number



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of participants we are hosting the world's fifth greatest Defense Industry Fair. Besides, this year many novelties have been brought in. This year's organization is being realized under the auspices of our Dear President. And this year, for the first time, there will be the promotion stands of our Land, Naval and Air Forces Command at the event. Moreover, the newly manufactured local and unique defense weapon systems will be unveiled and promoted at the fair for the first time. I congratulate all our institutions and associations that contributed to the realization of this fruitful event. I would like to thank all the representatives of the domestic and foreign defense industry for their participation as well.

Our local participation rate, which was only 20% 15 years ago, now has reached up to 60%. Currently, with the participation of over a thousand companies, SMEs, research institutes and universities, a Defense Industry infrastructure having gained a national structure has been achieved. The turnover of the sector increased to 20 billion TL from 1 billion TL. The export rate of our Defense Industry in 2002 was merely \$ 250 million and

taking a look at 2016, we achieved an annual production capacity exceeding \$ 5.9 billion and \$ 1.67 billion of export capacity. We enhanced the share we allocated to the R&D expenses to 20 billion TL from 1.8 billion TL. Our number of R&D personnel reached 123,000 from 29,000. Presently, the share of the R&D expenses within the Gross Domestic Product is 1.06% where it was 0.53% in 2002. We achieved a two fold increase and our goal is to increase it further to 2.5%. We wish to reach this target by 2023 as well. This year we are executing a total of 460 Defense Projects and the budget we manage in these projects is 123 billion TL."

Throughout the event where intergovernmental and G2G negotiations and negotiations between various levels of delegations and companies were conducted and a total of 2,240 appointment negotiations, stand visits and nearly 50 signing ceremonies were held. In 2017, a total of 65,782 visitors composed of 60,754 local and 5,028 abroad from 116 countries visited the fair displaying immense interest.

The 14th IDEF is planned to be organized in Istanbul with a broad participation again on 7-10 May 2019.



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Turkey's New Approach in Defense Cooperation: FNSS Leads the Way with Kaplan Modern Medium Weight Tank Developed for Indonesia

FNSS unveiled its prototype of the Modern Medium Weight Class Tank (Kaplan-MT) for the first time at the IDEF '17 Fair in Istanbul. The prototype is ready to run all tests with its sub-systems which are being developed in partnership with PT Pindad, the Indonesian state organization, within the scope of Indonesian Land Forces. On the second day of the fair FNSS hosted an official ceremony; attendees included the Undersecretary of Defense, Prof. Ismail Demir and Ambassador Wardana of the Republic of Indonesia, FNSS-CEO & General Manager Mr. Nail Kurt, as well as many other guests.

FNSS-CEO & General Manager Mr. Nail Kurt made a speech at the ceremony highlighting the successful new approach accomplished between Turkey and Indonesia in the area of Defense cooperation. In his opening remarks he proudly shared "Today, among several other reasons, I have another good reason to be very proud of FNSS, the reason is the unveiling of the vehicle that you see next to me. Which doesn't only represent a new product but it also represents a new approach in the area of Defense Cooperation. This is the very first multinational defense cooperation program that has involved FNSS and it gives us big hope and belief in further relations of both countries. This approach in multinational defense is what countries like Indonesia-PT Pinpad and Turkey-FNSS need very much." Mr. Kurt commented on the prospects of future endeavors with confidence stating "I believe this will not be the only one, there will be more to come, to develop and enhance our relations further. In light of FNSS's new vision of being the globe's trusted and respected defense partner, we launched this



program approximately 3 years ago with PT Pindad under an umbrella agreement between two ministries of defense. We owe a big thank you to both ministries for sponsoring this. It's a part of a big vision and we owe this opening today to your vision."

Mr. Kurt noted that the vehicle meets all of the important criteria required in the current warfare conditions "The product, the medium weight tank that we are unveiling today, I believe is a very effective solution for today's asymmetric warfare conditions, which many armies are exposed to. These conditions are easy and fast deployment requirements, high mobility requirements, low visibility requirements and high firepower requirements and of course low cost that everyone can afford. I believe that this vehicle that you see today meets all of these important criteria. Of course this comes not only with chassis but also with the turret equipped with the 105mm gun produced by CMI, a well proven and effective partner to both companies." Mr. Kurt noted that his membership as the chairman of the Turkish-Indonesian Business Council under the foreign economic

relations board of Turkey doubles his pride in achieving such a business relationship with Indonesia. As FNSS often plays a pioneering role in opening up new markets, Mr. Kurt elaborated "As FNSS, when we enter a new market, the rest of the industry follows. This was the case in the United Arab Emirates, this was the case in Malaysia and this was the case in Saudi Arabia. I believe Indonesia will be another good example where FNSS initiates the relations and the rest will follow. Another FNSS speciality I believe, is that of being a standard supplier to any country that we enter. Again with the countries that I've mentioned, this took place, we stayed in the country with consecutive contracts, and I believe that this will be the case with Indonesia too." Mr. Kurt closed his speech on a promising note, sharing his belief that "this rather small program will be a path to a high trade volume and defense cooperation volume between the 2 friendly countries. I'd like to welcome you once again and thank you for sharing the day with us."

The Indonesian Defense Ministry, Director of Technology and Defense Industry, Dr. Sutrimo Sumarlan, took the stage with his



Mr. Nail Kurt – CEO & General Manager of FNSS

speech praising the mutual success of their cooperation. “On behalf of the Indonesian government, through the ministry of defense we appreciate the successful prototype of the medium weight tank that runs today, I think that it is a success and a wonderful story of cooperation among the defense industries between both countries, Turkey and Indonesia. The Medium Tank (MT) cooperation started in the year 2015 and we hope to see its completion this year in 2017. Turkey and Indonesia, FNSS PT Pindad, will work together to profile new technology especially for the Medium Tank. Both countries, Indonesia and Turkey, expect that this tank will not just be for the two countries, we can sell it to other countries in addition to fulfilling the requirements of the Indonesian defense force and also in the future we can create a market for Indonesia and maybe for the Middle East, Central Asia and parts of Europe. We convey our deepest thanks on behalf of the Indonesian government to the Turkish government, for working closely with Indonesia to be successful with the Medium Tank.

Once a gain we hope that after the success of the prototype of the Medium Tank, both PT Pindad and FNSS will continue to complete it and we will create joint marketing, in Asia, and also maybe Latin America. We do hope that in the future that both countries can continue their cooperation, not only with the medium tank but also with

other products such as missiles, the market is very open. It is a big opportunity for the companies in Turkey and Indonesia to join together.”

Undersecretary of Defense Industry, Prof. İsmail Demir presented the final speech at the ceremony, welcoming guests, attendees and company representatives. “Today it is a great pleasure for me to be present at this event because it was one of the first projects that SSM has supported as international cooperation and with government support. As our policy, we have always supported our companies’ export activities. The tank development project is a government to government program between SSM and the Indonesian Ministry of Defense, a part of a defense cooperation agreement between two brother countries. It was one of the first models that we have applied. FNSS from Turkey and PT Pindad from Indonesia were assigned to execute the program. The scope of the program is to jointly develop a medium weight tank with the 105mm gun and produce one prototype in Turkey with the participation of Indonesian engineers from PT Pindad and one prototype in Indonesia by Indonesian partners. The program started with our exhibition during IDEF 2015 in Istanbul. FNSS is exhibiting the first prototype at IDEF 2017 and as agreed with the Indonesian Ministry of Defense the prototype will be running during the Army Day with their parade in Indonesia on October 5th of this year. After the Indonesian army qualifies the vehicle, the vehicle will be ready for serial production. We believe this prototype will serve the needs of the Indonesian army and the Turkish army as well. It will have great potential for export opportunities. I congratulate both companies with this program and would like to emphasize that we are ready to support serial production of this program with maximizing cooperation between the two countries. I think this is a first example of our potential to cooperate in different areas, as Mr. Director General stated, because there are so many areas

of cooperation, and I urge our brothers to have a serious look during this exhibition of Turkish products, because we know that our cooperation will enhance our strength, our friendship and brotherhood and it will always be a positive contribution to world peace and security.

The Undersecretariat of Defense Industry, Indonesian Delegation and FNSS officials participated in the 2015 IDEF fair and signed an agreement for the Modern Medium Weight Tank Program, which included the Intellectual and Industrial rights for the design, production, integration, certification and certification of two prototype medium weight tanks belonging to Turkey and Indonesia and the production of one Modern Medium Weight Tank. The production process initiated in the last quarter of 2016 after a one year preparation period. The first prototype with the participation of PT Pindad engineers was manufactured at the FNSS facilities in 2017. In this context, the second prototype is planned to be manufactured by PT Pindad in Indonesia, according to the 37 month development phase schedule. The total development phase is expected to cost \$ 30 million, and the program responsibility share is 60% FNSS - 40% PT Pindad. Through a joint development process used to manufacture the prototypes, the aim is to eventually execute mass production orders with PT Pindad with a common production model.



Prof. İsmail Demir – Undersecretary for Defense Industries (SSM)

TAI Makes its Mark at IDEF with Indigenous Products

TAI, the leading enterprise of the Turkish Aerospace Industry, displayed its unique products at IDEF 2017. The T129 "Atak" Helicopter was demonstrated previously at various events and used effectively by the Turkish Armed Forces. It was exhibited once again at the area specially allocated to it, the "Anka" Unmanned Air Vehicle was unveiled, equipped with the critical payloads simultaneously for the first time. In addition to the SAR Radar, "CATS" Electro-Optical Reconnaissance Surveillance and Targeting System, the 2.75' Cirit Missile and its launcher and MAM-L missiles' developed for the first time by Roketsan were demonstrated over a platform. TAI displayed for the first time the Synthetic Aperture Radar (SAR), "CATS" EO Reconnaissance-Surveillance and Targeting pod, 2.75 "Cirit" missile and launcher as well as MAM-L missile together on the ANKA UAV.

The first prototype of the T625 Multi-Role Helicopter was amongst the surprises of IDEF 2017 with the "Hürkuş". The simulated mock-up of the Turkish Fighter (TF) project of which the design activities have been proceeding rapidly, was also displayed for the first time at TAI's pavilion.

On the first day of the Fair, Prime Minister Mr. Binali Yıldırım and Minister of National Defense Mr. Fikri Işık visited the TAI stand hosted by TAI Chairman Prof. Oğuz Borat and TAI President & CEO Temel Kotil, Ph.D. Prime Minister Mr. Binali Yıldırım and the accompanying delegation were informed about T129 "Atak" Attack and Tactical Reconnaissance Helicopter, T625 Multi-Role Helicopter, Hürkuş-C New Generation Light Attack/ Reconnaissance Aircraft and the configuration of "Anka" Unmanned Aerial Vehicle System on the ammunition was fitted.

On the second day of the Fair, a memorandum of understanding was signed at the TAI stand with the leading civilian and military aerospace company of the Ukraine, Antonov, for the development



TAI and Ukraine-Based Company Antonov Aerospace have signed a MoU on the second day of IDEF

and joint production of the UAV System. The signatures were given by TAI President and CEO Temel Kotil, Ph.D; General Manager of Antonov Mr. Oleksandr Kotsuiba, TAI UAV Systems Group Head Mr. Ömer Yıldız and Antonov Marketing and Sales Deputy General Manager Mr. Yuliy Kyselov.

At the SSM signing ceremony, Pakistani Aeronautical Complex (PAC) and TAI signed Memorandum of Understanding (MoU) for cooperation in the field of aerospace under the witness of Pakistan Defense and Production Minister Mr. Tanvir Hussein and Minister of Defence Mr. Fikri Işık. The signatures were given by TAI President & CEO Temel Kotil, Ph.D and PAC Chairman of the Board Mr. Arshad Malik.

TF-X Program Turkey-BAE Exchange of Letters Memorial Ceremony was Realized and a Letter of Agreement was Signed between TAI and BAE Systems

During the second half of the day, two crucial signatures were given regarding the Turkish Fighter Program (TF-X) at the TAI stand. On behalf of Turkey, the Undersecretary for Defense Industries Prof. İsmail Demir and on behalf of United Kingdom Head of the Defense and Security Organization (UKTI DSO) Mr. Stephen Phipson signed the TF-X Program Turkey-BAE Exchange of Letters Memorial Ceremony certificate. The memorial ceremony was realized with the participation of Air Forces Command Major General Abidin Ünal, British Ambassador Mr.



Turkey-BAE Exchange of Letters Memorial Ceremony for Turkish Fighter Program

Richard Moore and distinguished guests.

Following the Heads of Agreement document inked between TAI and BAE Systems on January 28, 2017, the Letter of Agreement, which identifies the status reached by the parties after the completion of the negotiations in order to initiate the approval process under the Collaboration Agreement, was signed between TAI and BAE Systems at the IDEF fair. The signatures were given by TAI President & CEO Temel Kotil, Ph.D, TAI-Turkish Fighter Group Head Prof. Mustafa Cavcar, BAE Deputy Director Mr. Tom Fillingham and BAES MAI Chairman of Board Mr. Michael Hasnip.

The joint activities such as engine selection, conceptual design review, infrastructures, etc. were carried out with BAE systems in addition to contract negotiations within the scope of pre-contract activities referred to as "Pre-Contract Study" (PCS).

Collaboration Agreement Regarding Malaysian UAV Systems Requirement was Signed

On the second day of the Fair, a "Collaboration Agreement" was also signed between TAI and Malaysia's largest Defense Industry Company DEFTech-DRB-HICOM Defense Technologies Sdn Bhd in order to meet Malaysia's need for Unmanned Aerial Vehicle Systems. The signatures were put by TAI President & CEO Temel Kotil, Ph.D, CEO of DEFTech Group Dato 'Haji Amril Samsudin and TAI UAV Systems Group Head Mr. Ömer Yıldız. COO of DEFTech Group Major General Dato' Pahlawan Zulkifli bin Mansor also signed as a witness.

On the third day of the exhibition, important collaboration agreements were signed while the senior delegations visited the TAI stand. Qatar Defense Minister Khalid Bin Mohammad Al-Atiyye visited the TAI stand accompanied by TAI President & CEO Temel Kotil, Ph.D and inquired about the unique platforms from the TAI executives. The signature ceremony for the Hürkuş-C New Generation Light



Armed/Reconnaissance Aircraft development and Mass Production Program was also realized on the third day of IDEF 2017 with the participation of Undersecretary for Defense Industries Prof. İsmail Demir at TAI stand. The contract between the Undersecretariat for Defense Industries and TAI was signed by the Undersecretary for Defense Industries Prof. İsmail Demir, TAI Chairman of the Board Prof. Oğuz Borat and TAI President & CEO Temel Kotil, Ph.D.

Following the announcement of the RFP by the Undersecretariat for Defense Industries (SSM) regarding the New Generation Light Attack /Reconnaissance Hürkuş-C Development and Mass Production Program, SSM and TAI agreed upon the Framework Agreement.

Within the framework of the Hürkuş-C Program, the hardware and software activities will be developed mainly by local facilities and integrated on the aircraft in accordance with the terms of reference and technical requirements to be agreed by the parties.

Within the scope of the Project, a total of 24 Hürkuş-C aircrafts (12 optional), are planned to be procured. Hürkuş-C will be also equipped with local unique ammunitions such as



Hürkuş- C Serial Production Contract Ceremony Prof. Oğuz Borat – Chairman of TAI; Prof.İsmail Demir- Undersecretary for Defense Industries, Temel Kotil, Ph.D, President & CEO of TAI

LUMTAS, "Cirit", TEBER, HGK, LGK; the INS/GPS guided bombs, general purpose bombs, unguided missiles and machine guns.

Having external fuel tanks to enhance the endurance for critical missions, the electronic warfare systems were also outfitted on Hürkuş-C against the MANPADS threats, and the internal fuel tanks were supported by self-repairing fuel tanks. The vital parts of the aircraft are protected by armors. The Hürkuş-C, equipped with an Electro Optical Camera capable of laser designation and surveillance at night and daytime conditions, will also be able to convey the video and data image to ground stations in real time.

Within the scope of the ceremony, a Framework Agreement was also signed between TAI and Aselsan and Roketsan. The signatures were put by the Presidents and Chairmen of the aforementioned companies.

Collaboration Agreement with the Indonesian Company PTDI Regarding Aerospace

On the third day of the exhibition, a "Memorandum of Understanding" was signed between TAI and Indonesia's largest aviation company PTDI-PT Dirgantara Indonesia to team up for enhancing the existing common capabilities

TAI and BİTES signed a "Memorandum of Understanding" with the aim of collaboration by bringing together the experiences and know-how in the field of Dynamic Simulation Software Frameworks and Simulation Software Infrastructures. TAI President & CEO Temel Kotil, Ph.D, TAI Satellite Systems Group Head Mr. Selman Nas and BİTES CEO Mr. Uğur Coşkun have signed the agreement in the behalf of the companies.

TAI Aims to Ramp-up its Commercial Work-Packages

TAI President & CEO Temel Kotil, Ph.D, held a breakfast meeting with the press at IDEF. Mr. Kotil candidly responded all questions on TAI's future plans and strategies as well as the agenda at the meeting taking place on the second day of the event

Stating that the Turkish Defense Industry has made grand progress in recent years, Mr. Kotil expressed that Turkey needed a devoted team in order to reveal its indigenous programs and added that the existing programs could only attain achievement through this point of view. Mr. Kotil said: "In order to become the first country stepping on the moon, the United States worked until the first days of dawn, ceaselessly without getting any overtime payment and as a result of those endeavors the technological-base of the United States could be formed. With our engineers and all our staff, we need to have the same amount of enthusiasm within the scope of the Turkish Fighter development program toward achieving success."

Underlining that a crucial responsibility was assigned to their company as part of the Turkish Fighter program, Mr. Kotil announced that the platform to be revealed will be a twin-engine fighter jet capable of flying in supersonic speed and will be able to carry the ammunition within the weapons bay at the air-frame, that it will have covered stealth technology. Stating that manufacturing a platform of this category comprising high technology incorporates certain challenges as well, Mr. Kotil continued: "In order to build a platform with the aforesaid capabilities, Turkey has to acquire different critical capabilities in 14 sectors. Turkey has to manufacture its own technology in material groups consist of cutting edge technology such as titanium and carbon composite. It is not quite practical to procure this high-tech material from abroad and in such a complex project we must find out and resolve these issues single-handedly. On the other hand, we have an important responsibility for the establishment of a robust and sustainable eco-system with a design and test infrastructure."



Mr. Temel Kotil: "We will organized a team of 600 staff as part of the PDR stage of the TF-X program"

Conveying information to the press members on the details of the contract signed with the British company BAE Systems, Mr. Kotil said that the company will be providing them 150 qualified personnel and engineers for a four-year period and continued: "This team assigned to work in Turkey will be working in our company for 4 years. At the first stage, a team of 300 personnel will be organized in Turkey, we aim to bring a team of 150 qualified and experienced personnel who worked actively in these types of programs from abroad to Turkey. This team composed of 600 staff will be revealing Turkish Fighter with all its architectural structure; its critical parts such as the engine, geometrical structure and airframe internal weapons bay on paper. Then, during the following stage, the critical design activities will be launched."

Touching also upon the importance of the fact that Turkey is conducting this design from square one, Mr. Kotil expressed that this approach will also enable a long lasting design. Mr. Kotil: "We are aware of the challenges of

manufacturing a Fighter Aircraft. If one has an optimal design on the paper then this would prove to be a crucial acquirement. You will have the advantage of manufacturing this aircraft you designed for 50 years."

Mr. Kotil stated that the maiden flight of the aircraft was scheduled for 2023 and that the time was running out and continued: "There are years ahead us that we have to use efficiently. In the design stage, all grey areas from the critical components to the engine selection of the aircraft have to be clarified. There are no final decisions reached on the procurement of the engine for the time being. But we assess that this aircraft will be able to fly with its unique engine in 2030s. The General Manager of TEI made a commitment to me. They will be integrating the indigenous T625 engine under development to the "Özgün" Multi-Role Helicopter platform within three years (a period of 8 years is envisaged in the contract within the scope of the development program). This engine is not as complex as the Fighter aircrafts' engine but the production of such an engine in our country is promising for me in the future."

Upon the question regarding the financial size of the program with all its processes and whether they are making a feasibility study for this

Mr. Kotil said: “Lockheed Martin is developing and manufacturing the 5th generation F-35 JSF aircrafts. An expenditure of \$ 60 billion is mentioned for 3 different configurations up to date. So, we are speaking of a figure of \$ 20 billion for a single configuration. There are no figures to be discussed but we need a major fund to put forth such a platform in the end. Surely, if there is multi-national participation in the program after the PDR stage in the following processes, there will be a decline in the figures Turkey allocates through its own resources.”

Mr. Temel Kotil: “There will be some Changes in the Wings and Airframe of the Anka Platform”

Informing the press members that there will be crucial modifications on the Anka UAV system in the upcoming period Mr. Kotil said: “We are re-designing Anka’s wings. We will reveal a flatter wing without wing flaps over it. Similarly, we aim to conduct retrofit activities in the airframe. Moreover, we are discussing in house how we could achieve a bigger platform capable of carrying more payload. There is no such request of our government from us but we are already getting prepared as if we will receive the order.”

Sharing the recent developments on the Hürkuş-B Basic and Primary Trainer Aircraft, the production, equipping and integration activities of which are ongoing at the mass production line and Hürkuş-C New Generation Light Attack/ Reconnaissance Aircraft with the members of the press Mr. Kotil continued: “When the procurement process of Glass Cockpit system developed and produced by Aselsan and subject to military certification, diversifying Hürkuş-B platform from the Hürkuş-A configuration with civil certification, the aircrafts will practically become airworthy. We revised the delivery schedule of the Hürkuş-B aircrafts as December 2017. The Hürkuş-C configuration will be basically built over the Hürkuş- B aircraft. As ammunition and various payloads will be carried over this configuration, the aircraft will have to be reinforced. The retrofit of the landing gears and wings is required and our activities to this end continue. For the



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command control of the weapon systems, certain changes have to be accomplished on the monitors in front of the second pilot. We made the aforementioned modifications with Roketsan.”

Mr. Temel Kotil: “TAI will Focus on Commercial Programs in the upcoming Period”

Sharing that TAI’s consolidated budget was around \$ 1.6 billion, Mr. Kotil stated that \$ 500 million of this figure was from commercial programs. Mr. Kotil: “There will be certain changes in our projections for the upcoming period. When we analyze the existing situation, 2/3 of our turnover consisted of military programs and the remaining 1/3 is composed of civilian and commercial programs. We aim to build a structure in which the commercial programs would form 3/4 of our turnover. In order to achieve a sustainable structure for TAI, the civilian programs will have to gain momentum.”

Preliminary Studies Communication Satellites Weighted at 1 Ton Commenced

Making important statements on TAI’s space studies, Mr. Kotil elaborated by saying that TAI launched the TAI Spacecraft Assembly, Integration and Test Center in which the installation, integration and tests of the satellites weighing up to 5 tons are being conducted with an investment of \$ 100 million. “At this center built within the scope of the Göktürk-2 program, the tests, installation and integration activities of our national systems are being conducted. We need new satellite programs for

the effective and efficient utilization of this facility. In recent years there has been global interest towards the communication satellites of especially up to 1 ton weight category. We currently initiated the preliminary studies for achieving this. We do not have too much free space in our center for the satellite systems of 5 tons weight but we have many spaces to locate the satellite systems weighing up to 1 ton as they do not occupy too much space. With the approval of our Members of the Board, our goal is to launch the design of 1 ton satellites through our own resources. We made pre-interviews with 2 different users in this area. We will be creating a significant source of income if we manage to launch these satellites of 1 ton into orbit within two-years.”

TAI President & CEO Mr. Temel Kotil conveyed essential messages to the candidate engineers studying engineering and the engineers devoted to aerospace during the final part of the press meeting. Mr. Kotil said: “We launched a crucial study with Istanbul Technical University in order to develop and manufacture a Very Light Aircraft of 700 kg. 24 students and 11 academicians from İTÜ will be involved in this project as well. The certification of the aircraft is planned to be completed after 24 months in this program with a total budget of \$ 1.5 million. We aim to conduct a similar study with Middle East Technical University in the upcoming period. We attach great importance to our youth and I would especially like to underline that we are open to their projects and ideas. They can send their projects via okul@tai.com.tr. We will be closely examining all projects regarding aviation and will be trying to provide support to most of them.”

Aselsan and SSM Signed Contract for the Modernization of M60T Tanks

The contract comprising the modernization of the tanks was signed at the IDEF Fair between SSM and Aselsan in order to retrofit the M60T Main Battle Tanks against anti-tank missile and terrorist attacks

With the contract signed by Undersecretary for Defense Industries Prof. Ismail Demir and Aselsan President & CEO Dr. Faik Eken, the Main Battle Tanks are aimed to be effectively protected against anti-tank missiles and terrorist attacks.

Addressing the attendees of the signature ceremony Prof. Ismail Demir said: "Today we will sign a contract with Aselsan for the modernization of the M60T tanks. As a result of the negotiations aftermath the Euphrates Shield Operation, significant development projects emerged. We had to take a solid step to immediately actualize these critical technologies with local sources. With the signatures signed today, our Main Battle Tanks will become more modern and powerful in the battlefield.



Aselsan President & CEO Dr. Faik Eken said: "We have analyzed the urgent needs and have well-organized to cater to the requirements of our

Within the scope of the contract regarding the effective protection of M60T Main Battle Tanks against anti-tank missile and terrorist attacks as well as the improvement of existing systems by additional capabilities, the aim is to realize the integration of Laser Warning System, Remoted-Controlled Weapon System, Close-Range Surveillance System and Protection and Air Conditioning System on M60T Tanks.



While our Altay MBT program is being carried out, we also have some projects to upgrade the capabilities of our other Main Battle Tanks existing in our inventory, and we will also realize these projects in the course of time. We would like to finalize our studies without any delay and reinforce our Armed Forces with these tanks in the theatre. We thank those who contributed to such efforts."

Armed Forces. Our skilled staff determined the requirements immediately with the coordination of the Undersecretariat for Defense Industries, a sample system solution was set up, and successful results were achieved in the terrain. Today we are in the signature phase. I would like to thank the Undersecretariat for Defense Industries and Turkish Armed Forces officials for supporting us with this contract."



Turkey's First Air-to-Air Missile were Launched by TÜBİTAK-SAGE

"TÜBİTAK Defense Industries Research and Development Institute (SAGE), which continues its mission with the motto "National R&D for National Defense", pursues serving the Turkish Armed Forces."

Many munitions and missiles, among most firsts in Turkey, were developed by TÜBİTAK SAGE. Turkey's first indigenous guidance kit HGK, the first unique stand-off-missile SOM, and NEB the first aerial bomb with a successive penetrating warhead are just some of these impressive examples.

TÜBİTAK SAGE has begun working on more complex and challenging projects with its accumulated knowledge of munition and missile projects. In this context, "Peregrine" – WVR (Within Visual Range) and its longer-range sibling "Merlin" – BVR (Beyond Visual Range) Air to Air Missile duo, which has been under development since 2013, was exhibited for the first time at the IDEF'17 exhibition between May 9th to the 12th, 2017.

Aiming to excel the Turkish Air Force's air superiority, the development of exemplary WVR and BVR Air-to-Air missiles that are to be launched from F-16 aircrafts, continues at a great speed.



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Two novel missiles are being developed under the program. "Peregrine" – WVR achieves high maneuverability at short range with Imaging Infrared (IIR) Seeker and "Merlin" - BVR employs a state-of-the-art Active Radar Seeker. The Active Radar Seeker which will also

be utilized in long range air defense systems is being entirely developed within the scope of the program. The seeker is expected to reach operational maturity in 2019.

Developed by TÜBİTAK- SAGE, "Peregrine" and "Merlin" are Turkey's first indigenous air-to-air missiles. Merlin is also the first missile with an Active Radar Seeker developed in Turkey. TÜBİTAK-SAGE has broken ground by developing critical systems and transferring these products to the defense industry, taking a giant step forward toward the future development of Air Defense Missiles.



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STM and ThyssenKrupp Marine Systems Signed Letter of Intent for Indonesian Submarine Project

Having played an important role in the 'New Type Submarine Project' for the Turkish Naval Forces and having undertaken the main contractor ship of the Pakistan Naval Forces' Agosta 90B Class Submarine Modernization Project, STM made a new addition to its studies in this field at IDEF 2017. Within the framework of the collaboration formed under the coordination of the Undersecretariat for Defense Industries, STM signed a Letter of Intent with the German company ThyssenKrupp Marine

Systems (TKMS), which is one of the world's largest Defense Industry companies, for the Indonesian Submarine Project. STM General Manager Mr. Davud Yilmaz and ThyssenKrupp senior officials were present at the signature ceremony.

Within the scope of the Indonesian Submarine Project to be initiated by the STM and TKMS, one or two submarines are planned to be built in Turkey and the other submarines are to be built in Indonesia. The details of the final business model of the



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Indonesian Submarine Project, which is expected to be one of the largest export projects in Turkey, are anticipated to be finalized in the upcoming weeks.

Otokar Unveiled Altay-AHT, Urban Operations Tank

Altay-AHT Urban Operations Tank, a version developed from Turkey's Main Battle Tank Altay for asymmetrical - combat environments, was unveiled for the first time from 9-12 May at IDEF 2017

Otokar, a Koç Group company, showcased the Altay-AHT Urban Operations Tank, developed by Otokar on the Altay Main Battle Tank (Altay MBT) Hull and Turret platform, for the first time at the IDEF exhibition.

Otokar General Manager Mr. Serdar Görgüç: "The Altay – AHT Urban Operations Tank is a Solid Indicator of Our Claim In Serial Production"

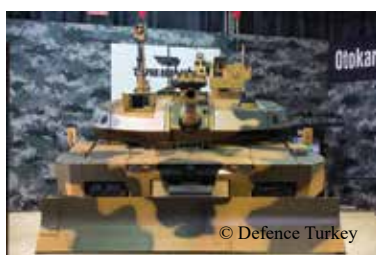
Otokar General Manager Mr. Serdar Görgüç said, "As Turkey's most experienced land systems company, we are striving to provide the best products and services to more than 50 clients in the world, including the Turkish army and security forces. The experience we gain in Turkey and the world on diverse terrains and under different climate conditions is reflected in our research and development activities. Thus, we act according to present and future threats and needs, and predict our clients' expectations. The Altay-AHT Urban Operations Tank, which we are exhibiting for the first time at the exhibition today, is a great example of these activities. In response to hybrid and asymmetrical threats and conditions where unconventional forces and methods are employed are spreading more widely, we designed the Altay-AHT Urban Operations Tank using our own resources that will meet the future needs of the Turkish Armed Forces and will have high export potential. This urban operations tank, which Otokar designed with its own insights and capabilities, is also a solid indicator of our claim in the serial production of Altay, and proof that we have the capabilities and human resources for serial production. If tasked with serial production, we are ready to deliver the best for our country and armed forces."



Altay-AHT Urban Operations Tank

Altay Urban Operations Tank (Altay-AHT) was developed by Otokar on the Altay Main Battle Tank (Altay MBT) Hull and Turret platform. With asymmetric engagements increasing, and those that mostly transpire in residential areas, Otokar, foresaw that the need of modern armies for suitably equipped battle tanks would also increase, and designed the Altay-AHT Urban Operations Tank with a special team of 20 in as little as five months. With its unique survivability, mobility and fire power capabilities, the Altay-AHT Urban Operations Tank is differentiated from Altay MBT with its armor system, mission equipment and a suspension with torsion bars.

Key specifications of the Altay-AHT Urban Operation Tank designed by Otokar are:



- › Explosive Reactive Armor (ERA) and Bar Armor Systems are applied on the tank to enhance its survivability against guided and unguided ballistic missile attacks that pose great threats within 360-degrees for main battle tanks in hybrid and asymmetric combat conditions.
- › Situational awareness improved with the addition of Telescopic Elevated Observation System (EOS), YAMGÖZ system that enables 360-degrees awareness, and repositioning of remote control weapon stations (RCWS).
- › The tank is fitted with a Jammer against remote control IED attacks. The Gunshot Detection System can identify the direction of sniper threats, the Laser Warning System can identify the threats by laser guided anti-tank missiles, and laser range finders that measure distance. The direction of the identified threat can be automatically smoked using the Soft Kill (Smart Smoke Curtain) System. The EOS, RCWS and tank turret can be automatically directed to the threat depending on the user's preference.
- › The tank is fitted with a directional dozer blade that can be operated by the driver, and used for a variety of tasks such as preparing the defense lines, clearing the obstacles on the battlefield, and filling the tank trenches.

Altay MBT Counting Days toward Serial Production

The prototype of the Altay Main Battle Tank, Turkey's largest land systems platform, was also on display at the Otokar booth at IDEF 2017, and is counting the days until serial production. Designed and developed to cater to requirements and expectations of the Turkish Land Forces against present and future threats, Altay is the world's most modern main battle tank with its specifications. With Otokar as prime contractor, the Altay project was launched in 2009, and the main battle tank, with increased survivability, mobility and firing power, has delivered superior performance in challenging tests

conducted in all climatic and terrain conditions for the last two years. The "Qualification Tests" were conducted by the Undersecretariat of Defense Industry, and Land Forces Command on Altay and were completed in February 2017, achieving very high accuracy in firing tests carried out for diverse scenarios in all kinds of weather conditions and distances.

As the sole authorized company to receive the Call to Bid Document for 'Serial Production', also known as Phase II, for the main battle tank Altay to launch serial production, Otokar submitted its first bid on January 18, 2016, and its best and final offer (BAFO) on August 29, 2016. With all infrastructure requirements and line plans in

place to launch production with the signing of the Altay serial production contract, Otokar also obtained the 'Production Permit' from the Ministry of Defense. In addition to the production of 250 Altay tanks required by the Land Forces Command over the course of five years, Otokar has also made annual capacity plans taking into consideration the export potential, minesweeping, rescue, engineering tank and other derivative and complementary vehicle needs.

The Undersecretariat of Defense Industry's evaluation process regarding the bid for 'Serial Production' and 'Integrated Logistic Support' of 250 units of Altay is on-going.

MKEK – “Yavuz” Howitzer System Launched at IDEF

Mechanical and Chemical Industry Corporation (MKEK) unveiled the “Yavuz” 155mm Self – Propelled Howitzer Systems mounted over 6x6 vehicles at IDEF 2017 event with the participation of MKEK's General Manager Mr. Ahmet Taşkın and military and defense officials

The first test firing of the “Yavuz” were executed in Konya on April 18th, 2017. The system is capable of successfully hitting targets up to 40 kilometers and firing 4-6 times per minute with its capacity of 18 ammunitions. “Yavuz” howitzer is able to hit the same target with 3 different ammunitions with the help of its various elevation angles and propellant charge modules. The system is capable of firing with the

military units and battalions within the range of 18 to 40 kilometers through its long-range ammunition. As the deployed artillery unit is far away from the counter targets, the risk of counter fire from the enemy diminishes. Equipped with the semi-automatic, electrically driven bullet placement system which is controlled electronically, the Howitzer can fire all the 155 mm ammunitions in NATO standards through its weapon system. With the help of the “Yavuz” howitzer, 3 firing in 15 seconds (burst fires), 4-6 firing per minute (normal fire), and 2 firing per minute (continuous fires) can be accomplished.

The combat weight of vehicle reach up to 90 km maximum speed per hour. The vehicle utilized for the T-155 mm 52 caliber MKEK “Yavuz” howitzer system was developed completely as an armored system. The system gets ready to be armed in maximum of 1 minute and it takes a maximum of 2 minutes for the system to complete the firing and displace. The vehicle has dual cabinets with the capacity for 5 crews.



12.7 mm machine gun is utilized as a collateral weapon within the system. This System features Nuclear, Biological and Chemical (NBC) protection system, 7.62 x 51 mm (M80) ammunition and protection system against anti-personnel mines.



Katmerciler Debuted Novel Products

Katmerciler launched its armored ambulance and remote controlled weapon platform (UKAP) at IDEF'17 for the very first time and announced the project for the development of Turkey's first hybrid armored vehicle "Hızır" which will be conducted with the cooperation between Aselsan and Katmerciler

Drawing attention to the vehicles it exhibited at the International Defense Industry Fair IDEF' 17, Katmerciler introduced three new products throughout the event.

Launching its first vehicle which was developed at the R&D Center established through the company's own resources and that which was manufactured as an armored ambulance; Katmerciler which also unveiled its multi-purpose unmanned weapon system UKAP which is a remote-controlled weapon platform throughout the event. Moreover, Turkey's first hybrid armored vehicle to be developed through the cooperation between Aselsan and Katmerciler was announced to the public opinion by the company at the event.

Following the Anti-Riot vehicles (TOMA) it initiated to manufacture in 2010, Katmerciler enhanced its investments in the defense sector with the 4x4 tactical wheeled armored vehicles. The armored combat vehicle "Hızır" launched in 2016, first member of the Armored Personnel Carrier group KHAN and NEFER with its concealed armoring system were introduced to the participants at company's stand during the event. Throughout the event, Katmerciler stand was visited by numerous delegation and military officials Prime Minister Mr. Binali Yıldırım, Minister of the Interior Mr. Süleyman Soylu, Minister of Defense Mr. Fikri Işık being in the first place, local and foreign military delegations and representatives of the Internal Security Forces.

Prime Minister Mr. Binali Yıldırım and the accompanying delegation obtained comprehensive information on the vehicles, notably "Hızır" and armored ambulance from Mr. İsmail Katmerci - the President of Katmerciler and Mr. Furkan Katmerci-Deputy Chairman of Katmerciler.



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Katmerciler Stands out with Innovative Products

The armored ambulance which was announced to be on display at the IDEF by Katmerciler is the very first armored vehicle designed actually as an ambulance. This 4x4 armored ambulance was designed and equipped with the aim of transportation, first aid and patient transfer for hazardous area over Ford F550 vehicle chassis. With the assistance of its wide interior volume, the vehicle enables ambulatory treatment for the injured and the vehicle has the capacity for 8 persons composed of 5 patients, 2 healthcare personnel as well as a driver. This Armored Ambulance can be designed in required configurations and in accordance with various ballistic levels as well.

Turkey's first hybrid armored concept developed through the collaboration between Aselsan and Katmerciler was another innovation announced by the company and it was amongst the most discussed topics at the event. Within the scope of this project that bears great importance in respect of diminishment the external dependency of the Turkish defense industry, the electrical engine developed by Aselsan will be integrated to the off-the-shelf "Hızır" armored vehicle developed by Katmerciler.

Being its strongest combat vehicle in its own segment within the Turkish defense industry, "Hızır", with this innovative breakthrough, will also attain the title of being the first hybrid vehicle in the sector at



© Katmerciler

the same time. The hybrid armored vehicle concept launched with “Hızır” is also expected to become a groundbreaking innovation in armored vehicle development. The projects were concurrently exhibited at both companies’ booth area.

One of the novelties Katmerciler displayed at the fair was the Remote-Controlled Weapon Platform (UKAP). UKAP, all functions of which can be remotely controlled, was designed as a multifunctional vehicle with firing, surveillance as well as recovery operations.

UKAP is a tracked platform defined as a “genuine requirement for the engagement areas” capable of reaching 25 km speed per hour and uninterruptedly operating up to five hours. Delegations from land forces scrutinized and obtain information about the Weapon Platform. In the beginning of the design process, the vehicle was initially planned to be manufactured

as a firing platform and now Aselsan’s Remote Controlled Stabilized Weapon System is mounted over it.

Designed in a modular structure, UKAP can concurrently be used for reconnaissance and surveillance through thermal or sensor mobile cameras and for dispatching the ammunition of the military units. UKAP can also be utilized for recovery the injury troops and security forces at the caught in the crossfire and the vehicle is expected to become through an important solution for minimizing the casualties at the theatre.

Development studies for enabling UKAP platform to function as a task force at urbanized terrain and operational regions and for the platforms’ integrated operations continue. Within the scope of the development project, a different configuration of the platform is aimed to be used as a



Mr. Furkan Katmerci – Deputy Chairman of Katmerciler – Remote-Controlled Weapon Platform (UKAP)

mine clearance vehicle. According to the statements of company’s representatives, within the scope of the project under development, the configurations will be launched phase by phase.

Indigenous Rocket and Missile Center Showcased at IDEF

Roketsan, one of the worlds’ leading suppliers of rockets, missiles, and guided munitions, opened a stand for its visitors at the 13th International Defense Industry Fair (IDEF 2017), which was held in Istanbul between the 9th and 12th of May.

Following the opening the Prime Minister, the Minister of National Defense, the Deputy Minister of National Defense, the Deputy Chief of General Staff, the Commander of The Turkish Land

Forces, the Commander of The Turkish Air Force, the Commander of the Turkish Gendarmerie Forces, the Undersecretary for Defense Industries, and the Deputy General Manager of TAFF visited the stand. Here, they were given information about our products and details of projects on the agenda.

The KAAAN Missile, TRG-300 TIGER Missile, TRG-122 Missile, and Smart Micro Munitions MAM-C, which were being displayed for the first time, were the center of attention for visitors of IDEF 2017.

Roketsan’s stand continued to host senior civil and military representatives from across the world. Senior delegations at the level of Defense Ministers, Chiefs of Staff and Force Commanders from Azerbaijan, Bahrain, Bangladesh, Czechia, China, Ethiopia, Morocco, Gambia, South Korea, Italy, Qatar, Kazakhstan, Kyrgyzstan, Hungary, Saudi Arabia, and Vietnam were briefed about Roketsan’s products and projects.

Roketsan’s preferred products

in the global market, namely the 2.75” Laser Guided Missile “Cirit”, Medium and Long Range Anti-Tank Missile Systems UMTAS and OMTAS, Laser Guided Long Range Anti-Tank Missile System L-UMTAS, SOM (Stand-off-Missile) and JSF Compatible SOM-J Precision Guided Stand-Off Missiles, “Hisar” Air Defense Missiles, TEBER Laser Guidance Kit, fuses, and various ballistic protection systems, attracted the most serious attention from the visitors.



FIGES Unveiled High-Tech Products

FIGES, one of the crucial engineering companies having a depth of field in Turkey, introduced its high-tech products developed 100% domestically as a result of R&D studies and produced in its factory was launched in February, to local and foreign exhibitors for the first time at IDEF 2017 Fair. These high technology products are MAST, 3D Metal Sintering Systems, Bionic Hand and Impedance Tube.

The devices, known as three-dimensional printers and mainly processing parts made of plastic, plastic derivatives and organic materials, have become widely available all over the world. These new generation 3D printers, having also simple models that produce prototype parts, now exist in almost every home as a result of reduced costs.

3D Metal Sintering Systems having much more advanced technology than plastic printers are able to combine layer by layer all kinds of metal powders that can be sintered, especially titanium, gold, nickel super alloys, stainless steel, aluminum, tool steels through advanced laser features and sensitive optical subsystems, and are able to produce the functional parts with high precision, which are difficult or even impossible to produce with the usual production methods of geometry.

Thanks to their popularity and widespread use of these systems, the functional use of materials such as titanium, which are both difficult and costly to manufacture by conventional manufacturing methods and which are lighter and more durable, is expected to enhance in Satellites, Unmanned Aerial Vehicles and Fighter Aircraft platforms.

Figes can Produce Functional Parts for Air Platforms through 3D Metal Sintering Systems

FIGES, proceeding to serial production phase from the prototype phase, can produce any kind of 3D Metal Sintering System as per the customer's requirements. With this new generation Metal Sintering System that provides considerable flexibility in terms of time according to conventional production methods, a critical



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part which is produced in one week by mold method can be produced in in 5-6 hours by this system. The most prominent factors that stand out and that distinguishes the system from other 3D plastic printers is that it can also produce non-prototype functional parts, which can also be used functionally on aircrafts or other platforms.

The Metal Sintering Systems (Additive Manufacturing Systems), which were determined as a critical technology by TÜBİTAK in 2014 (FIGES was also supported by TÜBİTAK for the development

of this technology), initiated to be serially produced by FIGES in its factory that has been in operation in Ankara Organized Industrial Zone since February 2017. In 2017, the factory launched to produce with 3 devices in 2 different categories and in 2018 it will produce with 5 different devices in 3 different categories. The Additive Manufacturing Systems, fitted out laser systems that can only be produced by merely limited developed countries, will thus be indigenously designed and serially produced by Turkish engineers.



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FIGES 3D Metal Sintering System

Local Solution to Defense Industry with Telescopic Elevation Systems (MAST)

At the IDEF 2017 exhibition, FIGES also unveiled the Telescopic Elevation Systems (MAST) product family from 3 meters up to 15 meters in length and carrying capacities, which are made up of carbon fiber, aluminum and various composite

components in various categories. Two different configurations of Telescopic Elevation Systems (3 meters and 8 meters) developed by FİGES in a short period of 8 months were exhibited for the first time in the exhibition.

These systems, which can be integrated on all kinds of land maritime vehicles and fixed platforms, as well as antennas, sensors and radar systems, target acquisition devices, communication, reconnaissance and surveillance systems and weapon systems in defense industry, can also be designed for the needs of civil communication companies. The high-strength telescopic elevation systems expected to proceed to the mass production phase in near future from the prototype phase are designed to perform in the most severe and challenging environmental conditions in strong wind, very hot and cold climates while the systems are analyzed by computer simulations and tested as per the military standards.

The Telescopic Elevation Systems developed in a short period of 8 months with FİGES' 28 years of engineering experience are mostly used electro-mechanically. While the electronic control panel of this system is also developed by FİGES, the operator can easily issue the system



Telescopic Elevation Systems (MAST)

elevation and lowering commands via the panel. In addition, the height info can be transmitted digitally to the operator over the panel. The system having carbon fiber pipes made up of composite winding method is also protected by a patented locking system which is specially developed by FİGES. The 3-meter configuration weighing 80 kg operating at 10 degrees of inclination is able to carry 150 kg of payload while the 8-meter configuration with a weight of 120 kg can carry 200 kg of payload.

Aselsan REHIS group has placed many orders for the 8-meter configuration to be used in the Self-Propelled Air Defense Gun System (KORKUT) project, the mass production of which was recently started, while the Aselsan SST group has ordered the 3-meter configuration for use in the ADOP project. It was also noted that the negotiations for a significant amount of order regarding the 15-meter configuration were made with Aselsan MGEO group throughout the Fair.

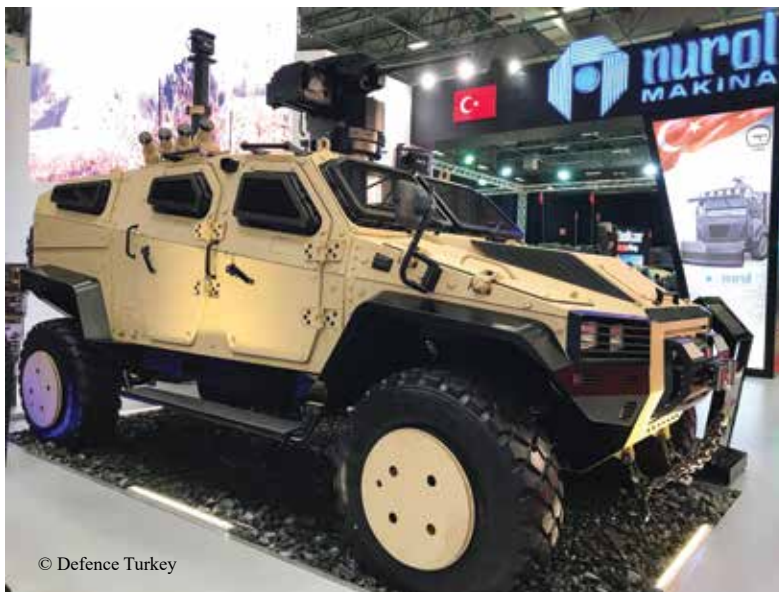
The tests of the Telescopic Elevation Systems are planned to be completed in June, but according to preliminary test results made with Aselsan, the systems achieved the required performance. Following the completion of the tests, the serial production is planned for the ordered systems relatively quickly.

It was also reported that the studies on the use of weapon turret systems integrated on Telescopic Elevation Systems in the future especially in the borderline are resuming.

The Telescopic Elevation System was also exhibited for the first time at the IDEF Fair on Nurol Makina's armored vehicle Ejder Yalçın.

Bionic Hand Provides Sense of Touch

The other innovative product introduced by FİGES throughout the Fair was Bionic Hand. Developed by FİGES engineers, the bionic hand in the intelligent prosthesis class is able to give the patient a feeling of touch with the sensation of temperature and pressure. The bionic hand, which can be removed when requested, can process the signals from the brain and perform commands easily. The product, the patient experiments of which were finalized, is aimed to be marketed as a product at the end of 2017. According to the information given by the company officials, the studies on bionic foot are aimed to be started at the next stage.



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FİGES MAST System was unveiled over the Nurol Makina's New Generation Light Armoured Vehicle at IDEF 17'

Footage Taken by Göktürk-1 Released to the Public

The high-resolution images received from Göktürk-1 were shared with the public for the first time during IDEF 2017. Göktürk-1 is Turkey's highest resolution Reconnaissance and Surveillance Satellite. It was procured by the Undersecretariat for Defense Industries to cater to the satellite image requirement of the Turkish Armed Forces for target intelligence. The satellite was successfully launched on December 05, 2016 with the Vega Launch Vehicle from the Kourou



© TAI

Launching Base in French Guyana in South America,

Having undergone testing and commissioning since its launch date up until today, the satellite has captured more than 1000 square and strip test images in a period of 6 months. Some of the images were used for image calibration, and some were used to serve the requirements of the Turkish Air Force Command.

The Göktürk-1 Satellite, the final acceptance of which will be realized in the 3rd quarter of 2017, is being operated from the ground station located at the Air Force Command's Ankara Ahlatlibel, Reconnaissance Satellite Battalion Command through a nationally developed crypto located on the satellite.



© TAI

Aselsan and MKEK Team up to Develop 40mm Smart Ammunition

Turkey's two major defense industry companies, Aselsan and MKEK, are bringing a new dimension to their cooperation in the field of ammunition which started with the development of 35 mm Airburst Ammunition in 2010. The two companies will team up to develop a 40mm Grenade Launcher Ammunition.

The collaboration agreement was signed between the parties at IDEF 2017 fair. Following the development studies which are aimed to be completed in a short span of time, it is aimed to launch firing demonstration with the prototype was revealed by the parties.

40 mm Grenade Launcher Ammunition

40mm Smart Ammunition will be used safely in all kinds of terrain conditions against threats, sight defilades and in trenches,



© MKEK

and against undercover units inside buildings and caves. This technology, which is possessed by only a few countries in the world, is based upon the principle that the ammunition is precisely programmed for the time it explodes in the air while launching. Thanks to the explosion

of the ammunition at the point of impact, the risk of collateral damage is minimized while the undercover threat is destroyed quickly. 40 mm Smart Ammunition is aimed to significantly enhance the effectiveness of the 40 mm grenade launchers that are in the inventory.

Primary Trainer Aircraft (BEU) Program Contract was Finalized

Primary Trainer Aircraft Program Contract negotiations are being finalized and the contract signature ceremony was held with the participation of executives from both parties at IDEF 2017



Within the context of this program, the T-41 and SF 260 Aircraft which are used for primary training in the Turkish Air Force inventory, will be replaced with 52 SMK Primary Trainer Aircraft.

The BEU Project aims to procure the most suitable air platform to train the pilot candidates in the combat squadrons of the Turkish Air Force. Currently, T-41 and SF 260 Aircraft are in the Turkish Air Force inventory and they are used by student/graduate pilots for primary training.

After the tender process, upon the result of the evaluations, the Defense Industry Executive Committee selected the contractor for the Primary Trainer Aircraft (BEU) Program and has authorized SSM launched contract negotiations with Pakistan Aeronautical Complex (PAC) in August 2016.

SMK's General Characteristics

- › A propeller driven single-engine aircraft
- › Center-mounted (cyclic) stick
- › Identifying Friend or Foe (IFF)-Transponder, Global Positioning System (GPS) and ease of navigation
- › UHF/VHF radio system
- › Basic aerobatic maneuvers can be performed
- › Take-off and landing distances, stall and approach speeds are low, side-wind speeds are high
- › The pilots have good all-around view

Procurement of the SMK aircraft will provide the opportunity to complete more efficient and effective flight training.

With this project, Turkey will be the first NATO country to operate the SMK in its Airforce's inventory. Considering the heritage of good relationships between the two countries, this project will foster this relationship and take it to new heights in the future.

Pakistan to Procure 4 "Ada" Class MILGEM Corvettes

Signatures for the delivery of 4 Ada Class MILGEMs to Pakistan Naval Forces were provided by STM and DGMP on 10 May 2017 at the IDEF Fair with the participation of National Defense Minister Mr. Fikri Işık, Undersecretary for Defense Industries Prof. İsmail Demir and Pakistan Defense and Production Minister Mr. Tanvir Husayin

Having previously signed the Fleet Tanker and Agosta Class Submarine Modernization Projects, STM will realize the biggest export activities in the history of the Turkish Defense Industry with this 3rd Project in Pakistan, namely the Pakistan MILGEM Project.

Within the framework of the collaboration established under the leadership of the Undersecretariat for Defense Industries, STM signed a Letter of Intent at the IDEF 2017 Fair with Karachi Shipyard (KS & EW) in order to work together on the Fleet Tanker Project. It is planned that 4 "Ada" class MILGEMs will be manufactured at Karachi Shipyard in order to be delivered to the Pakistan Navy.

It is planned that the definitive agreement will be signed on 30 June 2017 in Pakistan for the MILGEM Project, undoubtedly a project that will be the biggest Turkish defense industry export success to date.



Wired Multi-Rotor UAV System Integrated on Nurol Makina's Armored Vehicles

The Wired Multi-Rotor Unmanned Aerial Vehicle System, which has been developed together by Aselsan, Nurol Makina, Bites, Altınay and Lapis for monitoring and providing security to fixed facilities, critical terrain on border and coastal lines, mobile units at the terrain and base areas through Unmanned Aerial Vehicles, was successfully integrated on Nurol Makina's Ejder "Kunter" Armored Vehicles.

By taking the power from the Armored Vehicle and communicating with the ground control station via cable, the Wired Multi-Rotor Unmanned Aerial Vehicle System is able to convey real-time peripheral vision to the user's goggles according to the head movements of the user wearing augmented reality glasses from a maximum distance of 100 meter from the vehicle.



The system, which was developed for internal and border security and is also very robust against jammers due to the wired

communication, was exhibited for the first time on the armored tactical vehicle at Nurol Makina's stand at the IDEF 2017 exhibition.

Nurol Makina and ATEL Technology Signed an R&D and Integration Collaboration Agreement at IDEF

Nurol Makina and ATEL have agreed to team up to develop new systems and technologies in order to create a national synergy by combining their expertise and

know-how, integrating new systems and developed technologies into existing Armored Vehicles and RF Jammer products.

With the agreement signed at

the IDEF Fair, Nurol Makina and ATEL will collaborate to introduce these developed technologies and integrated systems at home and to markets abroad.

Navantia and AYESAŞ Join Forces at IDEF

AYESAŞ, a distinguished and pioneer critical systems supplier for various international platforms of the Turkish Defense Industry, and Navantia, the leading naval platform and systems company of the Spanish Defense Industry, have decided to join their forces in the field of Integrated Platform Control and Monitoring System

(IPMS) for submarine and surface ship platforms and signed a memorandum of understanding.

Having signed a contract for nationalization of IPMS which is to be developed by Navantia within the scope of the Landing Helicopter Dock (LHD) Project for the Turkish Navy, AYESAŞ and Navantia aim to further extend this collaboration for

the Turkish Navy's other platforms and export projects.

Within the scope of this cooperation with Navantia, AYESAŞ will develop the system and expand the application areas by utilizing existing system design, software development, hardware design, production and life cycle management capabilities.

Nurol BAE Systems Partners with German Company AES to Develop Motor Control System

The contract was signed by Nurol BAE Systems Air Systems Inc. (BNA) for the AES “Electronic Motor Control System Development Project” on the 10th of May at IDEF’ 17

The Defense and Aerospace industry is a sector where the most advanced technologies are used, high investment is required and some very competitive elements play a role in the developmental level of the countries in the world. Developing a national industry in these fields is emerging as a national necessity for Turkey, and it is within its national goals to catch up the level reached by developed countries and to become a world-renowned competitive power. In this challenging process, Turkish government, research institutions, universities and industry organizations are working hard to continuously develop its technological infrastructure and compete in the global environment.

Nurol Holding closely monitors developing technologies, makes the necessary investments and aims to constantly develop in order to not be indifferent to this national struggle. Nurol-BAE Systems Air Systems Inc. [BNA] was established to provide the most effective contribution to Turkey’s past 80-year aviation passion and toward future goals, besides its initiatives such as FNSS, Nurol Makina and Nurol Technology.

The successes achieved with FNSS, the collaboration culture and trust created, encouraged them to invest in new generation aviation systems technologies, resulting in its joint venture with Nurol-BAE Systems.

BNA General Manager Mr. Eray Gökalp shared insight on this topic saying that “BNA was established with the aim of adding critical technologies to our country’s capabilities that has not been initiated yet and which are subject to external dependency



and becoming a company that has reached a point of being a globally competitive power and can export the products it develops. As it is known, BNA’s shareholder BAE Systems is among the top three companies in the world defense industry and is open to cooperation with their own technological infrastructure within our objectives. Nurol Holding’s proven strong infrastructure, with its experience and strategic growth targets, will lead to becoming a global player in the aviation systems field when BAE Systems combines worldwide brand identity and technological power.

BNA aims to develop products that are strategically high in added value, innovative and competitive, and to provide engineering support in aircraft design programs. This process will begin with the identification of the right technologies to invest in and the establishment of a robust engineering and research infrastructure accordingly. Our targeted priority technologies are; Flight Control, Engine Control, Fuel and Hydraulic Systems, as

well as Low Observability, Training, Simulation and Virtual Reality.”

At IDEF’17, the 13th International Defense Industry Fair, on 10 May, AES CEO’s Mr. Bernard Jurczynski stated in a meeting at the event, “We are honored to create a cooperation with BNA. Today, we are honored to announce the signing ceremony of the “Multi-Purpose Gas Turbine Engine Control System Development Project” between BNA and AES companies as an example of the strategic goals I have just mentioned and the first fruits of our investments. AES is a joint venture company established between MTU one of largest engine manufacturers in Germany and SAFRAN, a leading French company in the fields of aviation, defense and security. AES has opted for BNA in the current competitive environment for the development and production of the Engine Control System, which is at the top of the technology level and considered to be the engine’s brain. For BNA Company, this agreement also carries an important export characteristic for our country’s industry.”

Nurol Makina and NANOBİZ Signed an Agreement on the Technology Acquisition Program for the Development of BIOSENS

Within the scope of the Security General Directorate Armored Tactical Vehicle-1 Agreement Technology Acquisition Program, signed on 23 March 2016 between the Undersecretariat for defense Industries and Nurol Makina, an Agreement on the Technology Acquisition Program for the Development of Biological Agent Detection and Identification Systems (BIOSENS) was signed between Nurol Makina and NANOBİZ.

Within the scope of the Technology Acquisition program, the following biological detection systems (BIOSENS), which can be used for the detection and identification of biological agents, will be developed:

1. Polyclonal antibodies for Biological Agents
2. Disposable quick test rods for the detection of Biological Agents
3. Hybrid and Portable Biological Agents Detection and Identification System that can complete immunoassay and nucleic acid based analysis

The detection and identification systems of Biological Agents, one of the key factors in the CBRN Project, will be gained with local resources as well as the labor force, infrastructure and accumulation of knowledge



will be acquired as a result of this program. The program is expected to be completed within 33 months

and will be realized by SMEs joint efforts under the responsibility of the contractor.

TEI and General Directorate of Military Factories Signed Collaboration Protocol for Turboshaft Engine Development Project

On the first day of IDEF'17, Deputy Undersecretary of the Ministry of National Defense Mr. Yunus Emre Karaosmanoğlu and General Manager of TEI Prof. Mahmut Faruk Akşit signed a collaboration protocol on May 10, 2017 for the engine test, module test, component test and auxiliary systems design, production and installation of the systems produced

at TEI facilities within the scope of Turboshaft Engine Development Project.

Within the scope of the protocol, the design, production and installation of the core engine test cell as well as the fuel and lubrication systems of this test cell regarding the Turboshaft Engine Development Project will be realized at EI facilities.

With the Turboshaft Engine Development Project, the signature ceremony of which was realized on February 7, 2017, the gas turbine engine design, development and test infrastructures will be established in Turkey and a certified and indigenous 1400 shp powered turboshaft engine to power-up the Indigenous Helicopter will be developed by TEI as well.

Gentex-Norbo Joint Venture Company Prepping to Manufacture Helmets of the Future for Turkey

With the signature ceremony of Gentex – Norbo Protection Technologies, Inc. which was established as a joint venture by the Gentex Corp. and Norbo Company in April will be starting production in Ankara in August; Fotoniks and Gentex signed the joint development project aiming to put forth the helmet system of the future at the IDEF Fair

General Manager of Fotoniks Mr. Cem Yazicioğlu made a statement to our magazine following the signature ceremony stating that the Gentex-Norbo Joint Venture Company established a facility with an area of over 3600 square-meters at the Başkent Organized Industrial Zone in Ankara and will be starting its production activities by the end of August and continued: “Specific types of helmets will be manufactured in Turkey and initially the helmets for the troops of the land forces will be produced. Gradually we will be stepping into the production of the helmets for the pilot of the Air Forces. As you know, Gentex Company is one of the greatest Military Helmets producers in the world and 99% of the helmets utilized by the pilots in helicopters and aircrafts in Turkey are procured again by the Gentex Company. Incorporation of this Joint Venture Company, maintenance to the existing helmet systems will be provided while the helmet systems requested by the Turkish Armed Forces will be manufactured in Turkey. As the Gentex-Norbo Joint Venture, we will be providing cost-efficient and high-tech products with high added value.”

During the recent period, especially considering the cross border operation, Gentex Company came up to the agenda with the helmet systems that saved the lives of the Turkish soldiers. Over approximately 20,000 helmets from the Gentex Company are being actively used by the Turkish troops in Turkey.

Signing the agreement on behalf of the Gentex Company, Mr. Richard Dellar stated they were pleased to sign these two agreements at the IDEF and added: “Today, with this very first agreement signed by the Gentex and Fotoniks companies,



we have signed an agreement that enables us to conduct joint R&D studies and we hope that we will be revealing crucial capabilities. Within the scope of the second agreement we signed today, we aim to increase the number of the helmets utilized and manufacture the helmets with superior technology in Turkey over the joint-venture production facility in Ankara, in addition to enable maintenance to the 20,000 helmets that are already being service. We are happy to enable the employment opportunities with the launch of this facility as well”. Mr. Richard Dellar also stated that they did not consider Turkey merely as a single market; with the production activities which will take place in this facility they were intending to conduct export activities to other countries over Turkey.

Gentex and Fotoniks to Conduct Joint Development Activities for the Helmet of the Future

The General Manager of Fotoniks Mr. Cem Yazicioğlu mentioned that as a military electro-optics company, Fotoniks has been working to build the helmet systems of the future

and continued: “As Fotoniks, we are striving the helmet systems of the future. Today we agreed on the joint development in which the Ballistic Protection system will be provided by Gentex Company and its integration with the electro-optical sensors and network based connection system architecture will be assumed by Fotoniks Company. We are living in the knowledge era and we are eager to gain the outstanding technologies that will convey this information to the battlefield. In order to achieve this, we aim to minimize the interfaces between the troops and the systems they utilize to the simplest level and create a system aligning with the ergonomics of the human beings without requiring many cables and equipment. Here, we do not aim only to reflect the night vision or the thermal camera to the soldiers’ eyes. On the contrary, we are willing to reveal unmatched helmet system of the 21st century that features integration with the GPS, direction finder, displaying GPS position depending on the units of the friend-or-foe, receiving messages similar with SMS from software based radios, such as Google Glass.”

CTech Exhibited its Innovative Products

Founded in 2005 with the aim of developing indigenous technologies in the fields of defense, security, telecommunication, aerospace in Turkey and to meet the requirements of secure communication, CTech has become one of the crucial companies with its depth of field in the Turkish Defense Industry with its R&D investments, engineering and design capabilities. Conducting its activities at Teknopark İstanbul with more than 100 engineers and staff, CTech unveiled its novel military products to participants during IDEF 2017 exhibition.

CTech introduced its “Airborne Satellite Terminal” system for the first time at the fair. This system was manufactured for use in all military and civil air vehicles used at both the national and international level, comprising Unmanned Aerial Vehicles (UAVs). In addition, CTech also unveiled Beyond Line of Sight (BLOS) Satellite Communication Terminal and Line of Sight (LOS) Satellite Communication Terminal at its stand.

Having informed Defence Turkey magazine about the products introduced during the Fair, CTech Product & Project Manager Mr. Derya Gürpınar said that CTech, as a subcontractor, assumed significant responsibility in the provision of jamming-resistant satellite terminals with electronic protection in the satellite system modernization programs being carried out under the coordination of Undersecretariat for Defense Industries and the main contractorship of Aselsan within the scope of the Turkish Armed Forces’ requirements, and continued: “This system was developed between 2006-2011 through the R&D studies conducted within the scope of AYSEK project. The product prototypes were delivered to the Turkish Armed Forces in 2011. One more program has just been initiated upon the system proving itself. There are various types of terminals in this system. There are also two types of modems in these terminals. The first one is the standard satellite modem and the other is the modem with an enhanced security level. The secure communication modem will



Mr. Derya Gürpınar –Product & Project Manager of Ctech

be procured within the scope of the program. There will be a significant accumulation of knowledge attained from the AYSEK program. This model is impressively robust to all sorts of jamming and able to work effectively under harsh weather conditions. Secure communication is guaranteed to the users from 20 KBs to higher data rates. A rapid and secure modem will be delivered to our customers. We are also demonstrating single-channel and multi-channel modems at IDEF 2017.



UAV SATCOM Terminal

These modems are the achievement of the Turkish engineers from their power supplies up to their boxes. Our modems are in-service and our staff are currently testing these modems at our premises.”

Modems to be Used by the TAF in 2018

Mr. Gürpınar discussed the terminals designed and produced by Turkish engineers, and stated that all mechanical boxes and electronic card designs of the terminals were developed by Turkish engineers and that this was a significant

achievement for them.

In addition, Mr. Gürpınar stated that secure communication is one of the priorities of the world’s armies and said that these systems could be sold abroad along with these systems that are launched to be used by the Turkish Armed Forces. “We hosted the Commander of the Azerbaijani Naval Forces throughout the exhibition and he elaborated on this system in our stand. Delegations from other sister countries were also interested in this product. Secure communication attracts the attention of all countries. We also consider that this product can be a striking export product”, added Mr. Gürpınar.

Mr. Gürpınar also shared the latest developments regarding the SATCOM Satellite Terminal Design and Development Project and said that TAI made procurement from abroad for the SATCOM satellite communication terminal in the Anka-S Project. “Based on our skill and knowledge in this field, they commissioned us to build a unique satellite communication terminal. Within the program which initiated in December 2014, we completed the design and production phase of our modem. We also procured an antenna in order to test the satellite communication terminal. We are currently maintaining terminal tests on this antenna. On the other hand, we launched our studies to localize the antenna. In 2017, we will have developed and produced a unique antenna with the skills of the Turkish Engineers”, said Mr. Gürpınar.



BITES to Develop User Simulator System for Nurol Makina's Ejder TOMA

With the agreement signed between BITES and Nurol Makina on the 4th day of IDEF, the User Simulator Systems for Ejder Anti-Riot Vehicles (TOMA) of Nurol Makina to be exported will be developed by BITES. The agreement between the parties was signed by Nurol Makina Executive Vice President Dr. Anil Karel and BITES CEO Mr. Uğur Coşkun.

In his speech made after the award of the agreement, BITES CEO Mr. Uğur Coşkun said: "BITES has been working on simulation and training technologies for 13 years and we are experiencing our maturity process in our studies in this field. It will be our priority that the simulators to be produced under this program are real-like platforms. We evaluated that these simulators will provide an additional benefit for Nurol Makina's sales both at home and abroad. I would also like to thank the Nurol Makina executives that prefer and rely on us for this program.

Stating that as a main contractor



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platform manufacturer, Nurol Makina is aware of the requirement for these simulators, Nurol Makina Executive Vice President Dr. Anil Karel said: "We are aware of the long-felt need for this simulator, the users are also aware that they need these simulators, within this context we have been in discussion with BITES for a long time. We did some preliminary feasibility studies

and during these studies we had the opportunity to experience BITES's competence in this area. We signed a business partnership agreement today to make a product for the end users. We consider that this agreement will also provide important contributions to the end users. Thanks once again to those for their efforts and contributions."



Leonardo “We have What Turkey Needs” with the C-27J Spartan

“Win-Win Partnerships Built on Trust”

Leonardo’s Mr. Fabio Cortese Aircraft Division Marketing & Sales Head of Turkey Sales, Mr. Italo Rossini Aircraft Division Marketing & Sales Regional Manager Middle East and North Africa and Mr. David Gourlay, Miysis DIRCM Campaign Manager Leonardo Airborne & Space Systems division met with Defence Turkey Magazine at the IDEF 2017 Exhibition to discuss; Leonardo’s long tradition of partnership with Turkey, the participation of the C-27J “Spartan” aircraft in the tender for the procurement of a tactical transport aircraft, and insight into Leonardo’s Directed Infrared Countermeasure System.

An impressive Longstanding History of Success in Turkey over the Years Continues as Leonardo Competes in the Tender Process with the C-27J “Spartan”

Mr. Cortese shared “We’ve had a good program and partnership for many years, focusing on the aeronotic, even with the procurement of the SX260, back in 1990. We have the contract for the ATR-72-600 for the Turkish Navy, and we have already provided 2 aircraft and will provide the others in the next years. Currently there is a tender for the procurement of a tactical transport aircraft where we will participate with our C-27J aircraft. He continued to elaborate saying that “We as Leonardo aircraft are fully engaged in the recent bid issued by SSM,

regarding the supply of 9 transport aircraft 6 for the landforces and 3 for the police. We understood also that also following this bid there is a chance that the number of aircraft would be increased, so we are very much interested and we are proposing our best product which is the C-27J that fully fullfills all the turkish requirements. The aircraft is a military transport aircraft. I say military because I want to stress the fact that it is not only an aircraft designed for military specifications, but also performance of this plane can be considered military because it can operate in the real military environment. It’s a proven combat aircraft, it has been operated in different areas in the world and hostile environments and it is possible thanks to its characteristics. Characteristics such as the ability to take off and land on a short and unprepared runways, without ground support equipment because the aircraft is autonomous, it is equipped with an Auxillary Power Unit. The APU can be used in the case of emergency that can happen in the military environment, it can be used also in-flight to generate electrical power. The aircraft has very powerful Rolls-Royce engines which allow the engine to climb away from the ground in a very short period of time. It needs to be able to avoid the ground quickly. it can climb at a rate of 2500 feet per minute or it can descend quickly at a rate of 4000 feet per minute. It is also important to note that the aircraft is fully compatible with the bigger transport aircraft. I

mention this because the cooperation for example in NATO areas together with other countries, you have the big transport aircraft arriving to what is called the main operating base and then from the main operating base the smaller tacticle aircraft which can move very easily and reach very remote locations which are called the forward operating bases. This task is performed with the maximum efficiency by the C-27J.”

Capabilities of the C-27J Spartan Aircraft

The C-27J offers high operational effectiveness together with competitive costs, extreme flexibility, the best performance in its category in all conditions and unique interoperability with larger airlifters.

The Spartan is a twin-turboprop tactical airlifter with state of the art technologies in avionics, propulsion system and other on-board systems.

Thanks to its very versatile design, the C-27J is ideal for roles including troop and materials transport, medical evacuation, paratroop and materials airdrops, search and rescue (SAR), logistic supply, humanitarian support, firefighting and civil emergency operations support. Purpose-designed kits also allow VIP transport and other missions.

The C-27J has a large cargo box, capable of supporting almost 5 tons per square metre. The aircraft can carry pallets or platforms weighing up to 4,550-6,000 kilos, or 60 equipped soldiers, 46 fully equipped



MC-27J is the multi-mission variant of the C-27J Spartan

paratroops, 36 stretchers or other combinations up to 30,500 kilos maximum takeoff weight.

The aircraft can operate from airstrips under 500 meters.

The two AE2100-D2/D2A engines are rated at 4,650 SHP. To increase safety and reliability, the avionics architecture is fully redundant and guarantees excellent performance and low pilot workload in whatever environmental condition and all operational theatres. Optional systems include air-to-air refueling, self-protection and head-up displays.

C-27J “Spartan” Perform Various Missions with Multi-Role Capabilities

Mr. Fabio Cortese provided an overview regarding the multi-role capabilities saying “The C-27J has been specifically designed to be a military aircraft and the aircraft has been conceived since the beginning as a modular solution. There is a platform that can be equipped with different mission equipment to perform different missions. Starting from the simplest such as transport, troop transport, paratroop transport, medivac, to the more sophisticated versions that we have developed some versions with C3, ISR equipment, and also we have developed an armored version for special forces which is equipped with command control and very powerful gun which is unique in this field. There are several uses for this aircraft. We have the VIP version which is used to transport VIP on the field in locations where you cannot go with your beautiful business jet and you need to go with a strong aircraft like the

C-27J and you can modify in a very short time on the base, the aircraft can become a VIP version. We have a module that is roll on roll off.”

More than 80 Orders Placed for this Aircraft, all Over the World

The latest C-27J customer is Slovakia, which ordered two aircraft. Other customers are Australia, (10 aircraft), the United States (21, including 14 used by the Coast Guard and 7 for the Army Special Operations Command), Italy (12), Greece (8), Romania (7), Morocco (4), Mexico (4), Bulgaria (3), Lithuania (3), Peru (4), Chad (2) and an undisclosed sub-Saharan African country (2). Italy, Romania, and the United States also purchased C-27J aircrew training flight simulators from Leonardo’s Aircraft Division.

The feedback is good and appetite for this aircraft is increasing worldwide. Mr. Cortese provided a recap of their growing customer base, saying “We have more than 80 aircraft ordered, starting obviously with the Italian Airforce, then Greece, several European customers, Bulgaria, Romania, Lithuania, then we expanded to North Africa with Morocco, then South America with Mexico. We had a big order from Australia, the aircraft has been selected by the Royal Australian Airforce (which is continuously giving us a lot of appreciation of the aircraft and good feedback) and it has been selected originally for the joint cargo aircraft in the US and now this same aircraft has been transferred to the US Coast guard.

Cooperation with Local Turkish Partners for the Development of

Critical technologies to Meet Local Specific Requirements is Key Fact

With a win-win approach to partnership, Mr. Cortese commented on Leonardo’s strategy related to technology transfer “As Leonardo as a company we have a long tradition of cooperation, such as the famous programs as T129 “Atak” Helicopter and “Göktürk” Satellite, and in the case of this bid we are talking now with all of the main partners in Turkey in order to identify the collaboration which gives the best technological transfer and obviously the economical return.

We have a product that is the base and on this base we can develop together the real needs for the country. If there are specific requirements we find out the way to have a local partner helping us in developing the local specific requirements.”

Participation of Local Content – Leonardo’s Approach for Turkish Partners

The offset rate obligation is very important for Turkey. SSM has strategic priorities to achieve the sustainability of the defense industry, achieving maturity in program management and developing technological competence. The Offset ratio now is at 70%. Mr. Cortese discussed what the company desires in terms of partnership approach in Turkey for the C-27J Spartan in this respect “Obviously, we know this is a demanding requirement for Turkey. We want to offer something that is not just production of simple parts, but as I said we want to involve local partners in developing some new configurations, new capability for the platform and for this reason we are trying to expand our discussion not only to the well known main counterparts in Turkey but we also want to involve SMEs

Leonardo Offers the Direct Infrared Countermeasure System to Intercept the MANPADS Threats

Following the candid and very informative discussions with Mr. Cortese, the Miysis DIRCM (Directed Infrared Countermeasure) System was and discussed in detail. Mr. David Gourlay – Miysis DIRCM

Campaign Manager Airborne & Space Systems provided insightful facts about the Leonardo DIRCM's unique capabilities.

Mr. Gourlay said "The Mysis DIRCM (Directed Infrared Countermeasure) System provides dependable, persistent protection from IR-guided missiles, including advanced, all-aspect Man Portable Air Defence Systems (MANPADS) missiles. This is to protect aircraft against MANPADS, a very prolific threat at the moment, very real to Turkey being so close to the action, so this is on your mind at the moment from a governmental view, not only the military aircraft but also important aircraft for government officials as well. It is important to note about the Leonardo DIRCM is the experience and knowledge which has gone into the system to make it capable of defeating the most advanced threats, but also it's the smallest, so if you buy this system you can fit it to a small helicopter which may be on a very important mission, CSAR (Combat Search and Rescue) mission or a very crucial military mission. It weighs 15 kg. The overall system is the smallest and lightest DIRCM available but there is no compromise on performance. It's the highest performing DIRCM system.

When the missile warning system thinks a MANPADS is coming, it tells the DIRCM to point to the right direction and will track the MANPADS and send a jamming code by using a laser (tracker system and laser system) and it confuses it and physically destroys the MANPAD and causes it to crash. In terms of our capability, were not talking about just making the missile miss, we're talking about making the missile crash, because our threat, our enemy, particularly for a high importance aircraft which they plan an attack against, it fires several, so in our technology at Leonardo we have made this very small, the latest technology. The older American systems that we made a pointer tracker for they're a bit bigger, a bit slower. This is exceptionally fast. It's all about speed and power. It can track multiple threats simultaneously."

World Leading DIRCM

Mr. Gourlay noted that the Leonardo DIRCM is a UK product,

saying "We do not use a license for anyone, it is designed and manufactured in the UK. It's a Leonardo product made designed in Edinburgh, UK. The only government who decides on export is the UK government. They're very supportive. It's built in Edinburgh because we have built 2,300 pointer trackers for Northrop Grumman in the past and we are still building. We build 50 lasers a month in Edinburgh for the F16, F18, F35 for the target pods. We know how to build pointed trackers, we're world leading, and world leading lasers, so put the two together and you have a world leading DIRCM."

Discussions on the DIRCM Device with Turkey

Mr. Gourlay stated that Turkey has had discussions with Leonardo regarding the DIRCM, stating "Yes, very much. Turkey as I said is closer than many to the threat. They also have a very capable Armed Forces and they understand the threat. I think they're very interested. This can be used on any platform or any aircraft for governments only. It is sold only for governmental use. The system is now in production for our launch customer which is a NATO customer. It would be nice to have another NATO customer. It is far superior protection than flare systems which are undoubtedly cheaper, but if you need to protect your platform against the biggest threats. It's completely autonomous. The best thing that a pilot can do is nothing (it's very difficult for me to say because I used to fly in the Royal Airforce) let this system do the job, the pilot needs to fly the aircraft and know that the system is working. The flare systems will not provide the required protection against the



Mysis DIRCM (Directed Infrared Countermeasure) System was first time displayed in Leonardo Booth at IDEF 2017

MANPADS that we've all seen in Syria, they're advanced threats. Range is not a problem, it will destroy the target as soon as it is identified. We recommend at least 2 heads, if you have an important enough aircraft or an important enough mission you want to make sure you are covered all around. This system can be used with UAVs – any airborne platform – if the customer decides it is necessary to have the top best level protection against MANPADS, this can be integrated. When you start to move towards unmanned platforms, space and weight is at a premium. You're coming to the smallest and lightest DIRCM in the world. There are other DIRCMs in the world, but this is the smallest, lightest, but importantly it has the energy to kill the most advanced MANPADS, you need the power for the laser. As I've mentioned, we have sold this to a NATO customer. We are expecting to sell next year to non NATO countries. The UK government and the American government made a big investment in DIRCM in about 2004-2005 when they fitted many aircraft with this particularly for Afghanistan, and I see Turkey as the next country to realize that DIRCM as a standard is the way forward. The sentiment yesterday from the UK government sends a good signal about advanced military technology from the UK going to Turkey.

With everyone in full agreement that the most important asset is the crew, not just the aircraft, the level of protection that this DIRCM provides was reinforced with comments from Mr. Cortese as he stated "The DIRCM is the best way to protect assets, the crew of the aircraft. It's a very different level of protection."

Looking forward toward new partnerships and new business, Mr. Cortese concluded by stating "We are open to collaborate. We expect to have exportability now. We have been encouraged by the UK MOD External Letter to your country, for the furthering cooperation, training, education."

Mr. Gourlay underlined the suitability of the DIRCM product by saying "We have a DIRCM system which is very competitive, but crucially for Turkey with such a wide requirement, it's suitable for all of the platforms from small to large." ■

Big Opportunity for Turkish Industry with MEADS

MEADS is the only full development program executed by a NATO agency, and the only program where the development started based on a harmonized set of requirements between Germany, Italy and the US

Mr. Jürgen Wlodarz, MEADS International, Member of the Board of Directors presented an overview of the MEADS system at IDEF 17. He discussed the Revolutionary Air and Missile Defense system, providing details of the system capabilities that address the evolving threats and challenges that the world faces today. In a candid and informative press conference, Mr. Wlodarz shared with the press the well-known concern that the world is more unsafe than it was in the past, saying that “We have a lot of proliferation of missiles. The threat is expanding to Europe and western Europe and we need to have modern systems to cope and counter against that threat especially in the ballistic missile area. Over a period of 10 years, and with development completed in 2014, on June 9, 2015 Germany announced that MEADS would be the foundation for its new Taktisches Luftverteidigungssystem (TLVS) for their future air and missile defense system. That system will be replaced, at a later time, the Patriot system that is currently in use in Germany and the SAMOC system.” The RFP was released in the first quarter of 2016 and includes integration of SAMOC and ground-launched IRIS-T SL missile as a secondary weapon.

“We are not alone with MEADS. We are offering an open system architecture, which other countries are free to join.” – German Defense Minister Ursula von der Leyen

Touching upon Germany’s decision with the system, Mr. Wlodarz stated “Meads provides next generation open architecture, very specifically for the German version of the MEADS system we will introduce additional deflectors



and sensors using the open architecture capability. When our Minister of Defense announced the decision to go forward with the MEADS based solution for the future air and missile defense system, they said we will be not alone and we are offering MEADS to partner nations especially NATO, Germany is offering cooperation to all NATO partners, with the program and missile and air defense activity. With MEADS, we have revolutionary air and missile design we call the 21st century air and missile defense system. We have 6 areas of key system requirements. Today we have 6 areas of key system capabilities and as a result of the development that we completed in 2014 we have successfully implemented all of these key system requirements.”

Big Opportunity for Turkey with MEADS

Mr. Wlodarz discussed the fact that there is a significant opportunity to leverage Turkish defense industry expertise to enrich MEADS solutions for Turkey with the use of open architecture for flexible integration of Turkish defense assets and capabilities. There are opportunities for the

Turkish industry to obtain a significant workshare in production of key elements. There is a heritage of cooperation and technology sharing that can be extended to Turkey and that MEADS provides military capabilities and partnership opportunities that competing systems cannot provide, cooperation and support with top international defense companies, such as the largest US defense company with operations in 70 countries and Europe’s largest missile house that supports 90 armed forces. Mr. Wlodarz stated “On the one hand, it is not completed and available as system as of today, but there is opportunity for partnership and local workshare and cooperation and on the other side there are 2 strong partners behind the program which are ready to start discussions and cooperation with Turkish Industry to supply the Turkish armed forces and the Turkish government with the system they need. As MEADS is not fully developed as of today and not fully qualified, there is also an opportunity for Turkish industry to be a partner for completing that development and so we leverage the Turkish industry in order to define and implement a Turkish solution of MEADS. That is one

of the specific things that we also experienced in Germany, Germany said no I don't want to introduce the standard MEADS configuration I want to enhance it by adding additional elements and that is one thing that can be done by Turkey, we can introduce existing missile systems or existing radars into that system and to set up really specific Turkish configurations which is tailored to the needs of the Turkish armed forces but also incorporates as much as possible Turkish industry."

Revolutionary Air and Missile Defense Capabilities

The capabilities of the MEADS solution were presented with detailed examples of how the system meets the challenging requirements not addressed in any single previous AMD system. Target Set addresses next-generation threats, tactical ballistic missiles/UAVs, cruise missiles and aircraft, both conventional/unconventional. Transportability & Mobility provides strategic and tactical airlift, continuous air and missile defense coverage for maneuver force and cross-country mobility. Mr. Wlodarz noted that "The German version is transportable with the A400M, and the Italian and US version was designed to be transportable with the C-130." Operating Concepts provide maneuver force protection, area defense, homeland defense and weighted asset protection. 360-Degree of Protection of the defended area - ABTs, TBMs. Interoperability of the system designed for coalition warfare, it is operational with a range of systems and is a dramatic improvement in combat effectiveness and situational awareness.

The Netted Distributed Architecture allows for Plug-and-fight capability via open architecture with non-proprietary software, providing a high level of operational flexibility. Mr. Wlodarz explained further saying "Netted Distributed means that you are not limited to the assets of your own battle element. If you have a specific target to engage, and the best engagement solution would

be to use a launcher or radar from a different battle element you can do that. You can use the whole set of assets which are active in the network regardless if it's your own radar or it's a radar of another battle element, you can use all of those assets to do engagement. That's what we demonstrated in the demo, showing for example if you have battle element 1 and you want to do an engagement and the best fire solution is to use the radar from battle element 2 you can combine new launchers with the radar from the other battle element and it gives you many more engagement opportunities, a lot of flexibility to the system and enhances the system capability." He added, regarding the Plug and Fight capability "You can easily integrate non-organic sensors or shooters. In the demo we integrated an Italian surveillance radar into the system and we were able to have live tracks from the Italian radar that was located on an Italian air force base near to Rome, we introduced it into the air picture of the MEADS system. We were able to integrate this radar that was not designed to be a part of the MEADS system and to use it."

Continuing, Mr. Wlodarz provided more details regarding the flexibility of the system "Specifically the operating concept which comes along with the open system architecture allows maneuvering force protection. MEADS is a really mobile system, you can protect troops on their move, and high rated asset protection, nevertheless it can be used in a classic homeland defense mode. We provide a full 360-degree coverage for the whole threat set. 2 radars, surveillance and fire control radar which allows autonomously. The system is interoperable with all necessary standards in the NATO environment. The open architecture, one of the unique and outstanding capabilities of the system allows the easy integration of additional radar sensors and missile deflectors to the system. The plug and fight network works like the concept of a plug and play usb interface at your home computer. You can use fiber optics



Mr. Jürgen Wlodarz, MEADS International,
Member of the Board of Directors

and radio connection for the plug and fight network. It is possible to integrate and add additional systems during the mission, during engagement, during operation to that network. You can add an additional element and can be used in that mission. If you remove the element the system does not need to be shut down, you can remove the element and you can continue your mission. It is very flexible in operations."

MEADS External Interfaces for Interoperability and the MEADS Plug-and-Fight Network

Successful systems interoperability was demonstrated with the NATO Air Command and Control System during JPOW13 and NATO systems in the 2014 System Demo. The traditional external interfaces are as follows: HEU/C2 Systems (EO Only), Ground-Based ADS, JTAGS/M3P, SR, TOC, MFCR, IRIS-T, Ground-Based ADS TOCs, JLENS and Naval ADS.

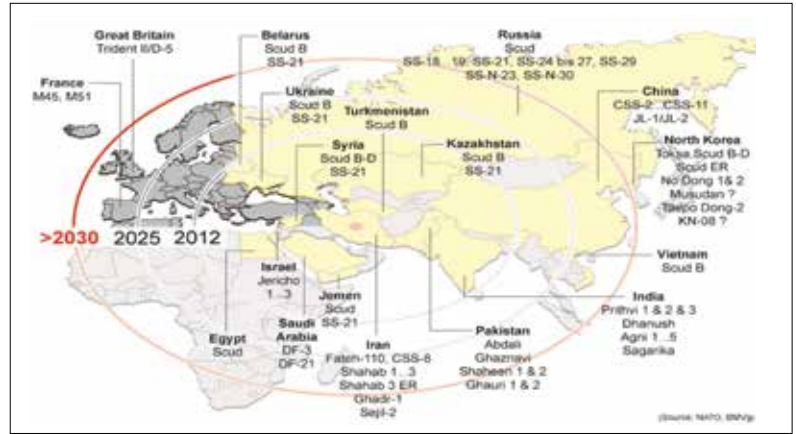
MEADS Launcher

The Launcher provides high firepower and mobility and complies with a 360-degree

launch capability with 8 ready-to-fire missiles per launcher. The system self-loads flatracks using a Palletized Handling System with partial missile reload capability.

MEADS Missile PAC-3 MSE

The hit-to-kill missile provides increased performance, greater altitude and range compared to the PAC-3. Threat-driven upgrades defeat the advancing threat set and leverages improved acquisition capability and detection range of MEADS radars. Unprecedented demonstrations of the over-the-shoulder launches of PAC-3 MSE were completed successfully at White Sands Missile Range in 2010, 2011, and 2012 and the



network, once in place all the other major systems are unmanned, fully remote controlled by the Battle Manager. All necessary actions and activities for engagement and force

decision was not to use one radar as a compromise for surveillance and tracking and engagement, but to have the perfect radar for surveillance and the perfect radar for fire control, therefore we decided to have 2 radars. The fire control radar is an x-band radar which is the perfect bandwidth to have accurate tracking information, multifunction based array, can actively control the scanned array. 360-degree coverage by rotating 2 modes, 15 and 30 rounds per minute. In addition to the rotation we can do digital beam forming in order to allow during one rotation several scans of one track which increases track quality and is also one of the reasons why we can do with a rotating radar the control of the PAC-3 MSE even against TBMs. We can have the full 360-degree engagement capability. The IFF is part of the radar. A very specific thing with regard to the PAC-3 MSE is that the up and down link for the missile is conducted and performed by the radar.”



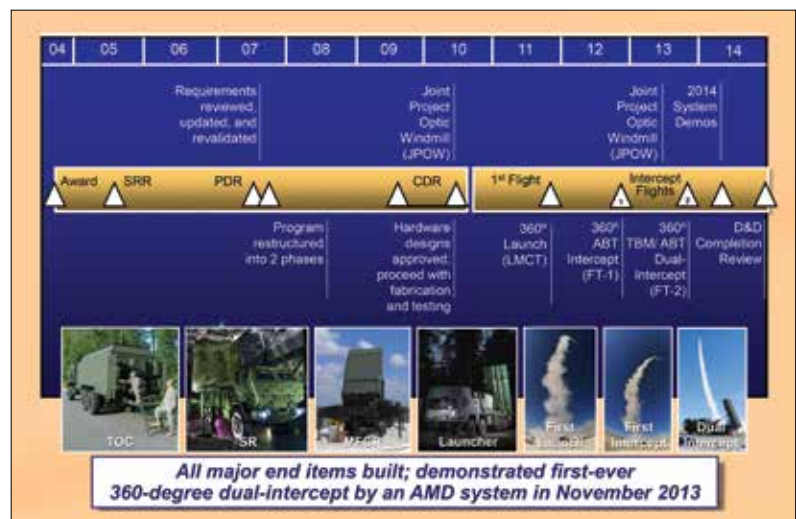
360-degree dual intercept was successfully demonstrated in November 2013.

operation are integrated so you can do all of the planning in the Battle Manager. At the very beginning when the system was designed the

MEADS Battle Manager

The network-centric open architecture allows for controlling node on network, Plug-and-Fight for sensors/shooters, integrated engagement capability and flexibility in force operations. The system enables enhanced maneuver force protection and it is interoperable with coalition, legacy, and future systems. In July 2014, a successful demonstration was made that seamlessly added and subtracted system elements under representative combat conditions.

Mr. Wlodarz elaborated saying that the system allows for “Full control of all the nodes of the



Development and Testing

Providing additional insight into the earlier years of the program, Mr. Wlodarz shared “The system is tested and proven, a 10-year program...design and development contract that started in 2004 and we completed that contract in December 2014. During that phase, we did all the design activities, we built several items of hardware, we conducted several flight tests. The first flight test was in November 2011 and we called it launch and missile characterization tests at that time. Very early in the program we did a first firing of the PAC-3 MSE not guided but controlled to see that the missile as a system is able to launch a missile from the PAC-3 MSE launcher which was newly developed in the program. One year later in Nov 2012 we did the first real engagement flight test. At that time, the system was set up by radar, battle manager, multifunction fire control radar a battle manager and one launcher. We successfully engaged our target, we used a specific maneuver that we called firing over the shoulder to engage a target which was in the back of the launcher. Due to restrictions of the missile, the launch angle was 70 degrees, we demonstrated through all the flight tests that we are able to engage a target that comes from the back of the launcher. In spring 2013, we participated in the NATO exercise JPOW with that system. In November 2013 we did the last flight test that was a dual engagement flight test, and we used the full system configuration, the multifunction fire control radar, surveillance radars, the battle manager and two launchers and we engaged one ABT which was a QF4 and one TBM which was a Lance, and due to the fire doctrine for a TBM we fired 2 missiles against the TBM and one missile against the ABT. We have had a simultaneous engagement of 2 targets having 3 missiles in the air, controlling 3 missiles and successfully engaged both targets. In order to show the 360-degree capability the attack angle of the 2 targets are exactly from the opposite direction. At the end of the program in the summer



in 2014, we conducted a big system demo. We demonstrated all the architectural capabilities of the system, and then finally we completed the development and design contract at the end of 2014.”

NATO JPOW Exercise

Mr. Wlodarz shared details into the JPOW exercise, saying “It was something new at that time, to participate in a NATO exercise operation with a system which is under development. For the first time, soldiers operated MEADS in a tactical exercise, operators received a short training course before the event.” All tests for this exercise were conducted with a single German air defender operating the MEADS system. The MEADS successfully demonstrated Link 16 interoperability capabilities and the ability to rapidly resolve issues identified during JPOW event (within hours). The event identified and prioritized opportunities for enhanced MEADS performance opportunities. Mr. Wlodarz noted that the customer declared JPOW 2013 a complete success as all defined customer objectives were achieved.

System Demonstration

In order to provide a clear understanding, Mr. Wlodarz provided more details into the system demonstration that was conducted “Engagement on Remote means you can start

an engagement against a target which is not seen by the sensors, so you get target information via Link 16 and then you can start engagement. We demonstrated that we are able to receive target and track information from a Link 16 participant, in that case it was another Patriot system. The total set up of that system demo was to have 3 MEADS battle elements 2 patriot fire units and one Italian Frigate in the overall network and they worked inter-operably, operating jointly in different customer defined scenarios.”

Variable System Elements

System elements were seamlessly added and subtracted under representative combat conditions in July 2014 system demonstration: Pulse Doppler multifunction phased array, X-band, High reliability digital design, Active Electronically Scanned Array (AESA), 360-degree coverage, Digital beamforming, 0, 15, and 30 rpm rotation, IFF subsystem, Interceptor communication link, MEADS MFCR detected, tracked, and guided PAC-3 MSEs in successful dual intercept of ABT and TBM threats, MEADS MFCR detected, tracked, and guided PAC-3 MSEs in successful dual intercept of ABT and TBM threats, 360-degree coverage, Pulse Doppler radar, Active phased array antenna, Digital beamforming, IFF subsystem, Staring and 7.5 rpm rotation. There was a successful demonstration of dual-intercept



MEADS Multifunction Fire Control Radar

test at White Sands Missile Range against Lance missile and ABT targets.

Additionally, Mr. Wlodarz explained details regarding the MFCR Performance Demonstration, noting the features and capability of the radar: X-band MFCR Features, active phased array technology, the ability to transmit/receive components developed in Germany, precision tracking and wideband discrimination and classification capabilities, advanced Mode 5 Identification Friend or Foe, can also provide limited surveillance capabilities. These capabilities were tested in Italy and Germany with a track and cancellation of jamming signals, search, cue, and track in ground clutter and target classification using kinematic information.

Significantly Lower Operational Cost

One specific requirement for MEADS was to reduce the operational cost and to have as system design that uses significantly less personnel than existing systems. Mr. Wlodarz stated “Typically, in the overall cost of a system over the life cycle, 30% of the system are the acquisition costs and 70% of the system are the operational costs and sustainability. With MEADS, we are able to reduce the operational cost by half, due to the design,

specific logistic features we have, specific maintenance, concept, but mainly by the fact that we can operate the system with a much higher footprint with the existing personnel. Especially for Germany it is very important as the Army is not that big and every mission that goes to a foreign country has to be approved by the parliament with a specific contingent number of personnel and troops and who they are allowed to send. It is always important to have less personnel as possible to operate that system. That was one of the drivers which finally lead to the decision to replace the aging patriot system in Germany by moving towards a completely new system design based on the MEADS development.”

The Negotiations are Proceeding with SSM

When asked to share details about discussions with Turkey regarding MEADS, Mr. Wlodarz responded “We offered the basic system configuration, which is the PAC-3 MSE as the main interceptor for TBMs, PAC-3 MSE is able to engage all kinds of targets. If you have an air breathing target at medium range for example, to engage you can use different methods. We offered to introduce existing missiles which are already in development or in service in Turkey into that system maybe as a secondary missile, to do it in a

similar way as Germany did. To add specific Turkish assets to set up Turkish system configuration. That is one aspect that could bring cooperation and workshare to Turkey and the other is to participate in the completion of the program. I think also Turkey has a higher echelon level command and control system which could be integrated in the same way into the MEADS configuration as Germany did.

We can introduce an existing missile that is 100% Turkish workshare. Same for the radar, if you want to have a second radar into the system configuration we can introduce and introduce into a system a Turkish radar. The open architecture enables each of the customers to set up their own system configuration using their own assets integrating their own vehicles, their own cryptos, their own communication systems, maybe higher echelon command and control systems but especially by plug and fight missiles, radars and sensors.”

There have been many cooperation opportunities at IDEF and prior. Mr. Wlodarz shared “We have had opportunities not only here but also with specific talks that we have already had. We see a huge cooperation potential with Turkish industry especially Aselsan and Roketsan and we have had several talks with them. In principle, we are open to discuss any field of cooperation. What I am seeing is a huge expertise also, not only the intent to cooperate but I have a clear feeling that there is a capability and the expertise to cooperate.”

Road Map for Further Development?

“Currently we are on the way to get the contract signed for the first introduction of the system into service in Germany. We have already added compared to the original system configuration additional assets, like additional sensors, radars, electro optical sensor, radar sensors, additional missile. That’s the first step on the roadmap compared to the

original system design which was required at the end of the 90's early 2000 when we started the development. We have currently no dedicated roadmap of what to add in the future. We know that the German Airforce will use the MEADS architecture as the future backbone for all air and missile and missile defense activities. The idea is to have that as the core system and then if you go maybe to upper tier activities or operations to use that architecture as the core to set up the specific systems to have the complete layout of defense systems."

Plans to Test MEADS Against other TBMs?

"It depends. The first program we will sign a contract for that is the (TLVS) in Germany, so we are currently in discussion with the German Airforce, so I can't say if there is a test planned because there the test plan is not agreed up until now. We will see at the end of the contract negotiations next year. I would say the middle of the next year, which is mainly driven by the fact that we will have an election in September of this year and if you want to sign a new contract according to the German budget law the budget needs to be approved and in the first year after elections it takes a while to get the budget approved, usually this is done in November the year before. We expect that the budget will be approved maybe February-March next year and then they can

start the formal process to get the parliamentary approval which is necessary in Germany for each big program and we expect to have the contract signed. Overall Germany is now slightly increasing their budget to come close to the 2% GDP figure. In the last year, they have increased their overall budget by 8%. The procurement in the German planning is secured the only thing is to finalize negotiation and to get the contracts signed and approved and that is mainly driven now by the fact that we have the elections in September. We expect the contract in 2018."

Next Generation Technology – Threats of the Future

"The system was designed to especially engage future next generation threat. So, if you are talking about maneuvering targets that is what the system is designed for. The missile is the most capable missile; the system was especially designed to cope with this next generation threat. Very low signature maneuvering long distances. As for any development, it was funded by the 3 nations, it was executed as a NATO program that was also a unique thing that MEADS was the only full development program executed by a NATO agency and the other unique thing was that it was the only program where the development started from the very beginning based on a harmonized set of requirements. We started with an international requirements

document signed by all 3 nations and therefore the system has been funded by the 3 nations so they have a certain say with regard to IP and so on but we have in principle we have no limitations, for sure we have to be compliant with export regulations and we have to ask the nations if they allow us to do business and to use the results of the program."

US and Italy have not yet Made Their Final Decisions

"In 2011 the 3 nations decided not to start a joint procurement. Now the situation is that the 3 nations are very different. Germany decided to use the MEADS development results to set up the future integrated air missile defense. Italy still has a need at the Airforce side for an air and missile defense system at the class of MEADS but has some budget constraints. Currently no budget allocated. The US decided to go towards a totally different way and a different concept of operation which at the end was not compliant with MEADS, and at the end will not be compliant with the closed patriot weapon system configuration, they want to break up the system and do it in the same as we do it with MEADS but with a different implementation concept which is IPCS and for that they are still looking at what elements of MEADS could be used in this new set up. Germany clearly decided when they started the process to start it from the beginning as a national program. To be open for cooperation during the course of the development or the later stage in production or in service. That is what minister von der Leyen said when she announced the decision to go for the MEADS based solution when she said we will not be alone we are open for cooperation with different partners and for me from industrial perspective and from the set of requirements which are existing Turkey is one of the perfect partners for that as there are not so many countries where the defense industry is developed in a way to be on the same level of partner as Turkey." ■



MEADS Executives; Mr. Jürgen Włodarz and Mr. Roland Kuntze met with Mrs. Ayşe Evers at IDEF 2017

Honeywell Aerospace's Strategy for Turkey – 'Strong Together'

Honeywell, one of the world's greatest Aerospace Industry companies, is getting ready to launch new strategies for potential new opportunities in addition to its existing collaborations in Turkey. Within this scope, during IDEF, Honeywell Aerospace Turkey Business Director Mr. Serdar Çetingül informed our magazine about their plans for the future, strategies and their ongoing collaborations



Beginning the interview by sharing with us that they accomplished a successful cooperation model with Turkey as part of the T129 'Atak' Helicopter program, Mr. Çetingül expressed that they were proud to completely fulfil the expectations users with the LHTEC CYS800-4A engine – a joint production of Rolls-Royce and Honeywell. "High altitude and high temperature are the most crucial factors challenging the engine. During the test campaign that we conducted last year in Pakistan the T129 'Atak' Helicopter proved itself by going through harsh circumstances, against high altitude and hot temperatures and displayed excellent performance. Surely, the splendid performance demonstrated by the LHTEC CTS800-4A engine was a great source of pride for us. Within the scope of the T129 'Atak' Helicopter procurement program, more than 20 helicopters were delivered to the procurement authority so far. The Land Forces Command staff is very pleased with both the helicopter and the performance displayed by the engine, and due to their satisfaction, negotiations with the Naval Forces Command and General Command of Gendarmerie are continuing for the procurement of these platforms and



Mr. Cem Akalın – Managing Editor of Defence Turkey Magazine met with Mr. Serdar Çetingül - Honeywell Aerospace Turkey Business Director

the Ministry of Interior Affairs. The official process for the ratification of the export licenses of the US Government for these engines to be procured in accordance with this contract have started. There seems to be no obstacles for the time being", said Mr. Çetingül.

Up to 10 Engines are Planned to be Procured as part of the T625 'Özgün' Multi-Role Helicopter Program Development Process

Underlining that they established a successful business model with TAI within the T625 'Özgün' Multi-Role Helicopter program, Mr. Çetingül added: "We are continuing the fruitful business model built with the Atak program also in our 'Özgün' Multi-Role Helicopter program. We signed a contract with TAI for the engines to be procured for the prototypes as part of the development stage of the helicopter. We made a contract covering the purchase of up to 10 engines for the development process. The delivery of 2 engines was accomplished last year and we will be delivering additional 4 engines this year. Everything is proceeding well within the scope of the program."

Stating that 'Özgün' Helicopter will be conducting its maiden flight in 2018, Mr. Çetingül added that witnessing the maiden flight of this helicopter, built from ground up, will make them proud. Mr. Çetingül mentioned that they presented a road map to the Undersecretariat for Defense Industries for the industrialization of the existing engine as part of the 'Özgün' program Mr. Çetingül added: "We shared the road map consisting of different phase with the procurement authorities. We are in close cooperation with

the Turkish Defense Industry companies regarding the production of these engines in Turkey. While we continue our negotiations with these companies, we also negotiate with the 2nd and 3rd Tiers that provide services and equipments to these companies. At this point, the costs must be competitive and affordable as well.

Additionally stating that they were working on various phases for rendering this engine non-ITAR Mr. Çetingül continued: "We are speaking of a long term industrialization plan at this stage. At the 1st phase, we are planning to launch a model of which we own the IP (intellectual property) rights fully, a model that is in alliance with the capabilities in Turkey, and for the second phase we aim to bring the companies that are our suppliers to Turkey, yet we do not have the IP rights of the systems to be procured. During this phase, we will bring our suppliers that manufacture the engine parts for us to Turkey and we will enable them to build collaborations with the compatible companies and assist them to set up a model. On the other hand, for this engine to be non-ITAR, some of its certain critical components should be producible in Turkey. In brief, we are discussing a long-term envisaged industrialization plan in Turkey."

Honeywell Aims to Increase its Strategic Partnerships in Turkey

Noting that they did not merely regard Turkey as a market to which they would conduct direct sales, Mr. Çetingül underlined that their ultimate goal was to grow in Turkey with the Turkish companies. Mr. Çetingül continued: "We are constantly chasing new cooperation opportunities. We are negotiating with Aselsan

over avionic systems, with TEI on engines and with AYESAŞ on other systems. We have been surveying the identification of long-term partners as we assess Turkey as a strategic partner. As Honeywell Aerospace, we have been accomplishing the landing gears manufactured by the great OEMs such as Boeing and Airbus. We will be manufacturing some of the lower segments of these landing gears in Turkey with Alp Aviation. We decided upon Alp Aviation after a lengthy research process. We decided to shift the production of highly complex 2 mechanical components that were produced in America to Turkey. Alp Aviation successfully manufactured its first articles and soon these products will be launched to mass production. We launched this export oriented cooperation with Alp Aviation without addressing any programs in Turkey. F-22 Fighter Jet is a platform which is not sold to any other countries out of America, these critical mechanical components will be utilized both in this platform and in the commercial and military aircrafts manufactured by Boeing and Airbus companies with the JSF program.”

Honeywell's Motto 'The Power of Connected'

Also noting that Honeywell Aerospace made a significant amount of investment in SATCOM technologies, Mr. Çetingül said: “We changed our motto to ‘The power of connected’. We plan to carrying all physical Honeywell solutions to the digital environment. The engines, APU systems or weather radar raw data collected via the Honeywell solutions afterwards this raw data is processed and can be transformed into essential data for the service supplier to reduce costs etc.

This cutting edge high technology called the Ka-Band enables downloading the data within broad band in high frequency and high data rate to the ground. Our portfolio is very wide and we have the chance to process the data of various systems and present a different service to the user. Nowadays, our users request us to not merely sell the APU system but they also they wish to purchase the service. At this point we have to underline this in particular; gas turbine tools require maintenance in certain periods depending on the dust in the air. Taking all these aforementioned



JetWave High-speed satellite communications hardware

points into consideration, one needs to distinguish the cost of the services provided to the user capable of conducting landing and take-off in clear conditions where the rate of dust in the air is low and the cost of the service provided to the user operating in a very dusty environment. SATCOM provides you such options. Therefore, you are capable to discuss these points with the user.”

Mr. Çetingül shared that these analyses conducted real-time brought many advantages to the user in managing of the life cycle cost of the aircraft and continued: “There are several methods for reducing the speed in course of the landing of the passenger aircrafts. You may conduct either reverse thrust or hand landing. Both methods have certain potential implications; you either consume more fuel or shorten the life of the landing gears. When you offer this essential information to the aircraft service suppliers you can tell them that whereas they could have conducted the landing by using the engine, the pilots preferred hard landing method and that choice brings you additional costs. Nobody has heard of this information yet and I would like to state that this information is very valuable for the clients. You provide instant weather data through the radar coverage area of the aircraft. Then again when you download all radar data collected from all aircrafts to the ground and see the big picture, this service once again enables you the service by answering questions such as the points of turbulence, how you should alter your routing accordingly, how you could optimize the comfort of the customer.”

Mr. Çetingül mentioned that they also aspire to collaborate directly with the end user in the military platforms and systems in the aftermarket and

continued: “At this point we are searching for the modality of directly working with the end user. So far, we could not implement this in Turkey. Rather the G2G (Government to Government) and FMS (Foreign Military Sales) stand out at this point. We have to clarify this to our end users; if you directly work with us, you will be equipped with many advantages. If the turnaround time of a system dispatch for repair is 30 days, then you will be able to get that system back with the OEM quality within 30 days. On the contrary, on the FMS method one does not know when the dispatch the system would be returning or whether or not it will be at OEM quality. We assess that there is an important growth potential at the Aftermarket. There are many areas to which we can contribute added value. However, we have certain drawbacks regarding the legislation. The privatization of the military factories, Ministry of National Defense’s assuming the role of procurement are at the agenda and all of them are positive developments as we faced difficulties in reaching the end user in the previous years. In light of these recent developments, we assess that the commercial focused approach will be stand out.”

Stating that they have adopted a growth oriented approach in Turkey, Mr. Çetingül said, “We are aware that we will grow through cooperation here. All our products are being designed and manufactured in order to provide added value to the end user. All programs launched in Turkey are very important for us and we are willing to be involved in all platforms and all programs. We wish to take part not only in the product sales but also in the logistical aspect of the business” ■

Aselsan – Sub-Industry Companies Selection and Evaluation Process

Since its establishment, Aselsan has been collaborating with the SMEs and Sub Industry companies and has attached great importance to the development of these companies. Aselsan's policy of benefiting from the sub industry is based on procuring all commodities and services that could be designed and/or produced domestically through local resources. With the business volume increasing especially in recent years, in parallel with the technological development of the sub-industry companies, the ratio of benefiting from the sub industry companies in the areas of design as well as in production activities have increased. In this way, the sub industry has even attained the system development level beyond sub-system development from the level of unit and device. In order to keep up with the growing workload in accordance with customer expectations, improving the quality and performance of the existing sub-industry companies and adding the qualified sub-industry companies to their approved company portfolio became obligatory.

Aselsan has evaluated the sub-industry companies through a fair



and transparent evaluation process while conducting their selection and certification processes. According to this process; a sub-industry company that is willing to team up with Aselsan, accomplishes its official application by filling out the application form at the Aselsan Supplier Portal at Aselsan's corporate website. The application form gathers general information, production/test infrastructures, personnel infrastructure, design tools, financial and administrative structure, references of the companies as well as their certificates regarding the quality and security.

After the pre-assessment of all applications, a special username and password is assigned and given to the applicant company. The following updates are conducted via password access. The applications entered into Aselsan's portal are assessed by the Sub Industry Company Assessment Council that gathers periodically under the presidency of the Central Procurement Directorate. By this council formed by Aselsan's expert representatives from the procurement, quality, production and design units of Aselsan in addition to the Central Procurement Directorate, every company application is evaluated according to the criteria such as the information on the application forms, preliminary surveys conducted on the company, Aselsan's business potential in the area applied by the company, number of the existing certified companies. As a result of the evaluation, an investigation delegation is formed for the applicable companies and the consideration is executed at the facilities of the company through the question sets organized in accordance with the activity area of the company. Three different question sets are used in the tests. These question sets are



composed of the administrative questions examining company's financial structure, the importance attached to the occupational health and safety of the company, questions inspecting the references and personnel infrastructure of the company, quality inquiries measuring the quality system implementations and whether or not the quality management system criteria are actively implemented by the company, and technical inquiries specifically designed based on over 30 different areas of activity depending on the company's area of competency. These questions sets are sent to the company prior to the investigation and the preliminary assessment of the company will be formed and the on-the-spot-investigation is planned in thereafter. Each question set has a different degree and the investigation point of the company is calculated in average according to these various degrees. All data exchange throughout this process is provided by the Aselsan Supplier Portal. As a result of the accomplished evaluation, companies meeting the conditions for approval are selected as Aselsan's approved sub industry companies.

Initially, a 'Confidentiality Agreement' is signed with the approved sub-industry companies and the procurement activities are conducted within the framework of related Aselsan instruction. The performance of our approved companies is measured in respect to both timely delivery and quality aspects for each dispatching they accomplish. Their periodic performance results are assessed and the periodic investigation schedule of the company is determined. As the performance points of a given company increases, the duration between the periodic schedules is extended. The development of the company is monitored through periodic investigations, and the "approved status" of the companies that do not achieve the required development, not adopting the required actions will be annulled. However, a strategic cooperation agreement will be signed with the companies functioning with high performance for a long period and additional privileges are provided in orders placed to the companies in this latter category. Surveys similar to these inspections accomplished by Aselsan are conducted by other Main-Contractor Defense companies as well. In this case, the sub-industry companies collaborating with multiple Main-Contractor companies would be involved in various investigation processes. In order to transform these investigations into a central and standard structure, the Industry Competency Assessment and Support Program (EYDEP) is launched under the coordination of the Undersecretariat for Defense Industries. The main objective of this program is to identify the instant status of defense industry's subcontractor companies and provide support to the companies in the required categories. Aselsan has been providing support and contribution to this process ever since its initial formation. Aselsan aims to utilize the EYDEP system for company approval once the EYDEP audit processes are completed.

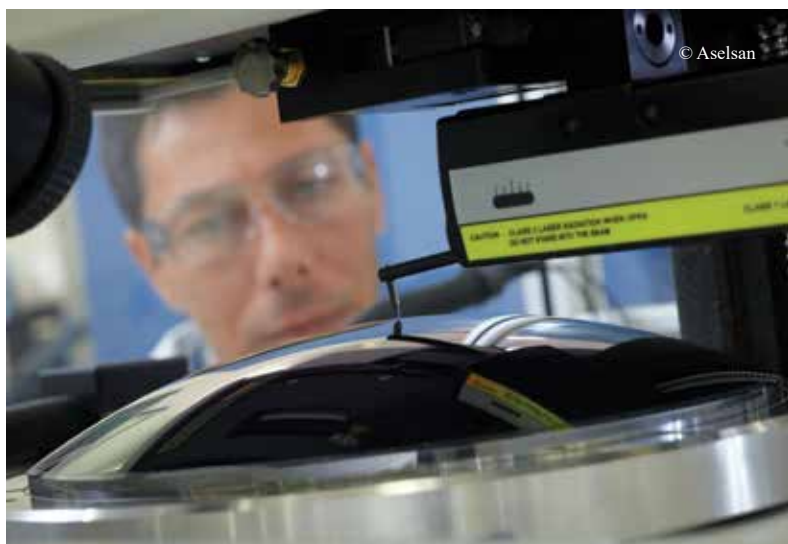
Certain support programs are organized to support the



development of our approved sub-industry companies. These programs are composed of: free vocational training, equipment grants, technical consultancy, supplier financing agreements with the banks and special purchase agreements. Over 20,000 hours of free vocational training was provided to companies over the past three years. Also, nearly 300 pieces of equipment in working order which was not utilized by Aselsan was transferred to these companies over the last three years. Aselsan's engineers provide technical consultancy and convey their experiences to the companies within the scope of the projects. Sub-Contractor financing agreements are made with the banks especially for our sub-industry companies that require support as part of the financing and affordable loan rates

without requiring any additional warrants; these are provided through the Aselsan order letter. To date, approximately 80 Million TL (\$ 23 million) has been provided to credit facilities to companies within the scope of this model, which includes agreements with 5 banks. Aselsan is managing private arrangements so that sub-industry companies can benefit from the products purchased at a high volume and with affordable prices.

On the course of its sustainable growth, Aselsan is aware of the contributions of the SMEs and Sub Industry companies and it constantly provides contributions to the development of these companies while continues its activities to seamlessly incorporate new qualified sub-industry companies into its portfolio without interruption ■



Sikorsky Names Alpteknik Aviation as Commercial Helicopter Sales Representative in Turkey and Central Asia

Sikorsky, a Lockheed Martin Company announced the appointment of Alpteknik Aviation as its commercial helicopter sales representative in Turkey and Central Asia. The announcement was made at the IDEF 2017.

"We are delighted to add Alpteknik Aviation to our worldwide sales representative network," said Sikorsky's Regional Executive - Europe, Middle East and Africa, Mr. Eric Schreiber, "With nearly

20 Sikorsky commercial aircraft operating in Central Asia and Turkey, along with promising continued growth, we are excited about working with our new representative to further our relationships in the region."

Alpteknik is a Sikorsky-authorized distributor for fixed and rotary wing aircraft spare parts, repair and overhaul, and aftermarket services. Alpteknik is wholly owned by Alp Aviation, a joint-venture

between Sikorsky and the Alpata Group with four Turkish locations in Ankara, Eskisehir, Istanbul and the Free Trade Zone Branch in Izmir.

More than 150 Sikorsky helicopters operate throughout Turkey, Azerbaijan and Turkmenistan with nearly 20 S-92 and S-76 aircraft performing corporate missions such as VIP, Head of State, airline and offshore oil transportation. The S-70 Black Hawk began supporting defense missions in Turkey in 1992.

First Japanese-Built F-35A Officially Unveiled at Nagoya Facility

The first Japanese-assembled F-35A was unveiled at the Mitsubishi Heavy Industries (MHI) Komaki South F-35 Final Assembly and Check Out (FACO) facility here today. The Japan F-35 FACO is operated by MHI with technical assistance from Lockheed Martin (NYSE: LMT) and oversight from the U.S. Government.

Approximately 200 people attended the ceremony including Japanese and United States government and defense industry leaders. The ceremony highlighted the strong partnership between the Japanese Ministry of Defense, U.S. Department of Defense, MHI and Lockheed Martin.

Kenji Wakamiya, senior vice minister of defense; Gen. Yoshiyuki Sugiyama, Japan Air Self Defense Force (JASDF) chief of staff; Lt. Gen. Jerry Martinez, commander, U.S. Forces Japan and 5th Air Force; Vice Adm. Mat Winter, F-35 Program Executive Officer; Vice Adm. Dave Lewis, Defense Contract Management Agency Director; Naohiko Abe, MHI's senior vice president and Integrated Defense & Space Systems president, and

Mr. Orlando Carvalho, executive vice president of Lockheed Martin Aeronautics, attended the milestone event.

"Seeing the first Japanese built F-35A is a testament to the global nature of this program," said Vice Adm. Mat Winter, F-35 Program Executive Officer. "This state of the art assembly facility, staffed with a talented and motivated workforce, enables us to leverage industry's unique talents and technological know-how to produce the world's best multi-role fighter. The F-35 will enhance the strength of our security alliances and reinforce long-established bonds with our allies through training opportunities, exercises, and military-to-military events."

The Japanese Ministry of Defense competitively selected the F-35A as the JASDF's next-generation air defense fighter in December 2011, with a Foreign Military Sales program of record of 42 F-35As. The first four JASDF F-35As were previously delivered from the Fort Worth, Texas, production facility. Subsequent deliveries of 38 F-35A aircraft will



come from the FACO here in Japan.

Additionally, the U.S. Department of Defense selected the Nagoya FACO in 2014 for the North Asia Pacific regional heavy airframe Maintenance Repair Overhaul & Upgrade (MROU) facility.

"Building upon our enduring relationship with Japanese industry, we are fully committed to our F-35 production partnership with MHI and our support to the Japan Ministry of Defense," Mr. Carvalho said. "The skilled workers who achieved this milestone know firsthand the F-35's capability and how this aircraft will only strengthen the U.S.-Japan Security Alliance, thereby building upon Japan's strategic vision to ensure the Alliance remains strong for decades to come."

The ATC's 36th Annual Conference Brings together Stakeholders and thought Leaders, Addressing Key Bilateral Commercial and Diplomatic Topics

The 36th Annual Conference on U.S.-Turkey Relations, organized by the American-Turkish Council (ATC) and the Turkey-U.S. Business Council (TAİK), was held from the 21st to the 23rd of May 2017 in Washington DC at the Trump International Hotel. More than 500 leaders and visionaries in the private sector, government, and the non-profit space came together with the focused vision to empower business through partnerships. More than 20 industries were represented in attendance, represented by CEOs, entrepreneurs, investors, members of the U.S. Congress and Turkish Parliament, as well as other ministers and cabinet secretaries.

The theme of this year's conference was 'Together Towards Tomorrow: Empowering Business Through Partnerships.'

Distinguished guests in attendance included: Lieutenant General Yavuz Türkgenci Director of Plans and Policy Directorate Turkish General Staff; Prof. İsmail Demir, Undersecretary for Defense Industries (SSM); Mr. Serdar Demirel, Deputy Undersecretary; Lieutenant General Kenneth F. McKenzie, Director, J-5, Strategic Plans and Policy, Joint Staff ; Mr. Hüseyin Avşar, Head of Helicopter Department of SSM; Mr. Müjdat Uludağ, Head of International Cooperation Department of SSM, Executives of TAI, Aselsan, Havelsan,



Lieutenant General Yavuz Türkgenci, Director of Plans and Policy Directorate, Turkish General Staff



Roketsan, STM, TEI, Kale Havaçılık, Alp Aviation, SNC, Lockheed Martin, Raytheon, BAE Systems, DownAksa, Honeywell, Pratt Whitney, Nova Power, Boeing, Willburt, Qinetiq and GE.

Opening remarks were presented by Mr. Howard G. Beasey, President & CEO, American-Turkish Council; Mr. K. Ekim Alptekin, Chairman of Turkey-U.S. Business Council (TAİK); General James L. Jones, USMC (Ret.) Chairman, American-Turkish Council; Mr. Ömer Cihad Vardan, Chairman of Foreign Economic Relations Board (DEİK), General William M. Fraser III, USAF (Ret.), Sierra Nevada Corporation.

Mr. Beasey welcomed guests and recognized signature guests in the front row, opening the 36th annual conference and underlining that the event was one where they will truly strive to move together towards tomorrow and empower business communities through partnership. Attendees rose for the Turkish National Anthem and then the American National Anthem. Mr. Beasey explained that over the next two days the ATC was proudly going to give guests a glimpse of the potential and the ways to increase and strengthen the economic and investment, diplomatic and political and strategic relationship between Turkey and the United States. He noted that the result of the days would provide an examination of the complexity of the strategic and

political relations between the US and Turkey. In addition, it was noted that participants would be able to take a closer look at the role of private equity investment, e-commerce, super batteries, collaboration in ship building and defense and additive manufacturing. Mr. Beasey then graciously asked participants to listen with open ears and to think with a critical mind to embrace the opportunity to work together for a more prosperous relationship. Mr. Beasey introduced the Chairman, Turkey-U.S. Business Council (TAİK) and event co-host Mr. K. Ekim Alptekin,

Mr. Alptekin shared that as the Chairman of the Turkish-United States Business Council, his main objective is to increase trade and investment between the two countries. He stated that strengthening bilateral economic relations is important because better economic relations are a means to increase prosperity for both Turkey



Mr. Howard G. Beasey, President & CEO, American-Turkish Council



and the US. Underlining that the Turkey – US business Council is Turkey's oldest bilateral trade organization, he questioned why there isn't another example of a 36th annual conference on bilateral relations from a different country, perhaps from Germany for example, who is Turkey's largest trade partner. Mr. Alptekin said that bilateral economic activity and its increasing potential are important, and said that economic relations can only reach their full potential in the context of a robust Turkish American relationship that includes close political and security cooperation. He continued by saying that strong Turkish American relations are crucial for world peace and stability and without peace and without stability there can be no trade and there will be no economic development. Having attended the annual conference for 14 years, Mr. Alptekin stated that it was unfortunate that relationship is being tested between Turkey and the US. Mr. Alptekin stated that as a business man he understands the importance of transactions, but said that they do not last. He said that alliances last, and principles do. He said that to neglect decades old alliances in the face of tactical transaction needs is very risky. Nothing that dispute the occasional political turbulence in both countries, the two democracies are in a world where democratic governance is increasingly rare. He noted that the United States might be an older more mature democracy and Turkey perhaps a younger developing one, but still they share common values and common threats. He continued in his speech and said that there is no alternative but for the two democratically elected governments but to work together to solve the many problems that they face. Mr. Alptekin closed his speech by saying that despite the recent challenges to the relationship, that he feels confident that the two great nations will find positive ways to respond based on their long history, that will forge and strengthening their ties.

Among the many key bilateral commercial and diplomatic topics were focused discussions on:

- › U.S.-Turkey Alliance: Defining Mutual Interests
- › The Importance of the NATO Alliance and U.S.- Turkey Strategic Cooperation to Regional Stability
- › Defense Policy Changes in the U.S. and Turkey
- › Industry Update: From Aerospace to Outer Space, Traditional Partnerships to Mergers and Acquisitions

U.S.-Turkey Alliance: Defining Mutual Interests

The opening plenary of this year's conference aimed to set the stage by discussing how the U.S. and Turkey can strengthen and define their mutual interests. Panelists discussed Turkey within the larger regional context, the NATO alliance, and joint efforts to fight against terrorism. This panel emphasized the strength of the U.S.-Turkey alliance, and analyzed the many avenues for cooperation.

The Importance of the NATO Alliance and U.S.- Turkey Strategic Cooperation to Regional Stability

The interview discussed the U.S.-Turkey strategic relationship, the seminal role that the NATO partnership has played in the bilateral relationship, and the global balance of power.

Industry Update: From Aerospace to Outer Space, Traditional Partnerships to Mergers and Acquisitions

In this informative discussion of the latest trends and challenges to industry collaboration, the audience embraced the many possibilities the future holds. The discussion featured the race for the T-38 replacement, developments in the pursuit of the Turkish Fighter Program in Turkey,

and the redefining of traditional partnerships in the U.S. and Turkey's decade long relationship. The panel discussed potential areas of cooperation in the export market of 3rd party countries. Panelists included: Mr. Jeff Schloesser, Strategic VP of SNC; Temel Kotil, Ph.D, President & CEO of TAI; Mr. Steve Ziff, President & CEO of Nova Power, Mr. Baki Şensoy, Former VP of Aselsan.

Defense Policy Changes in the U.S. and Turkey

The change in the U.S. administration has brought about a re-evaluation of Defense Policies and Priorities, particularly sweeping reforms to the undersecretary of acquisition, logistic and technology (AT&L). Furthermore, Turkey, in its 2017-2021 Defense Plan, has laid out a strategy to lift Turkey's defense industry exports and acquire more of the global defense marketplace through a combination of new structures and a strategic vision. This panel addressed the changes to the defense policy in both the U.S. and Turkey.

It is stated that the conference provides a very viable platform, a public platform to highlight the friendship and relations between the two countries. It is recognized the efforts that many had made in order to attend the conference, far and near. It is noted that the platform is intended to steer them towards the bright future that awaits this very special bilateral relationship. It is mentioned that the two great nations are anchored in partnership, they are security partners in NATO, they are commercial partners in trade and investment to create better living conditions for their citizens in both countries. It is stated that as regional and global leaders the US and Turkey could only ever be as content as their least contented allies.



Prof. İsmail Demir – Undersecretary for
Defense Industries

Smart Quadcopters Find their Way without Human Help or GPS

Milestone series of tests have quadcopters slaloming through woodlands, swerving around obstacles in a hangar, and reporting back to their starting point all by themselves

Phase 1 of DARPA's Fast Lightweight Autonomy (FLA) program concluded recently following a series of obstacle-course flight tests in central Florida. Over four days, three teams of DARPA-supported researchers huddled under shade tents in the sweltering Florida sun, fine-tuning their sensor-laden quadcopter unmanned aerial vehicles (UAVs) during the intervals between increasingly difficult runs.

DARPA's FLA program is advancing technology to enable small unmanned quadcopters to fly autonomously through cluttered buildings and obstacle-strewn environments at fast speeds (up to 20 meters per second, or 45 mph) using onboard cameras and sensors as "eyes" and smart algorithms to self-navigate. Potential applications for the technology include safely and quickly scanning for threats inside a building before military teams enter, searching for a downed pilot in a heavily forested area or jungle in hostile territory where overhead imagery can't see through the tree canopy, or locating survivors following earthquakes or other disasters when entering a damaged structure could be unsafe.

"The goal of FLA is to develop advanced algorithms to allow unmanned air or ground vehicles



to operate without the guidance of a human tele-operator, GPS, or any datalinks going to or coming from the vehicle," said JC Ledé, the DARPA FLA program



manager. "Most people don't realize how dependent current UAVs are on either a remote pilot, GPS, or both. Small, low-cost unmanned aircraft rely heavily

on tele-operators and GPS not only for knowing the vehicle's position precisely, but also for correcting errors in the estimated altitude and velocity of the air vehicle, without which the vehicle wouldn't know for very long if it's flying straight and level or in a steep turn. In FLA, the aircraft has to figure all of that out on its own with sufficient accuracy to avoid obstacles and complete its mission."

The FLA program is focused on developing a new class of algorithms that enables UAVs to operate in GPS-denied or GPS-unavailable environments—like indoors, underground, or intentionally jammed—without a human tele-operator. Under the FLA program, the only human input required is the target or objective for the UAV to search for—which could be in the form of a digital photograph uploaded to the onboard computer before flight—as well as the estimated direction and distance to the target. A basic map or satellite picture of the area, if available, could also be uploaded. After the operator gives the launch command, the vehicle must navigate its way to the objective with no other knowledge of the terrain or environment, autonomously maneuvering around uncharted obstacles in



its way and finding alternative pathways as needed.

The recent four days of testing combined elements from three previous flight experiments that together tested the teams' algorithms' abilities and robustness to real-world conditions such as quickly adjusting from bright sunshine to the dark building interiors, sensing and avoiding trees with dangling masses of Spanish moss, navigating a simple maze, or traversing long distances over feature-deprived areas. On the final day, the aircraft had to fly through a thickly wooded area and across a bright aircraft parking apron, find the open door to a dark hangar, maneuver around walls and obstacles erected inside the hangar, locate a red chemical barrel as the target, and fly back to its starting point, completely on their own.

Each team showed strengths and weaknesses as they faced the varied courses, depending on the sensors they used and the ways their respective algorithms tackled navigation in unfamiliar environments. Some teams' UAVs were stronger in maneuvering indoors around obstacles, while others excelled at flying outdoors through trees or across open spaces.

The test runs had the combined feel of part air show, part live-fire exercise, with a palpable competitive vibe between the teams. "The range is hot, the range is hot, you are cleared to launch," crackled the voice of the test director over the walkie-talkies audible in the adjacent team tents, giving a green light to launch an attempt. Sitting under his own shaded canopy, the director followed the UAV's flight on two video monitors in front of him, which showed views from multiple cameras placed along the course. Metal safety screens, which resembled giant easels, protected the camera operators on the course, as well as teams and course officials, from any rogue UAVs.

BAE Systems and Leonardo to Collaborate on New Precision-Guided Munitions for Air, Land and Sea Threats

BAE Systems and Leonardo have announced an initiative to pursue collaborations on new precision-guided solutions that will offer U.S. and allied military forces a range of low-risk, cost effective, advanced munitions for advanced, large caliber weapon systems

The two companies anticipate offering new adaptations of Leonardo's Vulcano — a family of gun-launched munitions that exceed the performance of currently available precision-guided projectiles — in a variety of gun systems, including the BAE Systems-built Advanced Gun System (AGS) and the Mk 45 naval gun. The AGS is currently on board the U.S. Navy's Zumwalt class of destroyers, and the Mk 45 is widely used by the Navy and allied nations.

"As a leading global provider and integrator of all major caliber weapon systems, we are expertly positioned to integrate mission-driven, advanced, and affordable munitions like Vulcano into land and naval gun systems," said Mr. Joe Senftle, vice president and general manager of Weapon Systems at BAE Systems.

"The Vulcano long-range guided ammunition family — part of the Leonardo's global offer of naval, land-based, and aeronautical weapon systems for customers worldwide — represents state-of-the-art technology with its unmatched range, accuracy, and effectiveness, which was successfully demonstrated in testing," said Mr. Gianpiero Lorandi, managing director at Leonardo Defense Systems. "Not only is it compatible with 155-mm land and 5-inch naval gun systems, Vulcano can also be easily integrated into current and future platforms such as the AGS — a major benefit."



The new adaptations of Vulcano will also focus on providing solutions for land-based 155-mm artillery systems, including all variants of the M777 and M109 howitzers for the U.S. military and allies around the world. In testing, the 155-mm Vulcano achieved launch accelerations that support maximum engagement ranges similar to distances required for the former Long Range Land Attack Projectile (LRLAP) program. The Mk 45 naval gun offers the potential to fire the 5-inch Vulcano at 20 rounds per minute to a maximum range over three times greater than existing munitions.

As part of this effort, BAE Systems and Leonardo will also explore offering an enhanced guidance and navigation unit, including semi-active laser and infrared seeker options designed to ensure pinpoint accuracy and provide moving-target capability to address air-, land-, and sea-based threats from land and naval weapons. Both companies will continue to independently offer land and naval guns beyond this joint work.

United States Army Tests High-Energy Laser Weapon Mounted on Apache Helicopter

A high-energy laser mounted on a helicopter shoots a target in groundbreaking test

A high-energy laser mounted on an Apache AH-64 attack helicopter acquired and hit an unmanned target. The test was conducted by Raytheon and the U.S. Army Apache Program Management Office in collaboration with U.S. Special Operations Command at White Sands Missile Range, New Mexico.

It was the first time a fully integrated laser system successfully shot a target from a rotary-wing aircraft over a wide variety of flight

regimes, altitudes and air speeds, proving the feasibility of laser attack from Apache.

The system tracked and directed energy on a stationary target at a slant range of 1.4 kilometers. (Slant range is the line-of-sight distance between two points at different levels.)

The data collected from the test, including impact of vibration, dust and rotor downwash, will help shape future high-energy laser systems.

“Our goal is to pull the future

forward,” said Art Morrish, vice president of Advanced Concepts and Technologies for Raytheon Space and Airborne Systems. “This data collection shows we’re on the right track.”

For the test, Raytheon coupled a variant of the Multi-Spectral Targeting System, an advanced, electro-optical, infrared sensor, with a laser. The MTS provided targeting information, situational awareness and beam control.

Boeing, DARPA to Design, Build, Test New Experimental Spaceplane

Phantom Express aims to enable faster, more affordable small satellite launches

Boeing and the U.S. Defense Advanced Research Projects Agency (DARPA) are collaborating to design, build and test a technology demonstration vehicle for the Experimental Spaceplane (XS-1) program.

Boeing will develop an autonomous, reusable spaceplane capable of carrying and deploying a small expendable upper stage to launch small (3,000 pound/1,361 kg) satellites into low Earth orbit. Boeing and DARPA will jointly invest in the development.

Once the spaceplane – called Phantom Express – reaches the edge of space, it would deploy the second stage and return to Earth. It would then land on a runway to be prepared for its next flight by applying operation and maintenance principles similar to modern aircraft.

“Phantom Express is designed to disrupt and transform the satellite launch process as we know it today, creating a new, on-demand space-launch capability that can be achieved more affordably and



with less risk,” said Darryl Davis, president, Boeing Phantom Works.

The Aerojet Rocketdyne AR-22 engine, a version of the legacy Space Shuttle main engine, would power the spaceplane. It is designed to be reusable and operates using liquid oxygen and liquid hydrogen fuel.

Phantom Express would offer an advanced airframe design as well as third-generation thermal protection to create a vehicle capable of flying at high flight velocity, while carrying a smaller, more affordable expendable upper stage to achieve the mission objectives.



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