DEFENCE TURKEY

VOLUME 11 ISSUE 75 YEAR 2017
ISSN 1306 5998

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Nisan - Mayıs 2017

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IDEF 2017 Gathers Defense Professionals from all Over the World...

Ayşe Evers
Publisher & Editor in Chief

Developing capabilities, original-design systems and products, the Turkish Defense Industry has recently carved out a different and significant place for itself among international platforms within the framework of participation in multinational projects, in joint programs and in the collaboration carried out with leading firms in the global defense industry. Significant developments in the R&D activities in the direction of the goals of the Undersecretariat for Defense Industries have enabled Turkish firms to open up to the world with a bold and new marketing vision harboring a new enthusiasm. With this dynamic vision, all parties of the defense industry have been taking part in major projects as a competitor or as a business partner within a common synergy together with the developed defense industries of the world in recent years, which is a big source of pride for all of us. IDEF fairs also reveal Turkey's vision which brings together developed defense industries and procurement authorities of the regional countries to a common platform, creating different cooperation possibilities.

IDEF 2017, organized to take place on May 9-12, 2017, under the auspices of the Presidency of the Republic of Turkey, hosted by the Ministry of National Defense and under the management and responsibility of Turkish Armed Forces Foundation (TAFF), is the only and unrivaled Exhibition in its field in Turkey and also among the top five defense industry exhibitions in the world with respect to the number of exhibitors. Moreover, the IDEF 2017 Exhibition is on track to becoming one of the preeminent defense industry exhibitions in the world with the cooperation opportunities to be provided to the exhibitors through the visiting delegations and meeting offices.

At this year's IDEF 2017, it is expected that nearly 800 companies from over 50 countries will exhibit their cutting-edge products, materials and systems manufactured in the fields of defense, security, maritime and aerospace. Apart from the companies directly related to the defense industry, a large number of companies from indirectly related industrial branches will participate in the Fair.

IDEF 2017 hosts the world's leading high level procurement authorities in the field of defense. It is expected that over 100 delegations from more than 70 countries and international organizations will participate in IDEF 2017 which is one of the defense industry exhibitions that hosts the highest number of official delegations in the world.

We hope that the IDEF 2017 Exhibition will be very successful for all parties concerned.

Enjoy this issue.. ■

Aksa Run Flat's Market Expansion – Plans in Motion, Building Cooperation with Big Names such as Goodyear and Petlas

Aksa Run Flat General Manager Mr. Rıza Saçmacı shares insight into the company's commitment to the mutual exchange of information with vehicle manufacturers, the company's R&D activities, cost efficiency, eco-friendly processes and plans of the year 2017

Defence Turkey: Mr. Rıza Saçmacı, first of all thank you for your time. Could you briefly inform us on the establishment process of your company, staff and facility structuring as well as areas of activity?

Throughout my business life, I have always acted with a perspective attaching importance to domestic capital. I can say that the most important factor in the emergence of Aksa Run Flat was the lack of a domestic producer in this area in our country's defense industry. During the period when I worked for the development of the very first Run Flat, we ran a few trials at the facilities of the National Police and designed the appropriate product and connection form. Then we successfully conducted our initial field test at the facilities of Nurol Machinery and consequently started serial production.

Our factory consists of 2 divisions; the raw material production line and the assembly line. We manufacture the main raw material used within our Run Flats on this production line. All our staff is composed of trained, competent, qualified individuals who are aware of their responsibilities.

The Run Flat application is available to almost all of the ground vehicles with the proper wheel and wheel rim combination. Our products are presently being used in personal vehicles, public transportation vehicles and military vehicles. We have been executing projects with our country's leading vehicles (BMC, Otokar, Katmerciler, Nurol Makina, FNSS) since the first day of our establishment.

Defence Turkey: Your Run Flat technologies are being actively used in the platforms of various categories from the Tactical Wheeled Armored Vehicles to V.I.P. vehicles used by the Military and Security Forces. What would you like to say on the characteristics of your product, the advantages it brings to the users and its technical superiorities when compared with the rival products in respect to the cost, logistics and technology?

Aksa Run Flat became one of the worldwide brands in respect to the product range. As you have also mentioned, we are capable of installing the Run Flat application to almost all the vehicles. One of the most prominent technical superiorities of our products is its quite practical installation and disassembly compared to the other products of many rival companies. Personnel trained in this area are capable of conducting all the operations with a simple gadget without requiring any expensive and complex equipment. And this creates major advantages considering the cost, work safety and ease of application against our competitors. We are always on top of our work to provide remote or on-site support with our competent staff and our quick response times according to demands. This is one of our features that enables us to be superior to our competitors. Presently we are at a level in which we are capable of competing in the world market with our products with convenient prices and without compromising quality. A concrete example of our quality is in the fact that we achieved more successful results than the worldwide leading companies in the Run Flat field test that was run at the BMC facilities under the auspices of the Undersecretariat for Defense Industries, registering this success on official platforms.

Defence Turkey: What are the defense industry projects you have been involved in since 2011, both in our country and in foreign countries? Which defense industry projects do you aim to take part in during the upcoming period?

Aksa Run Flat vehicles have been used in vehicles such as Ural, Kirpi, TOMA, Amazon, Loader, Backhoe Loader, Ford Ranger, Toyota Hilux and Toyota Land Cruiser in our country. We conducted defense industry export activities to certain countries within the scope of

those foreign projects. We aim to take part particularly in the European and American markets in the upcoming period.

Defence Turkey: You are in close cooperation with the major companies of theTurkish Defense Industry such as FNSS, Nurol Machinery, Otokar and Katmerciler. What type of collaboration you are building during the development stages of the vehicles, especially throughout the R&D studies with other companies in this respect?

Our R&D studies are one of the most essential components of our production plan because as Aksa Run Flat we always endeavor to achieve the best and to keep up with the latest technological developments. Within such a framework, the leading vehicle manufacturers such as BMC, Otokar, Katmerciler, Nurol Machinery and FNSS conduct information exchange with the Aksa Run Flat on the vehicle's wheel- wheel rim Run Flat configurations throughout the production stage. As I also mentioned previously, Run Flat can be implemented on approximately all ground vehicles with the help of the proper wheel rim configuration. At this step of production, in respect of the applicability of Run Flat, we attach great importance to the mutual exchange of information with vehicle manufacturers. Therefore, we always strive to build direct communication with the vehicle manufacturers both in our country and in foreign countries.

Defence Turkey: We are monitoring that the Turkish Defense Industry Land Platform manufacturers are forming a settled structure in the Middle Eastern countries and in certain Asia Pacific countries and thus becoming active players in such countries. What type of a plan and strategy did you build in relation with the launch of your product to countries especially to United Arab Emirates, Qatar, Saudi Arabia, Malaysia and Indonesia?

We are aware of the demands emerging in the Middle East and Asia Pacific countries for the Run Flat and we have been closely following these regions for a while. Launching the Aksa Run Flat to markets in those regions through granting distributorship in certain locations and becoming the leading Run Flat supplier in the target markets are amongst our main targets. In order to introduce our products to these regions we wish to display our quality to other countries by participating fairs and events.

Defence Turkey: We see that you participate in various fairs abroad and also you closely follow developments and competitors in the world. In this context, what markets will you be penetrating in 2017?

Our main target for 2017 is the Russian and European market, for 2018 is especially the American market.

Defence Turkey: In our 2016 interview, you stated that you are planning cooperation in the future with some producers of Foreign and Tire manufacturers that produce worldwide. Could you share with us the latest developments on this topic?


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We are working with Petlas tire company for all of the Projects in Turkey. For the American and European market, we are starting to work with Goodyear Tire Company.

Defence Turkey: What would you like to say on the investments you made in R&D, the incentives you received and the R&D projects you have been conducting?

We attach great importance to the R&D activities in order to develop our products, to decrease costs and to run our production through environmental-friendly processes. We believe that all the manufactured products could be further improved and therefore we continue to increase our R&D activities uninterruptedly and carry them forward. We build the prototypes of our raw material, and the mechanical, physical and chemical tests of the products we manufacture through our devices with laboratory scales in cooperation with universities. Also among our future plans is to buildan R&D laboratory in which we could be capable of running all our tests.

We conduct the performance tests of our products through our special test device which we designed as wheel rim - wheel - Run Flat and we determine the direction of our R&D activities according to the results of such tests.

Dr. Celal Sami Tüfekçi - Deputy Undersecretary for Defense Industries; Mr. Rıza Saçmacı - General Manager of Aksa-Run Flat

Defence Turkey: What are the upcoming activities planned for 2017? What are your expectations for 2017. From your end, could you talk about some developments with us? Will your share of the market increase?

We are working on 3 additional different products for our inventory profile in 2017.

- a) Self-sealing coating for fuel tanks (that stops leakage of gas after munitions penetration following gunfire) this system can be used for helicopters, aerial and armored vehicles.
- b) C.T.I.S (Central tire inflation system) for armored vehicles.
- c) Manufacturing alloy rims for Turkish and foreign companies.

Our goal is to provide a full set of weat systems (rim, tire, full flat) to armored vehicle manufacturers. In this way, we are going to further expand our market.

We received an award from the Defense and Aerospace Industry Manufacturer Assoiciation (SaSaD) recognizing our production of quality products and our proven ability to handle and deliver our products on time. This means that we are very conscientious and meticulous in our work, producing a quality products during the manufacturing process and exceptional service as part of the delivery process. This could open doors for us in new markets around the world.

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

As the Aksa Run Flat family, we strive to reach a significant position in the global market and become a worldwide brand in this area. I believe that we will be elevating all our targets to achieve success by acting in line with our plans in the future years.

Mr. Cem Akalın - Managing Editor of Defence Turkey Magazine met with Mr. Rıza Saçmacı - General Manager of Aksa Run Flat in Ankara.

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South Anatolia Defense and Aerospace Indigenization Summit Held in Gaziantep

Newly formed TÜDEP Cluster - building competitive strength in the region to become a center of attraction for Industry

The South Anatolia Defense and Aerospace Indigenization Summit was held on 21-22 March in Gaziantep with the objective of minimizing the Turkish defense and aerospace industry's foreign dependency and to discover the potential regional manufacturers within the scope of the development of domestic design and production facilities. Vice Prime Minister Mr. Mehmet Şimşek, Minister of National Defense Mr. Fikri Işık and Undersecretary for Defence Industries Prof. İsmail Demir, Governor of Gaziantep Mr. Ali Yerlikaya, Metropolitan Municipality Mayor Mrs. Fatma Şahin, Deputy Undersecretary of the Prime Ministry Mr. Harun Çelik, Deputy Undersecretary for Defense Industries Dr. Celal Sami Tüfekçi conducted the opening of the program with other participants and invitees. The summit program was hosted by the President of the Gaziantep Chamber of Industry and Sanko Holding's President of the Board Mr. Adil Sani Konukoğlu and President of the Technical Production and Export Funding Association Mr. Murat Yetişgin.

In addition, the Chamber of Industry from the cities of Adana, Adıyaman, Diyarbakır, Hatay, Osmaniye, Kilis, Kahramanmaraş, Mersin and Şanlıurfa were in attendance; industrialists, universities, technoparks, new entrepreneur candidates and many related institutions and associations attended the Gaziantep Summit Program which was accomplished by the Gaziantep Chamber of Industry, Defense and Aerospace Industry Manufacturers Association (SaSaD) and with TÜDEP's cooperation, under the auspices of the Ministry of National Defense and with the support of the Undersecretariat for Defense Industries (SSM). The theme of the program was "Defense Industry Growing with the SMEs", and major companies of the Turkish Defense and Aerospace Industry such as MKEK, Aselsan, TAI, Roketsan, Havelsan, STM, Aspilsan, İşbir, Alp Havacılık and Turkish Technic, which will be evaluating the domestic and national facilities in procurement, displayed their products at the stands allocated to their companies.

President of the Gaziantep Chamber of Industry Mr. Adil Konukoğlu gave the opening remark of the Gaziantep gathering held at the Ortadoğu Fair Center. President Konukoğlu underlined Gaziantep's assertiveness in numerous areas and added that 5-6 companies are active in the defense industry and that they attach great importance to this summit in terms of a national defense industry. Konukoğlu said, "We wish to provide an environment required for a cluster by allocating 200 thousand square-meters particularly for this topic, and even through constructing a special building if required".

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Thereafter, Governor Yerlikaya presented a speech to the participants and pointed out the importance of the defense industry in the future of countries and emphasized the level that our national defense industry reached and said, “In these times where our friends and enemies are clearly displaying their real intentions, Turkey’s accomplishments in the recent period once again has come into the spotlight”. Governor Yerlikaya highlighted that Turkey continues its activities in line with its targets for 2023 and reminded everyone about the Turkish Armed Forces’ grand target of fulfilling 80 percent of its requirements through its own resources by the year 2023. He mentioned that Gaziantep’s economy is growing every day and they stand ready to fulfill their obligations to this end.

Mr. Fikri Işık - Minister of Defense

Addressing the participants, National Defense Minister Mr. Fikri Işık stated that Gaziantep gained its title “Gazi” (Veteran) during the Battle of Independence with its efforts and power and underlined the city’s crucial contributions to the struggle for independence. Minister Mr. Işık continued, “With its tough stance standing firm against terrorism, Gaziantep is the shining star of its region. I believe that Gaziantep will continue to be a shining star by getting through all types of threats with its existing structure. Expressing the necessity of reducing the foreign dependency in the defense industry Minister Işık added, “We should mobilize

Mr. Mehmet Şimşek - Deputy Prime Minister of Turkey

all our domestic and national capabilities toward avoiding the dependence on vileness in cases similar with the case of Cyprus”. Minister Mr. Işık mentioned that things to do regarding the defense industry in Gaziantep have been discussed within the scope of the Summit and he talked about the support to be given to potential investments.

Within the scope of the opening remarks of the Summit, Vice Prime Minister made a speech on the “Constitutional Reform” to the participants. Vice Prime Minister Şimşek said, “Turkey has indeed covered an important distance regarding the first generation reforms and now we are after the second generation reforms. Without doubt, Turkey’s forward leap is closely related with structural reforms. Still, the most critical reform, I mean the reform which will constitute the grounds for all these reforms is the Constitutional Reform. This constitutional amendment is in fact the pre-condition of our future second and third generation reforms. Our country has no time to lose”.

Throughout the technical presentation part of the program, Undersecretary for Defense Industries, on behalf of SSM, stated the importance of the main strategies and indigenization in the defense industry. Deputy Undersecretary Dr. Celal Sami Tüfekçi and Head of Industrialization Department Bilal Aktaş made a presentation on the structure of the institution and the strategies for indigenization.

On behalf of Mechanical and Chemical Industries Corporation (MKEK) President and General Manager Ahmet Taşkın, Dr. Faik EKEN on behalf of Aselsan, on TAI’s behalf President and CEO Assoc. Prof. Mr. Temel Kotil, on behalf of Roketsan President of the Board Mehmet Emin Alpman and General Manager Mr. Selçuk Yaşar, on behalf of Havelsan General Manager and

Mr. Adil Konukoğlu - President of Gaziantep Chamber of Industry


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CEO Mr. Ahmet Hamdi Atalay, General Manager of STM Mr. Davut Yılmaz, representing İşbir President and CEO Mr. Burhan Özgür and on Aspilsan Energy's behalf General Manager Mr. Ferhat Özsoy introduced their institutional visions through presentations. Upon these presentations, the technical procurement processes of the institutions were presented to the participants in a detailed manner by the experts.

Sanko Holding was the main sponsor of the Summit Program and nearly 100 institutional participants attended. The program ended with a gala dinner following the visits to the stands, B2B negotiations and the visits made to the prominent industrial enterprises in the region.

Mr. Murat Yetişgin, President of TÜDEP accomplishing the coordination of the program with the Gaziantep Chamber of Industry, made an assessment on the South Anatolia Defense and Aerospace Indigenization Summit upon the completion of the Summit. Stating that the two-day long program had been the greatest event held in the region. President Mr. Yetişgin expressed that one on one negotiations had been conducted with approximately 600 participants and visitors from 10 cities and that the industrialists of the region approached the subject with great sensitivity and sincerity. Yetişgin added that there were already certain companies signing preliminary contracts with extremely effective negotiations and that the achieved positive results encouraged the industrialists of the region. Stating that through this summit program a South Anatolia Defense and Aerospace Indigenization Cluster based in Gaziantep and covering 10 cities was established, TÜDEP President Mr. Murat Yetişgin added that their purpose, in addition to areas of defense and aerospace, is initially to gain competitive power for the region and turn it into a center of attraction in terms of development with the help of nuclear energy stations, smart machinery and other sectors containing precise production and design technologies through the accomplishment of their initial target of locating 600 industrial enterprises in the region.


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The Difference is Vaneda – New Technology in Military Footwear

By Ümral Oral - Member of the Board of Directors

We are continuing our journey that we initiated in 2004 in Istanbul Ikitelli, with the same enthusiasm that we had in the beginning, continuously adapting ourselves to what's new, through research and development. Four years ago, with the philosophy of always aiming to produce a better product, we participated in projects with the Turkish Armed Forces for the design of shoes and boots with new technology. Our primary aim in the design of the boots and shoes was not only foot comfort but also to provide resistance and usability in the most challenging of environmental conditions, climate, terrain and different weather conditions.

I would like to proudly announce that our New Generation Waterproof Shoes and Boots designed with Breathable Technology, which we developed thanks to the investments made and after two years of long, hard work, successfully passed the field and laboratory tests, and are now being supplied within the Turkish Armed Forces.

With this new technology, shoes and boots remain waterproof and do not get wet and heavy in rain or snow, even in the event of extended wear. They dry quickly and due to the breathable design, fungal infection of the feet is prevented. When required, they are designed to provide thermal insulation up to -38 °C for cold weather conditions, thus protecting the feet from cold. This will put an end to the problems suffered by our soldiers for years caused by boots designed with outdated technology.

Our company, which proceeds with its investments at a fast pace, continues to provide services to the sector in the best way possible, at its new 5.000m^2 factory, which has a manufacturing capacity of 500.000 pairs of boots and shoes per year.

It is obvious that our soldiers need the best equipment and mobility, especially in these hard times that our country is going through. I would also wish for other suppliers to support such projects and to aim to increase the mobility capacity of our army to the highest level possible.

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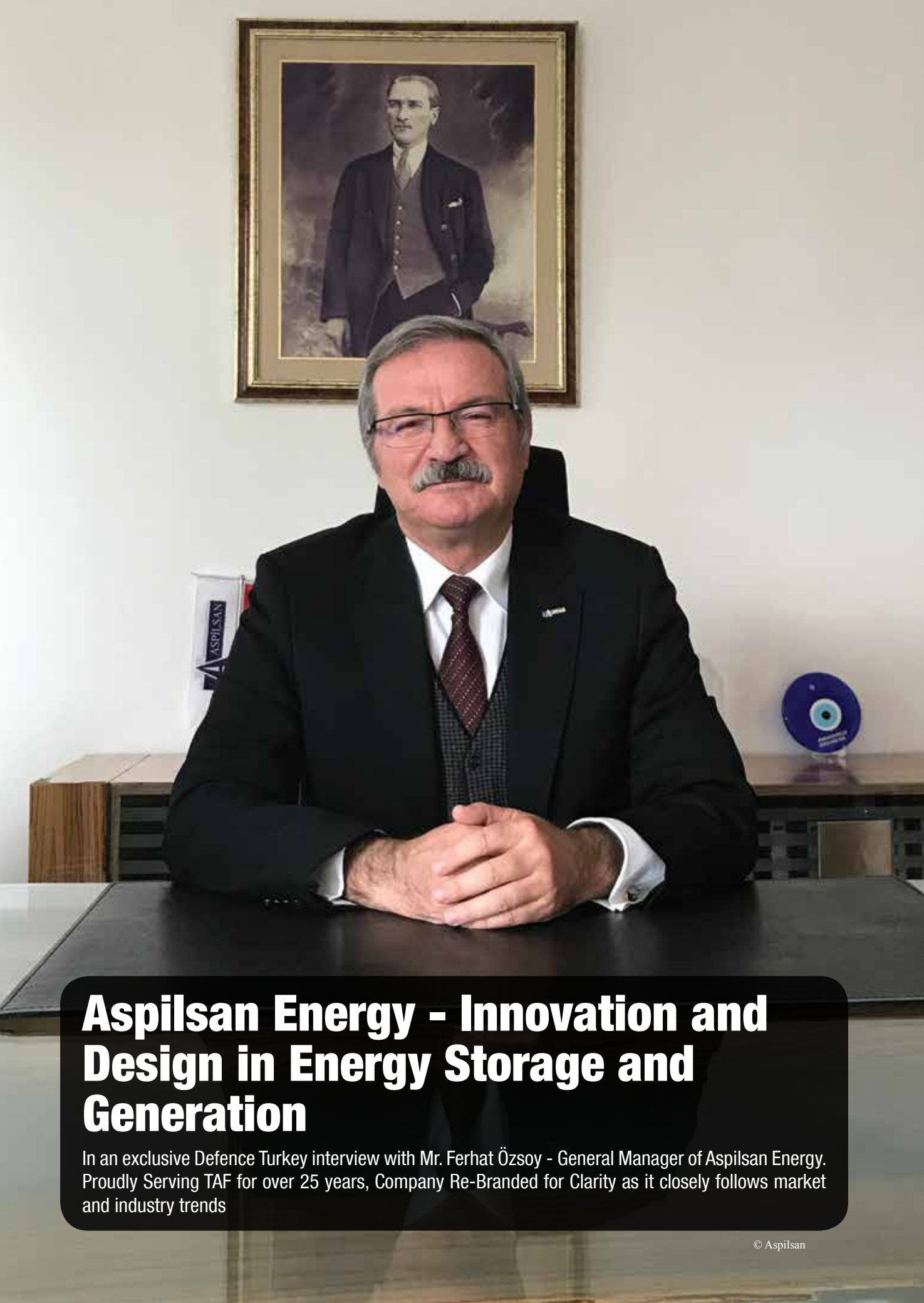

Aspilsan Energy - Innovation and Design in Energy Storage and Generation

In an exclusive Defence Turkey interview with Mr. Ferhat Özsoy - General Manager of Aspilsan Energy. Proudly Serving TAF for over 25 years, Company Re-Branded for Clarity as it closely follows market and industry trends

Defence Turkey: Dear Mr. Ferhat Özsoy, first of all I would like to thank you for your time. On 28 March 2016 you changed the name your company. With the new name of Aspilsan Energy what is the new structure with this change and what are the new strategies?

The company was established in order to fulfill the battery and cell requirements for the Turkish Armed Forces. Aspilsan Energy achieved this task with sacrifice and will continue to do so. Similarly, since the day it started providing services, the company has also been able to fulfil the requests of the civil sector in this area, but the definition of 'Military Battery Industry' which is the abbreviation Aspilsan stands for, gives the impression in the civil market that our institution merely carries out services in the military area. Rebranding as Aspilsan Energy will avoid misconception, while featuring the energy concept that reflects the numerous new projects that we have launched in the civil area as well as the breakthrough we made in the energy field. I would like to state that we are further increasing activities that are related to requests in the civil sector through our existing projects.

Defence Turkey: Since Aspilsan's establishment, in addition to quite a variety of battery manufacturing, the company has also specialized in battery blocks and aircraft batteries. Could you please inform us on the products and capabilities of Aspilsan in military and civil areas?

Currently it is common to confront license restrictions and direct procurement problems. As such, significant responsibilities fall to the sub-system manufacturers such as Aspilsan. Achieving fully domestic and unique platform projects would depend on the path we will be covering in these subsystems. With the development of these systems with local resources, we will free ourselves from foreign


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dependency at every stage of platform development and we will be able to overcome the obstacles in the production and sales stages as well. For instance, specific to Aspilsan Energy, our company wishes to increase its capabilities and make its mark in the world in this area, especially considering the fact that we produce batteries for all robotic systems, and this is becoming one of the world's most important subjects. The same applies to all systems operating with electric energy (UAV, Radio, mobile sensors, jammers, etc.). Considering the smooth operation of the aircraft batteries that we provided to the Turkish Armed Forces (TAF) for years, in particular, and the will to increase the quality of these batteries have directed us toward civil aviation. Therefore, we initiated the European Aviation Safety Agency (EASA) certification process for civil aviation.

Defence Turkey: It seems that Aspilsan has been focusing especially on mobile power supplies recently. What are your activities in this area?

Most of the energy storage requirements arise from the electric energy required by mobile devices and platforms. So, in order to fulfill such requests, we especially focused on mobile power supplies. We are designing energy systems that military units and civilians would require, would carry or utilize in their households. We are designing and manufacturing long-lasting, lighter batteries that are smaller in size and more durable which we believe to be among the urgent requirements of the Turkish Armed Forces in particular. Additionally, we will be delivering our specific new models soon. Therefore, we will be preventing the need for battery carrying and frequent charging - though we cannot claim this for mobile phones for the time being - especially for our radios and many different devices that require a portable power supply.

Defence Turkey: What are the programs and projects conducted by Aspilsan Energy in our country?


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Since 2009, Aspilsan Energy's R&D engineers have been conducting R&D projects on lithium battery and cell production, fuel cell systems, thermopiles, new generation nickel-cadmium battery components, indigenous battery management circuits and small, medium and large scaled energy storage systems. We are constantly improving our batteries in line with the requests emerging particularly in this fast-moving technological age. We are constantly trying to figure out how we could further boost our capacity.


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Defence Turkey: With the Aspilsan R&D center operating since January 2017, it seems that you are achieving important activities in the civil area apart from the military area. Could you please inform us on your R&D activities, strategies and on the R&D programs you have been conducting?

With our R&D center, that launched operations in January, we aim to eliminate deficiencies in our country's requests regarding battery technologies. Our main objective was to set up an R&D center in which studies particularly on battery technologies are conducted; develop domestic technologies there and contribute to our country's request for energy through national solutions by rendering this technology marketable. While researching and developing the aforementioned technologies at our R&D center, we will be contributing to our country by fulfilling the requirements of our defense industry and civil sector in line with our mission. We will be advancing toward a system with national technology, which will manufacture unique batteries and cells, this will be the first of its kind in Turkey. We are currently conducting approximately 20 projects at our R&D center that currently operates with our 22 engineers. Turkey fell behind a bit in respect to battery technologies. We know that the Middle East is especially quite dominant in this area. We also aim to enhance Turkey's infrastructure in this area and design projects to that end. Aspilsan Energy will follow new battery technologies by maintaining its existing cooperation in R&D, will obtain new patents as a result of the main scientific research and also as a result of research for production executed in laboratories and workshops under the auspices of the R&D center. Aspilan Energy will further develop innovation and design in energy storage and energy generation. In this way, it will fulfil its task in line with the target of manufacturing high added value products. This will add value to Turkey's development as well. Through sustainable innovation, we aim to obtain 50 patents, increase the number of our competence centers to 4 and support 5 post graduate/doctoral dissertations each year within the scope of the cooperation between university and industry gearing toward 2023 (in line with the 5-year targets).

Defence Turkey: We see that you have an export network composed of diverse countries extending from Thailand to Uruguay. In which direction are your export activities proceeding? What are your primary export areas and markets?

A major part of the batteries and cells manufactured at our facilities are being used for the requirements of the Turkish Armed Forces while a part is being introduced to domestic and foreign markets. Until now, export


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YOUR SOLUTION PARTNER IN DEFENCE COMMUNICATION SYSTEMS

Karel provides services in all stages from R&D to production for communication solutions specifically for the defence industry with her processes supporting both national and international standards. Karel capabilities: • Military PABX's • IP, ISDN, analog communication systems • Intercom systems • Alarm announcement systems for navy platforms • Command control units • Military type solid state disks (SSD) • Avionics design • INS-GPS systems

defence@karel.com.tr
www.karel-electronics.com

KAREL
Unifying Communications

activities to over 20 different countries have been conducted and through market research and business development activities that we conducted, we are continuing to increase the number of our foreign customers every day. The usage and demands of our products differ between periods but we aim to accelerate our exports by simultaneously increasing our capability to fulfill battery, cell and energy storage requirements that emerge as a result of global technology trends. We have been conducting intensive activities marketing the Energy Storage System (ESS) especially to the Middle East, African and Arabic countries. Moreover, the BB-2590/U and TOW Missile System Battery within the military battery group will be displayed on the front shelves in our marketing activities in the upcoming period.

Defence Turkey: Aspilsan signed a protocol with the consultant company TRACES for the EASA certification which will enable the utilization of the Ni-cd aircraft and helicopter batteries manufactured by a few companies in the world in civil aircrafts and helicopters in addition to military aircrafts. How are your activities proceeding for certification?

The aircraft and helicopter batteries manufactured by Aspilsan are being used by military air vehicles of various countries, and primarily the air vehicles within the Turkish Armed Forces' inventory for over 25 years. Our batteries have had the quality certificates of the German BWB and French SOPEMEA laboratories for many years. We wish to contribute toward decreasing foreign dependency by nationalizing our country's aviation battery requirements meanwhile seizing a commercial advantage in this area where limited manufacturers exist in the world. Our capability and experience in air vehicles will be advantageous within the scope of civil aviation, a rapidly developing in our country and in the world. Our production organization and design organization has emerged in order to reach this goal, and to facilitate in obtaining the requirement of approval from the European Aviation Safety Agency - EASA for our products. We have made significant progress in this certification process that we launched a year and a half ago, based on proving to the authority that our batteries fulfilled the identified minimum performance requirements and that they are airworthy in line with the relevant legislation, standards and technical specifications. We have had no issues throughout the certification project process so far and we aim to obtain our certificate by completing our battery tests within the year.


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Defence Turkey: Thanks very much for the interview. Lastly, do you have an additional message for our readers?

As Aspilsan, we have proudly served our country's defense industry for 36 years. I would like to state that we are committed to fulfilling all types of energy storage requirements demanded initially by our country and by the global market with the most developed technology by closely following the market and industry trends. While we explore and develop these technologies at our R&D center, we will fulfill the demands of the defense industry and the civil sector in line with our mission and thus contribute to our country. We will proceed toward a system with national technology, a system that is capable of manufacturing national batteries and cells - and these will be the first in Turkey


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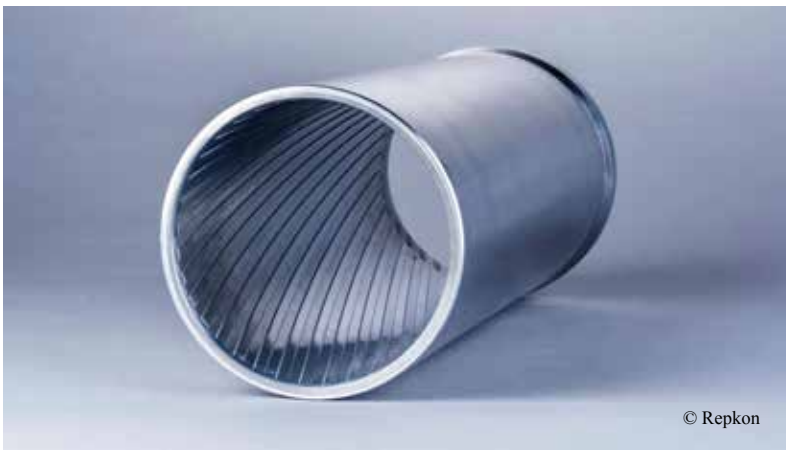
Repkon Announces Revolutionary Metal Forming Technology to Produce Precision Rifled Gun Barrel with an Extended Life Cycle

Flowforming technology is an advanced cold forming technology (continuous cold forging), which has been used in Aerospace and Defense industries for more than 50 years. With the new advancements in this technology (Repkon Free Flowforming Technology) now it is possible to produce chip-less and cost-effective high precision Gun Barrels.

The Flowforming method is known for producing high precision thin walled or thick walled rotary symmetric components. Using this technology, it has been possible to create only single internal and multi external contours on the work pieces, however it is now possible to produce multi internal contours as well as complex rotary symmetric shapes in the work pieces using the new state-of-the-art Repkon Free Flowforming Technology. Although flowforming has numerous advantages, some of the main ones can be summarized as follows; the material cold work hardening effect, drafted grain structure in the direction of deformation, increased tensile strength, dimensional accuracy and the improved surface quality.



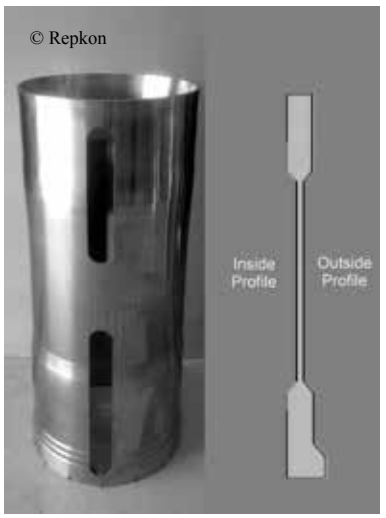
Moreover, flowforming is a cost-effective method for producing complicated parts to net shape or near net shape resulting in less material usage and reducing assembly costs by eliminating extra components. The technology also reduces or eliminates machining, welding and finishing process needs.

Although the flowform technique has been used in a wide range of applications in the defence industry for many decades, up until now it was not possible to produce rifled gun barrels due to technological forming limitations. Thanks to the patented Repkon Free Flowforming Technology which eliminates the existing limitations of the “conventional” forward flowforming and backward flowforming techniques, it is now possible to produce Rifled Gun Barrels using this technology.

Gun barrel production using Repkon Free Flowforming Technology presents a superior alternative to conventional manufacturing techniques such as Single Point or Multipoint Broach Cut Rifling, Button Rifling, Hammer Rifling and Electro Chemical Machining etc.

In addition to advantages listed below this new production technology will help engineering teams to design and develop complex barrels by minimising the manufacturing limitations;

- Superior material properties due to cold forging effect hence increase in the barrel life
- Net Shape or near net shape forming allows unmatchable material savings
- Increased forming tool and mandrel life due to non-impact forming

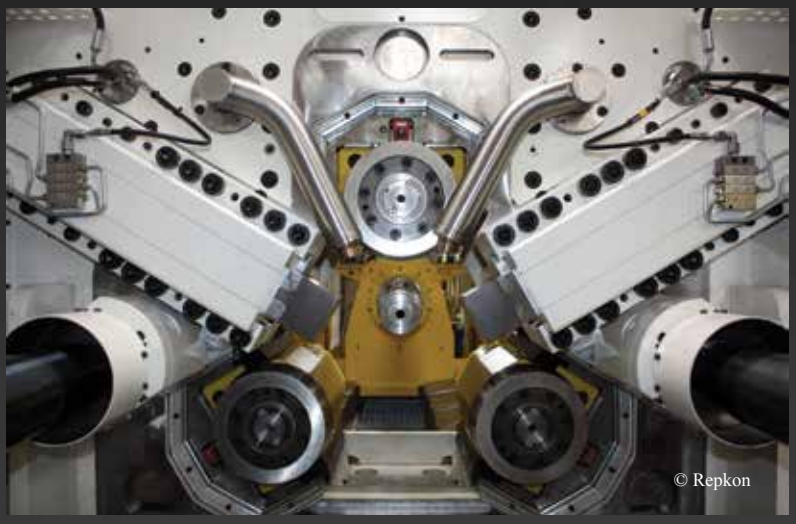


- Possibility of manufacturing vast range of material types or rifle shapes which is not possible with any other forming technique
- Possibility of the pre-tensioning / preloading the barrel hence increase in the barrel life
- Superior internal and external surface quality
- Superior geometrical tolerances including the sharp riffle edges, concentricity and straightness without secondary machining operations
- Elimination of micro cracks due to continues cold forging effect

Beyond gun barrel forming capabilities; with four decades of metal forming experience, REPKON is proud to offer high precision manufacturing alternatives to aerospace and defense industries for diverse products such as:

- Rocket Motor Cases
- Turbine Main Shafts
- Landing Gear Parts
- Hollow Shafts for Drive & Transmission (i.e. Helicopter Rotor & Drive Shafts)
- Tubes that are durable with high temperature and corrosion (i.e. Nozzle Cones, Diffusers)
- Jet Engine Intake Rings and Engine Chambers
- Gear and Drive Systems
- Copper Cones for Anti-Tank Missile
- Brass or Steel Cartridge Cases

Repkon is a provider of turn-key complete production plants for the metal forming sector as well as a designer, manufacturer and supplier of key metal forming machines for the global market, with a well-established reputation for outstanding performance. Their advanced in-house research and engineering capabilities in strategic technologies such as flowforming, shear forming, hot spinning, forging and ex-proof presses allows them to serve part and machine needs of their customers.



Tekno Kauçuk Shock and Vibration Test Center Accreditation Process is Completed

By Volkan Ertem- Tekno Kauçuk Sanayii A.Ş. Advanced Engineering Projects Group Leader

Tekno Kauçuk (Since 1959) is the manufacturer of anti-vibration parts notably for the Automotive, as well as for Home Appliances, Defense and Railway Industries. The Shock and Vibration Test Center inside of our factory located at Gebze Organized Industrial Zone was set up in 2013.


© Tekno Kauçuk

Tekno Kauçuk which provides high-level facilities for design, simulations, and validation for R&D activities added a three-axis hydraulic test machine, an electro-mechanic shaker, torsional test equipment and a medium weight shock test machine to its vehicle park already equipped with validation test equipment, a laser scanner, environmental chambers and a salt fog chamber, thus serving the industry with a full-fledged Shock and Vibration Test Center.

With the hydraulic test machine, the static and dynamic rigidities of the elastomeric parts on three-axis can be obtained, and life tests can be carried out. Characterization of rotational working parts can be determined with the torsional test equipment, and the electromechanical shaker is used for high-frequency dynamic tests. All the characterization tests of the elastomer parts can be carried out entirely with the aforementioned test devices and the actual behaviors of the parts tested with the simulation programs are measured thoroughly.


© Tekno Kauçuk

Within the scope of the shock and vibration test center project, tests can be carried out according to the MIL-STD-810 F/G, MIL-STD-167 and MIL-S-901D specifications required by the Defense Industry. We have an electro-mechanic shaker to apply shock and vibration tests for the MIL-STD-810 F/G and MIL-STD-167 requirements and medium weight shock test machine (MWSM) for the MIL-S- requirements in this project. Our Tekno Shock and Vibration Center has completed the accreditation process of Türkak in agreement with TS EN ISO / IEC 17025: 2012 standards as of October 2016 and is now among the few number of laboratories that can perform MIL-STD-810F/G shock and vibration tests and the only center providing MIL-S-901D shock testing in Turkey.

Thanks to the Tekno Shock and Vibration Test Center, it is now possible to carry out almost all of the shock and vibration tests for the Defense Industry in Turkey. With this center, we eliminate a significant deficiency in the R&D activities of the Turkish Automotive, Defense and Railway Industry contractors and manufacturers, achieved validation in national projects, and strengthen our stance in the international arena.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Karel Provides Military Communication System Products and Solutions with over 15 years of Expertise

Karel, established entirely with local capital, created electronic telephone switchboards with their own engineering capacity and genuine designs. By providing PBX products to this market, they led the transition from electro-mechanic systems of Turkey to electronic systems in communication. Karel has the most developed facilities in the field of electronic communication in Turkey, with a R&D department that is in compliance with international standards. Karel is the market leader in Turkey, exporting their products and solutions to more than 30 countries. Karel is among the top 3 in Europe and the top 15 manufacturers in the world, providing services to more than 700 thousand business with their PBX product.

With over 1,600 employees, Karel has been providing products and solutions for military communication systems for more than 15 years. Karel products are currently being used by the Turkish Army and several foreign armies. The Karel Military Product portfolio has a wide range of products ranging from durable communication switchboards to Public Address General Alarm (PAGA) systems designed for navy watercrafts. For the last ten years, Karel has put PBX intercom systems and PAGA systems on the market for moderate-large watercraft, meeting the requirements of the Turkish Naval Forces and shipyards.

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Objectives

The most significant objective regarding the defense industry is to extend their market to South Asia, the Middle-East and Turkic Republics, conducting long term exporting transactions. Additionally, the company aims to maintain an increase in turnover by developing cooperation with home-market prime contractors.

By continuing infrastructure investments for R&D activities in the defense industry, they plan to improve their testing capabilities. Through testing capabilities the company will gain an advantage in respect to competition due to the intensity of environmental conditions and EMC/EMI necessities in military products. Skills of R&D personnel will be honed via standard and progress training which will support design work for aerial platforms.

© Karel

Product Portfolio

Karel manufactures products and solutions in respect to the needs of the defence industry. The product range which started with military communication systems has expanded through the years; solid state discs, electronic control card and systems, manual military computers, inertial navigations devices, all within military standards. These products are still being utilized by the Turkish Armed Forces and foreign armies.

The DS200D/T series military communication systems, depending on the location of use, are differentiated from each other and customized according to land/naval uses.

RIBTECH

ALUPRO 920

Ribtech is an integrated manufacturer of recreational Rigid Inflatable Boats (RIBs), Military and Professional RIBs, Aluminium RIBs and Workboats from Turkey. Ribtech plant in Izmir, Turkey houses all R&D and manufacturing with series and custom built capabilities. Ribtech is the continuation of boat manufacturing business unit within Turkey's Marintek group of companies which has been active in the field since 1997.
Along with the professional and military RIBs in composite and Aluminium, which are used in Civil Defence, Police, Gendarmerie, Fire Brigade, Rescue, Coast Guard, Army, Air Force and Navy units, Ribtech also offers high quality recreational RIBs with Northstar and Joker Brands.

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DS200T military analog switchboard is designed for tough field conditions and are portable and durable against impact. DS200T, which distinguishes itself from others with features such as its backlight broad display, backlight key set, receiver installed to cabinets and headset that provide ease of use and PC-based system management interface, can provide connectivity with devices such as Analog/IP/ISN terminals, answer phone, fax and modem, GSM Gateway and IP-DECT systems.

With the IKT - Intercommunication system, they provide intercom solutions for naval and land vehicles. IKT systems are waterproof and appropriate for use in tough field conditions (vibrations, shock, heat). With its flexible structure, it provides intercommunication and wireless access to a variety of users.

The AD101 system, developed as a Watercraft Alarm and Public Address System, meets the needs of alarm and announcement in military watercrafts thanks to its developed features and integrated structure. With an Alarm and Address system, region-based alarms are given, announcements are made to selected regions and airplay is carried out over Radio-CD.

The AD101 Alarm and Address System enables alarm and announcement calls or airplay in bodies defined as watercraft-wide or as grouped. The system operates integrally with Accounting Switching Fabrics (MAS) and Military Watercraft Switchboards. The system also has User Stations (Kİ) authorized over Accounting Switching Fabrics and an external interface to alarm and announce with a Handset over a telephone switchboard. Power supplies which will provide power needs of the devices will be located within the GKB unit. Telephone Repeater Units (amphitheatre) within the scope of ASS are located on the amp modules on the General Control Units.

The AD101 Alarm and Address system is a modular structure created with the integrated operation of more than one product. Units are developed according to the 19" rack cabinets. The system has a power supply with both AC-DC and DC-DC features which can be scaled to be compatible with different power needs. The system is controlled and managed over the amphitheatre units' central system. The system was designed for easy assembly and appropriate for maintenance. Thanks to the modular structure, broken units are easily replaced without injuring integrity.

The MIL-STD 461E and MIL-STD- 810F were developed in compliance with military standards. By using military connectors in the system, measures were taken against corrosion, vibration and other breakdowns. Power supply of the entire system is provided from a single point. Special filtering was performed to prevent noise in the power supply. With the management software, the entire system is easily configured and error statuses are easily monitored.

Ship Entertainment & Alarm & Announce System is divided into 2 different systems as the AAS(Alarm Announce System) and the GES(Ship Entertainment System) that work together in an integrated form. Ship Entertainment & Alarm & Announcement System has a modular structure composed of multiple integrated products. The AAS(Alarm Announce System) has functions so that alarms that are region-based can be sounded, announcements can be made toward selected regions and music can be broadcast on Radio-CD, Audio Jack and Media server. The system has a DC-DC power supply that supplies the power to the whole system from a single point and can be configured to different power requirements. The power supply has special filters designed to prevent noise. The amplifier units can be controlled and managed from the General Control Unit (GKB).

Video On Demand and TV broadcasts can be watched by using panels on the entertainment system. Also, music selected from the server and other music sources can be listened to from the panels. Alarms and announcements are displayed and announced on the entertainment system panels. The entire system can be configured easily and error statuses are monitored by using software. The system is designed according to MIL-STD 461E and MIL-STD-810F military standards. The system uses military connectors to prevent against corrosion, vibration and other deterioration. The system is suitable for easy installation and maintenance. Because of the modular structure, defective units can be easily changed without damaging system integrity.

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System Components

The Alarm / Announcement control rack are composed of the General Control Unit (GKB), the Music Control Unit (MKB), the Speaker Distribution Unit (LSCB), the Alarm Announcement Station (AAI), the Media Selection Unit (MSU) and the Central Computer Unit (CCU) .

The General Control Unit is the central processing and control unit of the system. All operations are actualized by software on the General Control Unit in the system. The transmission of the alarm / announcement information is sent to the ship's general area or the selected areas on the General Control Unit. The electronic cards that perform the related functions are placed according to the appropriate configuration in the General Control Unit. The General Control Unit was designed to be scalable. More than one GKB can be connected in a cascade structure depending on each other according to system requirements. The Backplane card has an interface with 2 processor (CPU) cards that are spared, MODBUS Interface card, AAI Control Card, Radio & CD Control Card and 7 + 1 amp units control cards. The General Control Unit is integrated into the Ship Communication Switching System on a MODBUS card.

Music Control Unit (MKB) is composed of AAB (Broadcast selection interface card) and an auto tape.The aim of the Music Control Unit is to transmit audio broadcasts coming from an auto tape (AM, FM or CD) / media server (saved music files) or external audio connection.

Speaker Distribution Unit (LSCB) provides a connection between the General Control Unit and all internal and external horn speakers found in the system. The volume control units that can be used for the Horn speakers are also connected directly to the Speaker Distribution Unit.

Alarm Announce System (AAS) Announcements can be made to selected zones and desired alarms can be given through the keys on the Alarm Announce System. Alarm types and area descriptions are flexible and new alarm types can be easily added to the system.

Mr. Senih Başol - Karel Defense Industry Solutions Director

Mr. Senih Başol "Karel will continue to develop products and projects for the defense industry with its experienced R&D infrastructure, and to play a major role as a subcontractor in both national and international defense projects. Our company culture enables us to easily cooperate with many different companies. We always work to accomplish projects on time."

Media Server Unit (MSU) is the server of the ship's entertainment system. The Media Server Unit consist of COTS Media Server, Mini PC (Single Board Computer) unit, TV / Radio Tuner (Antenna / USB converter) and Ethernet Switch units.The subunit of the MSU which has an ETH interface with CCU, GKB and ND subunits, has an RF interface with ADU. The RF signal coming from the ADU interface is multiplied by 4 with a ¼ splitter. One of these signals is sent to the General Control Unit and the rest of the 3 signals are sent to the Antenna / USB transducer located in the MSU subunit. Also, 2 cascade ethernet switches that are located in the MSU, are used to distribute all signals on these units.

Central Computer Unit (CCU) is control unit of the central system.

Program Selection Unit (PSB) there are 3 units in the system. The PSB is the unit connected to the MSU through ND's like EP's. The TV units connected to the PSB's can access, watch, listen to the Live / Audio / Media broadcasts placed in the MSU with the PSB remote control. The PSB contains a Mini PC (Single Board Computer) unit and two input modulators. The modulator card receives and modulates DVD and Satellite transmissions and transmits them to the ADU. The PSB receives TV broadcasts and recorded videos, that come from Ethernet, on the MSU and sends them to the TV units from the HDMI port. There is a connection between the PSB and HIFI to silence HIFI units during the incoming alarm signal.

Entertainment Panels have 7 different mounting panels in the system. The EPs that consist of COTS panel PC units are part of the entertainment system. It connects to the MSU through the ND. The EPs can select Live/ Audio/Media to listen and watch on the MSU. This information is shown on the EPs during Alarm/ Announcement.

Power Distribution Unit (PDU) has 220VDC interface

Furthering Exports – Building International Recognition for Turkey's Defense and Aerospace Industry

By Latif Aral Aliş, Chairman - Defense and Aerospace Industry Exporters' Association

The Turkish defense and aerospace industry is now designing, developing and producing the most critical products of the defense industry, from unmanned aerial vehicles to communication and observation satellites, from helicopters to trainer aircrafts, from battleship to infantry rifles, from modernization projects to command and control systems. It is meeting the requirements of the Turkish army and security forces. However, in today's world the borders of Turkey should be surmounted, by exporting our premium products. Not only Turkey's needs should be met but also export performance should be increased.

Our defense and aerospace industry with its almost 2-billion-dollar export performance stands tobe one of the most important export figures of Turkey. Our sector which aims to achieve 25 billion dollars in exports by 2023 managed to end the year with a growth rate that was beyond Turkey's average compared to the previous year. In 2016, our sector reached $1 billion 678 million in export performance.

Today, Turkey stands out as a country that is producing its own satellite, drone, trainer aircraft, helicopter, infantry rifle, battleship, armored military vehicle, missile and rocket system; developing simulation and software; cooperating in globally recognized projects like F35 and A400M; building a satellite production test center; working on the construction of the satellite launch center and initiating genuine helicopter projects, with its qualified labor force, research institutes, R&D laboratories, SMEs and huge companies.


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International cooperation is necessary in order take part in global competition; and being recognized is necessary for international cooperation. You can produce very good and perfect products without failure on the production calendar but unless you are recognized or known, nobody will be aware of you. This is precisely why prestigious fairs, with broad participation, such as IDEF 2017 International Defense Industry Fair, embody huge opportunities for us. By hosting this fair, we will show the world the high level of achievement reached by the Turkish defense and aerospace industry.

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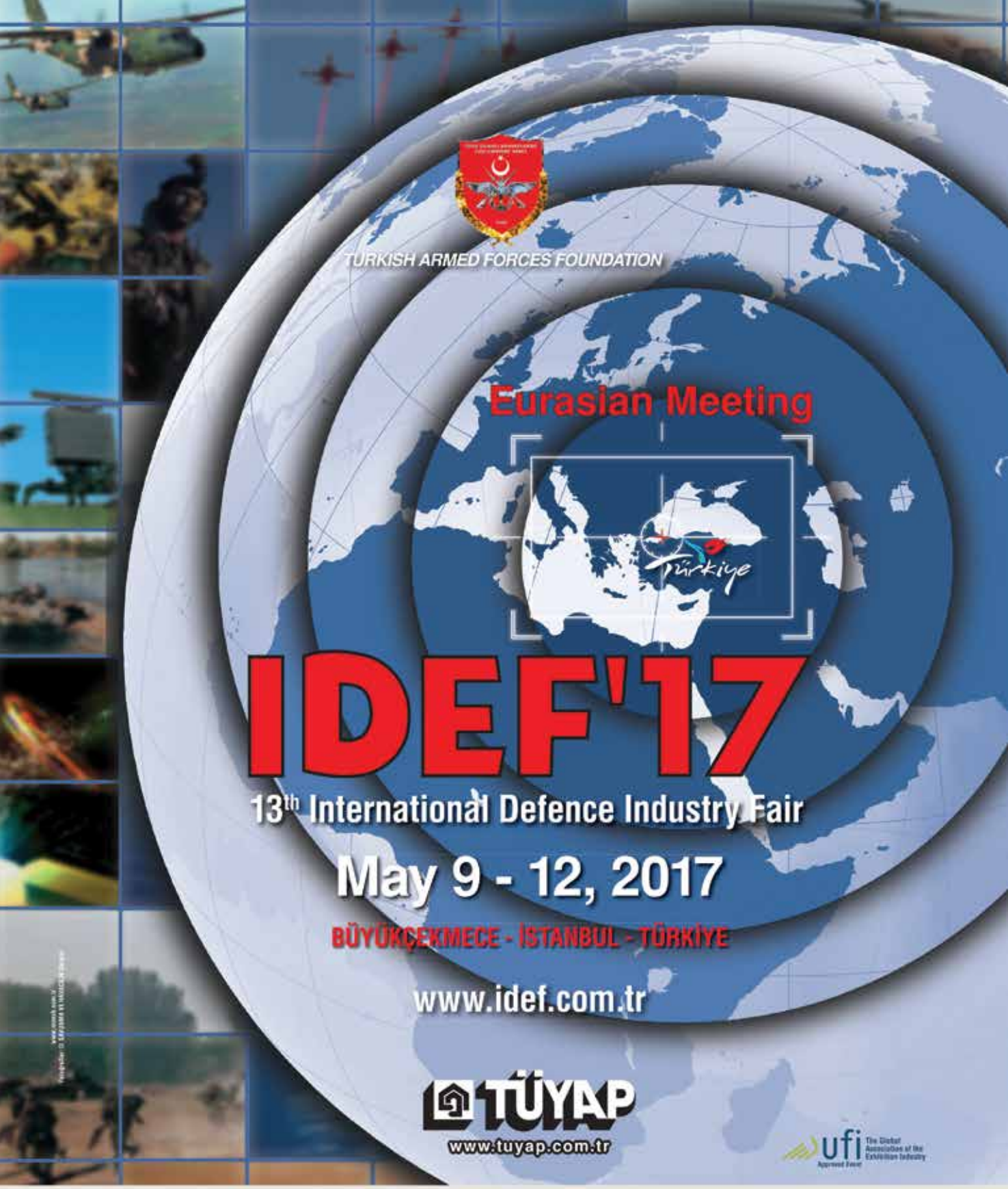

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Karizma Textile - Turkey's Customer Centric Leader in Specialty Textiles, 3D Fabrics Exporter

Industry Leading Manufacturer, Karizma Textile was established in İstanbul ,Turkey in 2002. Karizma applies a CRM based marketing strategy (Customer Relationship Management) based on customer satisfaction. Based on research and expertise, the company incorporates innovative solutions with a dynamic staff structure that also consists of producers who closely follow the direction of global fashion; Karizma is a leading company and creates their own fashion line.

Karizma Textile has years of experience, especially in industrial products for the footwear industry, producing safety shoes and military boots, various specialty textiles for specific garments, underwear, technical textiles, home textiles and many other products that are requested based on requirements of procurement authorities.

Karizma Textile manufactures various types of knitting machines and type of lamination systems. They use technical Raschel machines to produce Technical textiles for safety shoes and military shoes. The Annual Production capacity of company is approx 5,000,000 m^2 and it creates the laminate lining.

3D Textile Production from Karizma Textile

Karizma Textile is the only company in Turkey that produces AFT Cordura, which is a new technology for military and police boots, using the latest technology machines in the world. 3D fabrics

made with this special machinery, especially the products coming out of the Far East, made within Turkey, are making a significant contribution to reduce Turkey's imports.

Karizma Textile understands the customer satisfaction-oriented service approach, and as a pioneer and leader in focusing on products with high quality standards, Karizma has the distinction of being the first company certified in accordance with ISO-9001-2000 quality standards in the industry.

In addition, the TSE certificate is valid in the Turkic Republics of the Russian Federation, these countries recognize the certified products for quality and hygiene.

Karizma Textile is the most exported the products to countries such as the Middle East, the Balkans, the Caucasus Region, Russian Federation and the Turkic Republics countries.

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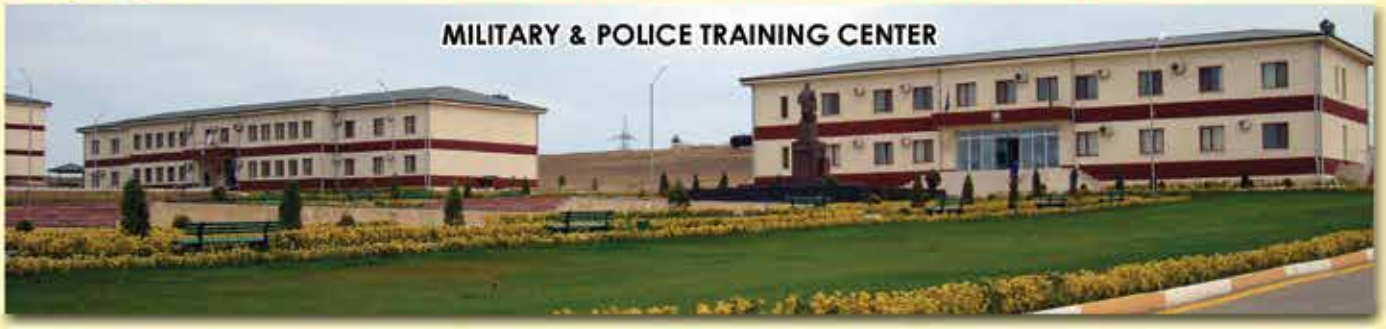

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Ribtech Stronger

Further today, Inflatable Boats and Rigid Inflatable Boats - RIBS, have become indispensable in many military and professional fields like; Military Defense, Security, Search and Rescue, Coast Guard, Coastal Safety, Law Enforcement, Ambulance service, Fire-fighting. Thanks to their high-speed capability, maneuverability, navigation skills, low running costs and ability to be equipped for different tasks. In addition to its own brand Northstar, Marintek Group has become the only manufacturer of the inflatable boat and RIBs in Turkey towards the end of 2014 by buying all the assets of Asil Marine A.Ş. which is known with its brand Joker since 1987. Following this development, the button has been pushed for the production of high-capacity and high-tech featured boat. In this new and modern facility of 4500 m^2 in-door area, both Northstar and Joker branded pleasure boats are being produced as well as the brand Ribtech which is carried out by emerging these two brand's Military/Professional product line. Ribtech inflatable boat product range, as well as at a variety of sizes and features, also consists of RIBs up to 12 meters with hulls and decks produced by the vacuum infusion or RTM (Resin Transfer Molding) technology. In our composite production we use vinylester and epoxy resins as well as the standard polyester resins.

Almost all of our inflatable tubes, are produced either with CSM (Hypalon) as known for its high durability or with polyurethane fabrics on customer's demand.

With the importance of military and professional demands, aluminum hull production for RIBs started as an alternative to composite in 2016. The first member of the Alupro range, Alupro 920 has made her debut in International Istanbul Boat Show in 2017. At the moment, smaller member of the Alupro Range, Alupro 800 is under construction

in Ribtech Facility in İzmir, Turkey. Many other new models for the Alupro Range are in development stage. With this capacity, due to short development processes compared to composite production, fewer or larger RIB projects can be answered.

Our company, in addition to providing solutions for developing the standard product platform according to the needs, also provides customized solutions by developing projects together with the needy units. In addition to our engineering team, we consider the world renowned experts in Military and Professional RIB design firms as our partner.

The production of the necessary molds are fully realized in our company. Each of our products are delivered to the superior operational characteristics as a result of careful development and testing process of the overall design, hull design, complete with tube geometry and capacity.

In 2015, the production of inflatable and closed cell polyurethane foam tube Search & Rescue RIBs are ongoing for Sultanate of Oman and many new projects are also being followed , mainly in Gulf Countries.

In 2016, under the scope of Ministry of National Defense, modernization project, forty unit of RHIBs varies from 4.3 meter to 9,5 meter in 4 separate model for Turkish Navy.

Ribtech is also a solution partner of STM which is the executive company of MİLGEM and Pakistan Maritime Supply tanker projects for the moment. Ribtech has undertaken the tasks of developing and producing the RIBs in both projects according to the user needs and requirements. Two 10-meter tender boats of Pakistan Navy Fleet Tanker successfully completed and delivered to Karachi Shipyard & Engineering Works Limited. Tender boat and Fast Intervention Boat of the third ship of MİLGEM project ready for the delivery tests. Boats of the 4th ship is still under construction in Ribtech Facility. Besides MİLGEM project, tender boats for LST (Landing Ship Tank) Project delivered in 2016.

Up to about 30 years of experience, Ribtech is ready to be your partner with its efforts for process improvement, product development and design quality.

NANObiz – One of a kind in Turkey TÜRKAK Accredited Provider of Fungal and Environmental Test

Mrs. Zeynep Öktem – Founder & CEO and Prof. Hüseyin Avni Öktem - Founder & CTO of NANObiz informed us about the companies structure and profile, TURKAK accredited lab and Fungus test activities

Defence Turkey: Could you please briefly introduce us to NANObiz?

NANObiz is a technology company, established in September 2006, and located at ODTÜ Teknokent Ankara, Turkey. The vision of NANObiz is to be a globally recognized technology and product developer in the field of homeland security and the field of CBRN. The company is experienced especially in biological detection, biosensors, decontamination and early warning systems. NANObiz has various patent applications, utility models and trademarks in the above-mentioned fields.

NANOBIZ is the sole regional accredited lab in the Fungus Test, which is performed according to MIL-STD 810, DO-160 and ASTM G21 Environmental Test Standards. NANObiz has accreditation from TURKAK (Turkish Accreditation Agency), which has both local and international recognition around the world.

NANObiz has an interdisciplinary personnel profile consisting of mostly PhD and MSc degrees who are experienced in the field of CBRN.

NANObiz is the exclusive representative of HOTZONE SOLUTIONS GROUP in Turkey, the world's most practice oriented and realistic CBRNE training provider and consultant service Provider Company. The company is also an active member of the EU Working Group Industrial Mission Group of Security: IMG-S TA6 CBRNE and an active participant in R&D projects financed by the EU.

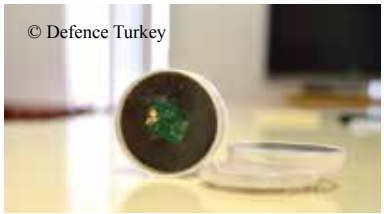
Defence Turkey: What are the infrastructure and certifications of NANObiz?

NANObiz has a Biological Safety Level -2 (BSL-2) molecular biology & microbiology Laboratory at ODTÜ Teknokent, which is equipped to conduct all research activities. Besides this lab, the company's main offices together with working places for electronics and software development groups are also located at ODTÜ Teknokent.

NANObiz is certified with ISO 9001:2008 and ISO 17025 general requirements for the competence of testing and calibration laboratories. The company also has NATIONAL and NATO Secret Level Facility Clearance Certificates as well as a Facility Operation Certificate issued by the Ministry of Defense, in order to conduct R&D and prototyping for the field of CBRN.

Defence Turkey: Can you briefly describe the Fungus Test and its importance?

NANObiz, which is entirely local and national, is the first and only independent institution that has a TÜRKAK accredited lab within ISO 17025 standards in Fungus Test Method 508.7 which is performed according to MIL-STD 810 Environmental Test Standards, Fungus Resistance for Aviation according to DO-160 Standard and Fungus Resistance Test which is performed according to ASTM G21-15 Standards. Fungus Tests are one of the most important environmental tests in the defense sector. Fungi are resistant organisms to environmental conditions and because of their structure, they can grow on many materials from fabrics to electronic components, plastics, rubber that we use in everyday life, as well as to more important mechanical parts, which can endanger human life in the case of operational dysfunction. Fungal growth on materials has very different effects. These effects can range from the appearance and bad odor to the loss of function (conductivity, insulation, etc.) due to fungal growth on the material, or the erosion of the material by growing fungal colonies on the material.



PCB Fungus Test

NANObiz lab has accreditation from TURKAK (Turkish Accreditation Agency) (accreditation no AB-0863-T) which is recognized by both local and international agencies in specifically Fungus Test Method 508.7 in MIL-STD 810, Fungus Resistance for Aviation in DO-160 Environmental Test Standards and Fungus Resistance Test which is performed according to ASTM G21-15 Standards. Fungus tests are important tests in the defense sector; these tests are applied in order to evaluate the extent by which the material will support fungal growth and how that growth may affect performance or use of the material. NANObiz Lab has test chambers that accommodate versions that require diurnal temperature and relative humidity cycles. The surface of the test pieces are sprayed with a fine mist of the fungal spore mixture, and then incubated for 28 days or longer according to the demand of the customer.

A company which is entirely local and national, NANObiz is the first and only independent institution that provides this testing service in the TÜRKAK accredited lab within ISO 17025 standards by. All "NATIONAL SECRET and NATO SECRET" tests are performed in our laboratory which is Privacy Facility Security Certified

Let Akademi Sancak Secure Your Future...

Turkish Defense Industry, together with synchronized efforts in manufacturing, training and consultancy services will be the operational force powering Turkey's 2023 vision

In modern day conditions, the defense industry is one of the most important indicators of a country's development level in terms of military power, economic capacity and capabilities. Akademi Sancak (ACS), since its establishment, has been a proud member of the growing Turkish Defense Industry with its unique features.

Well known by relevant governmental agencies as a "Private Defense Counseling, Military Training and Logistic Institution", ACS collaborates mainly with the Ministry of Defense and the Undersecretariat for Defense Industries (SSM). ACS is a pioneering company within the sector in terms of defense/security services, sharing the common 2023 vision

for the Republic of Turkey. The ACS staff is notably comprised of distinguished personnel who have retired from the Turkish Armed Forces together with members of other security forces such as police, gendarmerie and intelligence as well as academicians from esteemed Turkish universities, for the main services below:

- Military Training & Consultancy
- Combatting Terrorism-Training Special Programs
- VIP Protection & Facility Security Programs
- Technical Aviation, Certification & Security Programs on Aviation
- Public Safety, S&R Programs
- EOD, UXO, ERW Clearance & Demining Services
- Risk Analysis & Situational Awareness Programs
- Procurement of High-Tech Products & Trainings on Security
- Military School Management & Foreign Student Programs

ACS has been assuming its responsibilities by having sectoral awareness, creating customer focused innovative solutions and applying complex management skills in national and international markets in accordance with related state agencies and other solution partners from Turkey or abroad.

We believe that there is a concrete link between manufacturing and services in the defense industry. As long as there is an understanding and better support for this in Turkey, "Production and transfer know-how" assets will play many active roles within the 2023 vision of Turkey, verifying this fact through national and international platforms.

Being the main source of ACS, our staff have important features which differentiate the organization from other similar establishments around the world. Some of the features of the ACS staff include:

- Being ex-member of an Armed Forces that continuously sustains the Turkish army tradition of 2,226 years through contemporary norms as a member of NATO,
- Possessing a great deal of

international experience gained at critical missions in various crisis areas in the world,

- Comprising determined and pioneering attitude, high capacity, well trained in every field, particularly in special forces and commando operations executed with Army Aviation and Air Force support in our national combat against terrorism which has lasted for many years in the region,
- Having vast training knowledge well above world standards regarding Land, Air, Air Defense, Naval and Law Enforcement Forces training,
- Having high level expertise on border security; struggle against trafficking (human, drugs and arms) as a result of the fact that the country interlinks continents acting as a bridge between east and west,
- Possessing vast experience and knowledge in PSOs, Humanitarian Aid Operations and CIMIC Operations, with reference to the experiences gained and lessons learned in Bosnia-Herzegovina, Kosovo, Afghanistan and Gulf of Aden.
- Having professional skills on defense/security counselling, vocational programs with esteemed universities in Turkey, restructuring including capacity building, military observation, risk management, logistics management and procurement.

Within this scope, ACS has been acting through multi-dimensional programs to handle its missions considering the defense/security systems from the Ministry level to the individual soldier/police officer, as a whole or modular approach according

to requirements with many countries mainly from the Middle East, Africa and Central Asia on various projects.

We are proud of having positive feed-back from previously completed and ongoing project owners such as the Ministry of Interior of Turkmenistan which has added well-trained helicopter pilot and technicians into its squadron by ACS efforts and the Qatar Emiri Naval Forces which has cadets studying Maritime Faculty Programs at Istanbul Technical University under the coordination of ACS.

ACS aspires to continue numerous services in Turkey and abroad with its own experts by providing on-site training, courses and consultancy services, such as its successful representation in the NATO exercise, Loyal Lance 2014.

Defense and security mechanisms of countries can gain various benefits from the Turkish Defense Industry as a "Full package" through requirement-tailored and cost-effective programs that can be designed as complementary or independent services. The Turkish Defense Industry has

experience in producing qualified, globally competitive goods and has the unique know-how and experience acquired through tactical, operative and strategic levels.

Our expectations are very high; from 2017 forward, we strive to contribute to national services which will be approved by Ministry of Defense, Ministry of Interior and Turkish Armed Forces, in addition to commencing some new projects abroad, resulting from fervent efforts.

We believe that the Turkish Defense Industry together with synchronized efforts in manufacturing, training and consultancy services will be the operational force powering Turkey's 2023 vision.

ACS has been and always will be proud of its unique reference and energy, with its unwavering devotion to contributing to a secure future.

Defense Industry-Mobile Solutions

Kayalar Enterprises Group meeting the needs of Military and Humanitarian Aid groups with mobile kitchens, high capacity built-in kitchens

Kayalar Enterprises Group was established in 1957. Since its foundation, it has been operating in the industrial kitchen sector and has become one of the industry's leading organizations with more than half a century of experience.

Today, the company continues to be a pioneer in its sector with approximately 2500 kinds of products including industrial kitchen equipment, the manufacturing of kitchen equipment, designing, kitchen project and contracting, disaster systems and mobile systems. The company's production activities are carried out in plants that comprise a total covered area of 45.000 m², 30.000 m².

The organization has fulfilled its mission of carrying out amicable projects with their overseas partners, with the introduction of the sector, the exporting of new products to be of service to consumers and providing a foreign exchange inflow to Turkey. They serve their customers with 8 sales stores and 54 dealers throughout Turkey.

With the establishment of their strategic business development department 10 years ago, they began to work quickly both in Turkey and in the world to find new markets, becoming a recognized brand and increasing their market share. As a top priority, they started to work on raising their R&D department to meet international standards. They increased turnover share. They reduced the number of personnel by 10 and maximized utilization of technological opportunities.

Following these focused endeavors, they quickly became one of the leading companies in the field of design and new technologies in the industrial culinary sector and strengthened their place in the sector in Turkey and around the world.

During their strategy and business development studies, they observed that their products in Turkey and throughout the world were in demand especially by military units and disaster relief organizations. By concentrating their R&D and design work on these areas, they acquired the capability of producing high-capacity products with a small footprint and user friendly ergonomic designs.

By placing these products in mobile systems, they are able to offer their consumers all kinds of industry related products such as mobile kitchens, mobile bread ovens and especially laundry, dishwashing, water storage, purification, storage and cold storage products.

They have become a sector leader in Turkey and their success and determination has encouraged their continual development, easily placing them among the top 10 companies in the world within the sector.

They are able to produce a cooking capacity for 10,000 people / day in a 40" container;

© Kayalar

offering products with the capacity to produce 15,000 loaves of bread / day in a 40" container. Their


© Kayalar

mobile systems are delivered with high capacity, ergonomic design, durable, simple to use and economical devices in the container, with service trolleys and tents.

R&D operations are rapidly continuing, ensuring the design of these products to be as durable and simple-to-use as possible, with ergonomic comfort, high-capacity, low-consumption and to be useable in all-weather climate conditions.

Their mobile systems can work with electricity and gas. In line with the global direction of designing energy efficient systems, their mobile systems are designed to be cost saving devices based on capacity / energy consumption. Their R&D work in this area continues rapidly to produce the most economical devices.

The most important mobile system produced currently is the SAHRA KITCHEN, which is built on a trailer with the capacity to cook 3 separate dishes for up to 600 people. This mobile kitchen can work with gas oil, kerosene and diesel fuels at the same time and separately.

This product and all of their mobile systems are mainly used in the Turkish Army and the Turkish Red Crescent, in armies across the globe, in world aid organizations and in many municipalities in Turkey and throughout the world.

The company's additional area of concentration is on designing, developing and providing service for products in high-capacity


© Kayalar

built-in kitchens (military units, hospitals, universities, catering companies, residences, soup kitchens and hotels).

The functionality and efficiency of these kitchens are essential to fulfill their missions. The clock never stops, time is of the essence. Therefore, high-quality, 24-hour-a-day after-sales service and support for the kitchens are available. Service providers are located all around the world, with well-trained and knowledgeable staff to support and resolve any issues with urgency.

In addition to their focus on production and R&D, Kayalar Enterprises Group is committed to upholding their principles which are based on customer satisfaction throughout pre-sales and after-sales activities.


© Kayalar

With determination, they strive to continue to be leading a supplier of new technologies and compatible products, ergonomic designs that will be advantageous for consumers in accordance with international standards, providing exceptional customer service, with a distinctive focus on human resources. With perseverance and dedication Kayalar Enterprises Group looks forward to meeting the needs of consumers in an ever evolving global environment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Success and Momentum Propel ODTÜ Teknokent and the TSSK Forward in 2017

ODTÜ Teknokent, Turkey's Leading Technopark, hosted Defence Turkey magazine for an onsite interview with Mr. Tolga Özbolat - Director, TTO and Technology Collaborations - ODTÜ Teknokent
Building up on strength and collaborative experience, ODTÜ Teknokent is poised for success with talent, dexterity and an appetite for the International market

Defence Turkey: Please accept our very special thanks for devoting your time to answer our questions. As a start, could you please tell us about ODTÜ Teknokent in terms of the activities and projects being carried out?

It is our pleasure to host you here today at ODTÜ Teknokent. As you know, ODTÜ Teknokent is the first and still is Turkey's most innovative technopark. It serves a great ecosystem to its tenant companies, to ODTÜ faculty members, researchers, where we aim to support technology based entrepreneurship, increase the university-industry cooperation, commercialize R&D through the technology transfer office, facilitate interactions and collaborations between companies and finally work for the international competitiveness of the companies. Therefore, ODTÜ Teknokent has a wide range of programs, activities and projects addressing different needs of different stakeholders.

Among these are, the "Yeni Fikirler Yeni İşler Acceleration Program", the "Animation Technologies and Game Development Center - ATOM" together with various Incubation Centers as per the promotion of technology-based entrepreneurship; the "Technology Transfer Office - TTO" for the commercialization of R&D; Defense (TSSK) and ICT (T.ICT) clusters as a an expeditor of collaboration among companies; and finally the San Francisco Business Acceleration Center (T-Jump) together with liaison offices abroad paving the way for international cooperation and to act as enablers for companies to open up to global markets.

With its more than 330 tenant companies, 60% of which were initiated on its premises and employ more than 5,500 staff, 95% of which have bachelor, master of PhD degrees and with 125.000 m^2 of closed area reserved for R&D operations, ODTÜ Teknokent has undersigned exemplary success stories to serve as a model for other technoparks in Turkey.

The Award Ceremony of YFYI Acceleration Program

The companies operating at ODTÜ Teknokent are involved in R&D activities in software and information technologies (49%), electronics (21%), mechanics and design (15%), medical technologies (4%), energy and environment (5%) and advanced materials, agriculture, food, aviation and space, automotive account for the remaining (6%) altogether.

Due to the aforementioned services and its activities, ODTÜ Teknokent was selected as the most successful technopark having ranked FIRST PLACE five times and awarded as the most successful technopark in the Technology Development Zones Performance Index Study for the years 2011-2015 executed by the Ministry of Science, Industry and Technology.

Defence Turkey: What is the main target of the TSSK?

Thank you for raising this question, since I think the TSSK is very important as it is a cluster that was founded in ODTÜ Teknokent. By the year 2010 more than 100 firms had gathered together under the TSSK (Teknokent Defense Industry Cluster) in order to have a voice united through strength and developed more than 500 successful projects focused on the defense industry. These companies complement each other and add value to each other and defense capabilities, developing new products and services for aviation and security areas that have vertical expertise.

The development of needs that are critical and that have to be nationally produced, by national defense industry firms, occur within the scope of R & D-focused collaboration with universities. National defense industry companies, with universities and other companies, within the framework of R&D-oriented collaboration, set out with the vision to produce technology for the international markets, ODTÜ Teknokent Defense Industry Cluster.

Defence Turkey: How do you facilitate defense companies to work together and how are the cluster activities financed?

Within this context, support is provided for the pioneering of national and international business development activities, key staff on behalf of firms benefit from governmental support. Together, the cluster identifies targets for the development of a common infrastructure to meet the needs of cluster member firms. Universities, large industrial organizations, relevant public institutions, organizations with cluster members to ensure cooperation, and key personnel work toward reaching the targets set forth. The gathered cluster has its own unique management structure, representatives of the elected members of the firms have been working in collaboration with TDZ management on the management structure.

Besides the Ministry of Economy, SSM and TUBITAK support TSSK members and SMEs in the defense & aerospace area providing R&D and internalization support to enable them to develop products towards long term program planning in their strategic plans.

Defence Turkey: With more than 330 companies and over 5,500 staff you have a structure, which is growing every day. What are your comments on the added value and innovation contributed to the sector by the Defense - Aerospace, Space and IT companies that active within your body?

The driving force of clusters is the synergy that comes from R&D projects performed between university, industry and research.

Currently; in the "Anka" UAV program, ground based flight control & payload control computer, digital data recorders and ground station software are provided by TSSK companies. In the "Atak" helicopter program, airborne digital data recorders, anti-tank missile launcher control system, missile video coding/ decoding units, moving map computers and training simulators are provided by TSSK companies. There are many other examples can also be given. Moreover, TSSK companies are taking a role and will take more roles in major platform programs by also converting some of the foreign sourced subsystems to local indigenous products via a series of local R&D projects under a plan managed by SSM.

Defence Turkey: How do you evaluate the export performance of the TSSK Cluster members in 2016? Where does the TSSK see itself within the next five-year period?

I can answer these two questions together. There are more than 110 member firms and more than 2,200 R&D personnel employed. Currently, about 500 defense industry related R&D active projects are being carried out. Since the end of 2013, the clusters' turnover has exceeded 900 M TL and exports exceeded $ 180 Million. With the number of member companies and the R&D personnel, the TSSK is quite strong and the numbers show clearly where the TSSK stands. Moreover, the importance of R&D focused clusters is also of significance to mention for our national defense industry. The TSSK is located in the defense industry sector, and its structure consists of large, medium and small scale companies. Beside intra-cluster development and internationalization activities, with the accumulation of owned experience in the sector, by transferring of expertise into other national and international sectors, with the correct use of resources, it is ensuring the mission of accurate planning for new investments.

4th Project Market Day

Defence Turkey: What can you say about TSSK's activities in terms of events? And would you also inform us about your Market Day?

Throughout the year, the TSSK organizes various sector specific events, these are B2B meetings, special events with main contractors, seminars, soft skill and technical training. In January of each year, there is a very big sector meeting called Project Day which is held at the ODTÜ Cultural and Convention Center. The products developed by the companies operating under the roof of TSSK were showcased at the 4th Project Market in this year. At the event in which large and small scale defense companies gathered, new business opportunities were discussed in detail through bilateral negotiations with the participation of Dr. Celal Sami Tüfekçi - Deputy Undersecretary for Defense Industries.

Defence Turkey: Are there any other points that you would like to mention to the readers of Defence Turkey magazine?

I believe that the TSSK is very important, whereas its majority of member companies are R&D focused SME's, which are the driving force for the economy. We work for the international competitiveness of member companies and boost the university-industry cooperation by various projects and activities. Moreover, we cooperate with all the important institutions, clusters and companies within the sector. I believe a stronger TSSK means a stronger defense industry

52nd INTERNATIONAL PARIS AIR SHOW

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Where aerospace leaders
get down to business

an event from GIFAS

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Koza Construction & Defense Industry Growing Globally

Koza was established in 1991 in Turkey to operate in the defense industry. The company is headquartered in Istanbul.

Koza develop tailor made turnkey projects for; Police Forces, Military Forces and, Special Forces on an international basis. Professionally designed and constructed buildings will provide modern training facilities for; protection, defense and operations.

Training Systems for

- Small and Big Caliber Guns & Rifles
- Armoured Vehicles
- Simulator Systems for Various types of Training

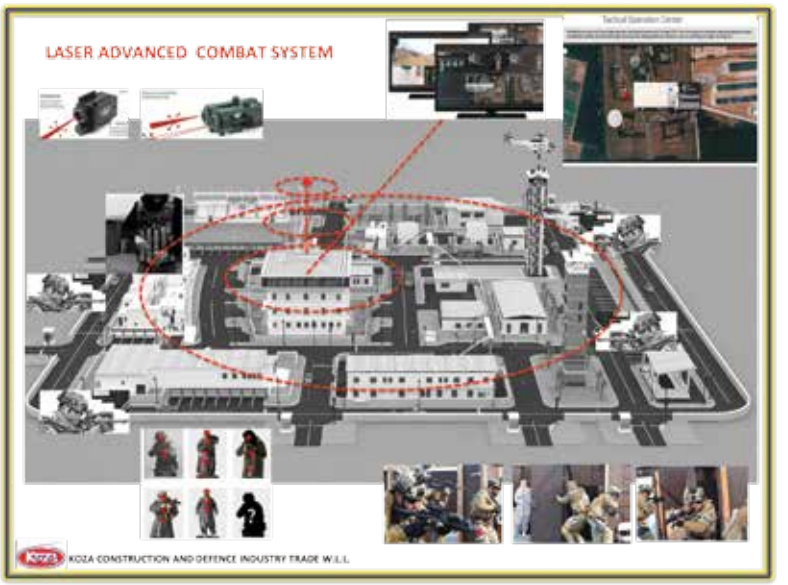
Construction

- Headquarters & Office Buildings
- Indoor & Outdoor Shooting Ranges
- Facilities Buildings (Dining Halls, Dorms, etc)
- Sports Fields, Physical Training Centers, Pentathlon
- Advanced Driving Technique Tracks and Simulator Systems
- NATO Standard Barracks
- Mobile Hospitals
- Hangars

Koza professional team is made up of architects, engineers and sector specialists. Koza use the latest technological systems and construction materials to satisfy high profile demands of Koza customers. Thanks to their custom made turnkey projects, users are developed; physically, technically and mentally.

Koza company holds ISO 9001:2000 Quality Management Certification related to its businesses.

Koza has completed construction of more than 100 shooting ranges globally. Koza opened its first international office in Moscow/Russia in 2003. Between 2003 and 2008 Koza successfully completed a number of projects in Russia. One of the most important projects was for the Federal Protective Service (FSO), which is an indoor shooting range and a simulation system.



Koza was invited to Azerbaijan in 2006. Koza opened their branch office in Baku the same year. Its first Project in Azerbaijan was for the State Security Service of the Republic of Azerbaijan. This military based construction had; indoor-outdoor shooting ranges, sports fields, headquarters, dormitories, dining halls, facilities building and infrastructure. Koza completed similar projects in the Republic of Azerbaijan for the Ministry of Defense, the Ministry of Defense Industries, the Ministry of Interior and for the Ministry of Taxes.

Now, Koza is constructing one of the world's biggest Tank shooting training facilities in Azerbaijan for the Ministry of Defense. Koza is planning to finish it in 6 months' time.

In 2015 Koza opened its next branch office in Doha/Qatar to follow up projects in the Gulf Region.

In 2017 Koza opened its last branch office in London/UK to enter the European market.

In a very short period of time, Koza started to be well known in its field of business all over the World. Koza work very closely with Koza customers to ensure that our facilities work efficiently without any technical problems.

Also, Koza attend International Defense Exhibitions to present their company's capabilities to their potential customers. In 2017 Koza is attending IDEF17 which will be held in Istanbul between 9-12 May. Koza is very excited to be there to show their latest systems. Attendees can visit them in Hall2 No: 216.

Between 16-18 October 2017, Koza plan to attend BIDEC17 which will be held in Bahrein for the first time.

Fast Electronic Component Procurement from the Four Corners of the World

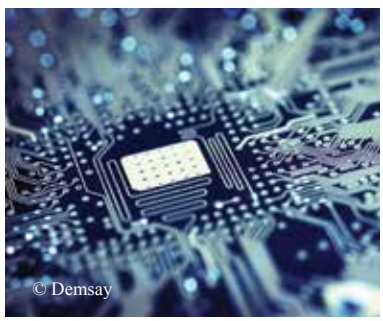
Founded in Istanbul in 2014, Demsay Elektronik, with 15 years of professional experience, caters to the electronic component requirements of their clients. Demsay Elektronik initiated its activities with 7 employees and in just 2 short years, it increased number of employees threefold by achieving an average growth rate of over 80% per year.

Demsay Elektronik is headquarted in Istanbul, with a branch in Romania, an office in Shenzhen and a warehouse in Hong Kong. Demsay Elektronik offers exceptional service, high quality, customized production with timely delivery and cost effective principles, with alternative product research and logistics services to customers in addition to fast electronic components supply.

The Demsay Difference – Best Price and High Quality Service

Demsay Elektronik meets clients' electronic components requirements by executing shipments from the world's leading electronic components suppliers. Demsay has regular weekly shipments from the USA, Europe, and the Far East.

With its shipments from global distributors, Demsay is able to facilitate fast delivery of high quality components, even from the Far East. Demsay aims for the procurement of equivalent products with reasonable prices. Its dynamic and professional procurement staff and sales engineers engage in research for the product requests of their clients and procure them with competitive prices.



With Demsay's innovative and development-oriented structure, they aim for the best price and high-quality service. Since the day Demsay was established, with each success story they move closer to this objective, step by step, always placing customer satisfaction as a top priority. Demsay procurement includes Semiconductors, Passive Components, Connectors, Electro-mechanicals, Wires & Cables, PCBs, LED/LCD/TFT Displays; importing products from worldwide distributors.

Why Demsay?

Fast Delivery

With express shipments, large network and importing experience, Demsay is the fastest electronic components distributor in Turkey. They aim to resolve customer challenges in an expeditious manner with 8 regular shipments every week.

Competitive Price

As a result of having formed close relationships with many manufacturer/distributor partners and with their global reach to different sources, Demsay is able to provide the most competitive prices.

Wide Global Reach

Through branch, partner office and shipping locations all around the world, Demsay able to reach many sources directly.

High Quality Service

Demsay has always prioritized customer satisfaction since the day they were established and their professional team follows this policy with no exceptions.

Developing Subsidiary Industry in the Defense Industry

By İlhami Keleş, Secretary General of the Defense and Aerospace Cluster - SAHA Istanbul

Manufacturing hierarchy of the defense industry consists of raw materials, parts, components, sub systems, systems and platforms.. With the word Subsidiary industry, we refer to a wide variety of productions that encompass all of the stages of production, from the raw material manufacturers to platform producers. Moreover, the companies known as platform manufacturers at home are capable of producing various parts, components and sub systems at their facilities. This being the case, even though the Subsidiary industry seems to cover the companies that manufacture parts at the SME level, predominantly, it in fact includes all companies that are involved in the Defense Industry.

If we analyze the subject within a systematic approach, we have to examine it under the titles of Input, Process, Output and Feedback

1. INPUT is the most important parameter in this assessment and human resources is the most essential component of this topic. The defense systems require the development and use of high technology and they need to be developed domestically, since the utilization of the defense systems developed by other countries contain major risks in respect to the survival of the country as well as the security of the military operation. This being the case, countries will have to develop the high technology required by the defense industry through their own assets such as qualified labor. The education system has to enable the individual's capability, building the skills to be able to produce high technology. The education system that will enable such production also has an inner hierarchy. Basic sciences make up the base of this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hierarchic pyramid. Establishment of an ecosystem that dominates the basic sciences and provides scientific developments in basic sciences is the first and most important phase. This is the "know why" phase constituting the basis of the "know how". The R&D should absolutely be based on our own indigenous infrastructure. Our education system has to be structured in a way to fulfill this requirement and serious resources and time should be invested for this. Initially, the focus should be on benefiting from the gifted children in those fields. Maximum effort should be put forth so that skilled Turkish employees abroad may collaborate with the local eco-system. The next step, engineering training should be hands-on and has to be supported by university and industry cooperation. The Undergraduate and post graduate students should complete their education by being involved in the on-going and value-added projects within the industry. This is a serious issue for our country just like in basic education. Unfortunately, the education at our universities is not designed to be connected with the with the industry. University-industry cooperation is merely limited to the contacts established by a few academicians interested in the industry. As a suggestion, this issue can be vitalized through the academic staffs' inclusion in the industry projects and transformed into commercial products as one of the essential criteria to be assessed in the academic members' passing onto a higher academic title. In the second phase, positioning the students in these projects and re-designing their curriculum accordingly can be considered. Training of the technicians who will implement the projects developed by the engineers that have been trained in the industry projects, by the academicians actively employed

in industry, is as important as the training of the engineers. Unfortunately, the industrial vocational high schools in our country are generally preferred by the low-profile students who wish to get high school diplomas but could not get in to other schools. Disconnected from implementation stages, these low-profile students graduate from vocational high schools educated by low-profile teachers. Only a few schools could be an exception to this claim. In order to fulfill such demands, some NGOs and foundations are aiming at vocational training that appeal high profile students, under the name of private industry colleges or private technology colleges. The number of these schools should be increased and similar approaches should be adopted by the public vocational high schools as well. The vocational high schools should be the schools where the students with highest scores can go and these students should move onto an engineering education. They should also go through certification training related to their own areas of study throughout their training and should obtain internationally recognized certificates. All these courses should be supported with foreign language education as well. Last but not the least, personnel trained in the practices of the industry over the years who have solid relevant experience and capable of developing new products is a critical issue to be considered. These four main areas regarding human resources are the most important areas within the inputs of the industry. The countries that are strong in this area did not take too long to recover even after the biggest crises; these are for instance, Germany and Japan following World War II or the Eastern European countries after the dissolution of the Soviet Union.

Another significant input is the critical raw material, special alloys and technological raw material. If the critical raw material can not be manufactured domestically then a strategic amount of these materials should be procured and stored beforehand. For the production of special alloys and raw material which require high technology, human resources capable of manufacturing technology with a solid scientific infrastructure and long lasting projects are required. Being a player in the defense industry is not possible without excelling in this area because the procurement of these materials from abroad during critical times may not be possible.

Information is one of the essential aspects of input. Informing the industry companies on projects concerning the platforms, weapons and systems demanded by the public sector in a timely manner and enabling their access to the technical specifications and details of such projects is important. Unfortunately, currently the narrow circle surrounding the bureaucracy is capable of observing these projects in real time and even during the concept building stage. Most of these are mainly the representatives of foreign companies or enterprises of foundations. The large masses constituting the actual industrial potential of Turkey do not have access to the information at this depth and speed and generally they are never informed of such developments. This being the case, the projects are prepared limited to the technical support and capabilities of the products of the companies who were informed when the concepts of the systems were being shaped or when the technical specifications were being identified. We should be preoccupied on adding the maximum amount of our existing capabilities to projects and working on the additional capabilities. The clusters are prominent interfaces to this end. As SAHA Istanbul, our cluster has the function of informing its members on the aforementioned projects.

2. The second phase is the PROCESS stage. In fact, during the process stage, Turkey's industrial plant stock know-how and process execution infrastructure is quite sufficient. Currently, many of our companies capable of accomplishing production in great amounts are capable of competing all over the world. Then again, in order to manufacture defense industry products and also to acquire a sufficient share of the worldwide defense industry market, the technological competency level of the existing facilities should be increased to enable these companies to manufacture the aforementioned products. In addition to this, it is also important for companies to obtain their internationally recognized qualification levels so that they can become permanent and regular players in the global market. There are companies already holding this level of competence but they do not operate in the defense industry; there are also companies who can reach such a level of competence through minor touches and they need to be involved and activated rapidly. However, they have to be gathered with proper projects, and the government should support these companies by granting the guarantee of purchase, funding projects and by aiming global markets. Then again, in addition to the aforementioned points, all areas of the defense industry do not necessarily require parts or systems demanding high technology. Turkey has a wide variety of production in this area. Still the organization and orchestration of this process is quite important. Our main problem in this area is inventory information. Unfortunately, one of the main problems of our country is that we lack industry inventory. There is a fruitful project launched by our Undersecretariat for Defense

Industries (SSM) to this end. In addition to the establishment of an inventory database of the industry, the objective is to determine the technological competency of the companies by trained and certified auditors who are authorized to conduct inspections on behalf of the SSM. Identification of the companies capable of manufacturing the parts and components required by defense projects will be easier after the attainment of a healthy inventory. As the data on manufacturing material and equipment stock of companies would then be available, a practical evaluation of the contributions of the companies to the defense industry, with their various product ranges, would be feasible. Therefore, this project - which SAHA Istanbul is also a part of - must be immediately successful and develop mechanisms that would keep it up-to-date. Since the only buyer within the scope of the defense industry is our government or countries of target markets, building policies in this regard, developing strategies and rendering the infrastructures of the companies capable of fulfilling these requirements are amongst the basic tasks of the government. At this point, the government has to manage, direct and motivate. The bureaucratic and financial obstacles before the industrialists should be eliminated immediately. Another important obstacle before the industrialist is the certification issue which again has to be overcome with the support of the government. Documenting the compliance of products within international standards, again by the internationally recognized authorities from accredited laboratories, bears importance in respect to taking part in foreign markets. Yet, this is an expensive, time-consuming process which contains risks. The financial and technical support of the government should absolutely be provided toward accomplishing such processes and to transform

the products into internationally verified products. The companies should not be expected to endure product development, time and certification expenses in defense industry projects on their own and at the same time sell their products for a cheaper price than the well-established companies that they compete with at the end of the day. Human beings and animals protect and look after their babies until they become self-sufficient. Similarly, the government has to show the same interest and compassion to its companies for a new product or capability to be developed.

3. The third phase is the OUTPUT stage. The initial utilization of output in the country and the preparation of the required organizations for marketing it in foreign countries are essential. Currently, one of the most significant tasks of governments is the conducting of activities that find and identify markets abroad for their country's products. Political and diplomatic relations between the countries are mainly based on economic relations. In other words, improving economic relations paves the way for improving and reinforcing political relations. Taking part in global markets can be possible through marketing efforts that are subsidized 75% by the grant supported projects such as Ur-Ge projects (International Competitiveness Development Incentive – URGE). As SAHA İstanbul, we have been conducting 2 Ur-Ge projects together with the companies in the defense industry. When the defense industry is in question, military alliances can be determinative. The integration and synchronization of the military systems of allies during joint operations is an important point. In the complex battle environment of our times, the rapid and uninterrupted information share and management of the harmonious systems from a single center are essential. Therefore, during the production preferences and marketing of the aforementioned systems such concerns may arise.

4. The fourth phase is the FEEDBACK stage. The feedback related to defense systems development processes through capability development or through the existing capabilities requires the development of more efficient, rapid and sustainable processes by identifying the bottlenecks and transforming these into inputs that react to the structure of the system. SAHA Istanbul has a critical function concerning this issue.

In conclusion, I can say that I am one of the believers that there is no product or technology that our country could not manufacture. In my opinion we need the three following factors:

- Putting forth the will to develop and manufacture any weapon, vehicle or platform domestically
- Backing the project with the required financial resources
- Demonstrating the patience required for the flawless development of the project

I would like to believe that we will be able to successfully gather the will, financial resources and patience in the development of our national systems

Nunatak Strong Structure in the Sector

Nunatak is the distributor of specialized brands, selecting the best brands of the world in their field. In addition to its distributorship, it also develops and produces need-based products.

Nunatak, imports the products needed to live and move in the conditions of nature, such as mountaineering, camping, search and rescue and climbing, as well as for the needs of the Turkish Armed Forces and Special Operation Teams. In order to select these products and to determine the most appropriate material needed, along with dynamic employees who are very active in nature sports and mountaineering, Nunatak works closely with employees of the institutions requiring the products.


© Nunatak

Our founder Fatma Sahin, continues to be Turkey's distributor of MSR, Therm-A-Rest, Platypus, Sealline, and Packtowl which are the most commonly forged and produced brands in the field since 2004. In addition to these brands; Nikwax, Outdoor Research, Marlow Ropes and Black Diamond which are the leaders in their fields, are also included. All of these brands are also suppliers to world armies, apart from civilian and sportive use. Some of these brands give lifetime guarantees and have a wide array of service networks around the world.


© Nunatak

Briefly summarizing these products; they are tents, foam and air mattresses,cots, portative stove systems, personnel type microfilter water purifier, bottles, winter climbing tools, snowshoes, glacial climbing tools, skies and equipment, harnesses, mountaineering and rescue technical tools, backpacks, chopper ropes, leather landing gloves, glasses, cold climatic outfits and gloves, waterpoof sprays and after-sell care products. Nunatak designs and produces thermal underwear for cold climate use, cold climate outfits; apart from these products. For hot climate use, it also produces and develops technical textile products.


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We made the T-Element brand, which is one of our 2017 targets, to create our own brand and to exist in the field of production. We are utilizing domestic production with the T-Element brand thermal underwear; it was produced with special threads and placed in the defense industry with its ergonomic structure providing protection even in coldest of temperatures, up to -40 degrees.

Our primary goal is to alleviate the burden of security forces in difficult natural and working conditions, to reduce their vital risks to a minimum and to protect the individuals themselves as well as the materials they carry from all kinds of environmental conditions.


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Eskişehir Aviation Cluster – Shaping the Future, Participation in EU Aviation Projects, Vocational Training, Developing Quality, Systems and Technological Infrastructure

The "Eskişehir Aviation Cluster Association" (ESAC) was established in March 2011 as a result of the leadership of the Eskişehir Chamber of Industry (ESO) in order to shape the future of the aviation sector, which is one of Eskişehir's industries and to direct the activities in this area.

Eskişehir's leading companies and organizations such as the Chamber of Industry, Anadolu University, Osmangazi University, TUSAŞ Engine Industry (TEI), Alp Aviation, Savronik Elektronik, Coşkunöz Aviation, Aycan Aviation, EJS Eskişehir Jant, Nümerik Makina are amongst the association's founding members. The number of members is 30 today, 24 of which are aviation companies.

Prof. Mahmut F. Akşit - The Chairman of the Board of ESAC

In parallel with the economic developments in the world, important developments are being witnessed in the defense and aviation industries in Turkey. The new projects in the military field in addition to the civil aviation field are contributing to the development of the country's aviation sector.

When Eskişehir is specifically considered, it is easily seen that Eskişehir is a natural aviation city. The aircraft factory, the 'Tayyare Fabrikası' which is named today the Air Supply Maintenance Center, was established in 1926 and has the features and capabilities sufficient to place it in the top ten amongst its peers in the world. The Turkish Aeronautical Association's center, founded at İnönü in 1936, has played an essential role in the formation of the aviation infrastructure in Eskişehir. In the following period, a fundamental infrastructure regarding aviation was accomplished through the launch of many companies and sub-industry formed in the defense and aviation areas.

The main objective of the Cluster, with its growing number of members, is to further develop the quality, system, technological infrastructure of Eskişehir's Aviation Industry and in this way, raise it to the level where it could compete internationally and thus be able to aquire more business share in the aviation sector. Eskişehir and the Eskişehir Aviation Cluster plan to enhance business development potential through cooperating with other clusters in the world, by creating awareness in this direction, building synergy with the similar aviation clusters in Turkey, promoting country's industry.

ESAC is involved in numerous grant projects at home and abroad as well. One of these projects is the Ministry of Economy's project for the "Development of International Competition". This project prepared by the ESAC was confirmed by the Ministry and an amount 1 million TL was allocated to this project for three years. At the same time, the ESAC exists in the databases of KOSGEB and BEBKA Development Agency, and it launched the CMM Precise Measurement Center in March 2015 for the joint utilization of our companies active in aviation area with the support of BEBKA.

Moreover, ESAC is taking part in the significant activities conducted to increase the

qualified labor for the sector in Eskişehir. The Protocol on "Project for determining Qualified Labor and enabling Increased Employment" was signed under the leadership of TEI, between the Eskişehir Aviation Cluster and Eskişehir Governorship with the participation of the Minister of Education at that time, Mr. Nabi Avcı, former Governor of Eskişehir Mr. Güngör Azim Tuna, Provincial Director of National Education Mr. Necmi Özen and high state officials. Within the scope of the protocol, a "Coaching Program" is being implemented on all students under vocational education at ESAC. If required, for a certain group composed of successful students in the program, an On-the-Job Training Program which would not exceed 160 days is being jointly implemented with İşkur. The students deemed successful by the end of the program (minimum 20% of the participants of the vocational training program) will be employed at the ESAC member enterprises or at the sub-industries of the ESAC members. The objective of this program, in addition to the vocational training they receive, directing the technical and vocational anatolian high school students in line with the requirements of the sector, accompanied by the professionals, it will contribute to the fulfilment of our country's requirement of qualified technical staff. In addition, the vocational high school teachers identified jointly by ESAC and Provincial Directorate for National Education are trained yearly at the ESAC member businesses. In this way, the industrial know-how of the vocational high school teachers is increased and their perception of industry's expectations is clarified so that they would be able to transfer them accurately to the students. On the other hand, qualified employees required by the aviation sector are trained at the Technical Training Center, launched in 2008 by the ESO - Eskişehir Chamber of Industry. Approximately 30 training sessions were organized

composed of CNC Lathe, Milling and Quality Control Technician courses conducted with nearly 1000 hours of programs approved by Anatolia University's Engineering Faculty and 650 qualified personnel have gained to the members of the cluster and to machining sector. The number of people working in the sector among the graduates of the program is nearly 400.

Taking part in the international events and business negotiations conducted in Europe and in Turkey, making presentations at conferences and conventions in the country and being involved in European Union aviation projects, with these activities today ESAC become an institutional representative and an identity in terms of aviation in Eskişehir. Within the scope of such cooperation, ESAC as a member of the Defense and Aerospace Industry Manufacturers Association (SaSaD), was also accepted to the membership of the European Aerospace Cluster Partnership (EACP Europe) in 2014. ESAC made its mark on significant European Union projects with Eskişehir's participation in the European Aerospace Cluster Partnership and with the support of the Eskişehir Chamber of Industry which is one of the most steadfast supporters of the aviation sector. The Clean Aerospace Regions (CARE) project within the scope of the 7th Framework Program and EACP ABROAD projects are the most important of the aforementioned projects. The sectoral prestige and recognition of the region is increasing with the participation of ESAC in these types of European Union projects in the aviation/aerospace field.

Aeroms Engineering, Predictive Software Simulating In-Flight Icing Scenarios

Ice accumulation during flight on parts of the airframe is one of the most serious threats to flight safety in aviation. Ice accumulation on wings, tail surfaces, fuselage, air intakes, air data probes, etc. result in severe effects, which are often unpredictable and unrecoverable. The following effects are often encountered during an icing encounter:

- Decreasing lift force, increasing drag force,
- Decreasing stall angle of attack, increasing stall speed,
- Unpredictable and possibly uncontrollable pitch and roll behaviour making stall and spin recovery impossible,
- Blockage of air inlet and/or carburettor resulting in engine stoppage,
- Restricted or blocked forward vision due to windscreen icing, which is particularly dangerous during landing,
- Breaking ice impacting airframe and engine components,
- Rollbacks or flameouts due to excessive liquid water or ice crystal ingestion in turbofan engines,
- Increasing total weight.

In-flight icing occurs due to freezing of cloud droplets or super-cooled droplets, which remain in liquid state in the atmosphere even at temperatures far below freezing when they are struck by aircraft during flight. Ice can form on every exposed frontal surface of the airplane at 0oC or colder temperatures when liquid water is present, i.e. when flying through clouds. The airplane components that are most prone to icing are the wings, tail surfaces, propeller, windshield, antennas, vents, air intakes, nacelles and flight sensors.

Large Aeroplanes need to demonstrate safe operation in icing conditions prescribed in CS-25 or FAR-25, Appendix C in order to be issued a Certificate of Airworthiness by Certification Authorities.

More recently, icing in conditions where clouds contain both liquid and solid phase particles have attracted considerable interest due to numerous in-flight incidents including engine rollbacks in the vicinity of deep convective clouds in tropical regions. These incidents have prompted certification authorities, research organizations, airframe, engine and equipment manufacturers to investigate and extend the

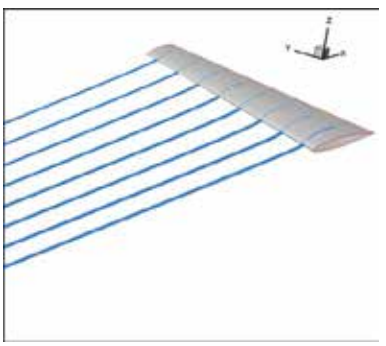


Figure 2. Calculated droplet trajectories for a wing geometry

icing conditions to include solid and mixed-phase clouds for airworthiness certification. For example, within the Framework Program 7 of the European

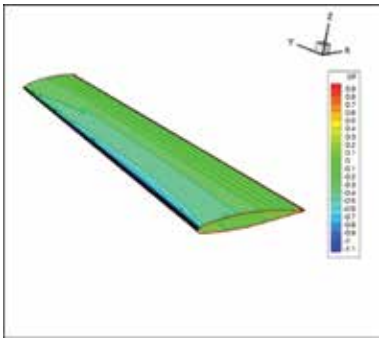


Figure 1. Calculated pressure coefficients for a wing geometry

Commission, major research projects including HAIC (High Altitude Ice Crystals) and STORM (Systems and Simulation Techniques of Ice Release on Propulsive Systems) have been funded. The efforts of certification authorities have resulted in the amendments issued by EASA and FAA to the certification specification of large airplanes, CS-25 and FAR-25, respectively.

This demonstration of compliance with airworthiness requirements may be accomplished by flight tests, laboratory tests, and computer simulations. Computational ice accretion simulation reduces (but never totally replaces) the demand for flight and laboratory testing. Computer simulations allow the investigation of a wide range of flight and meteorological conditions, which cannot be fully

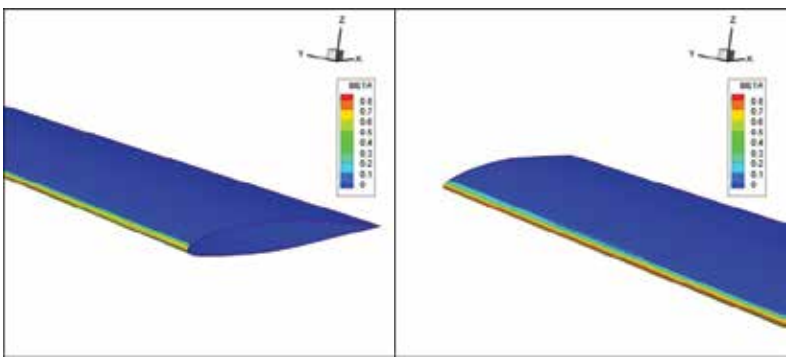


Figure 3. Collection efficiency distributions calculated for a wing geometry (left: wing root, right: wing tip)

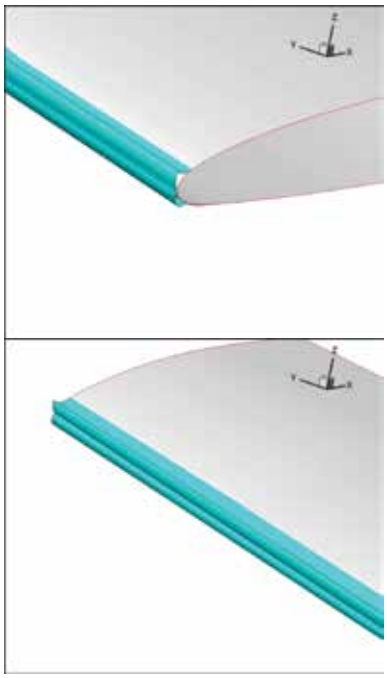


Figure 4. Calculated ice shapes for a wing geometry (upper: wing root, below: wing tip)

experimented during flight and laboratory tests.

Today, most aerospace research organizations and manufacturers make use of computational ice accretion prediction tools, either commercial or in-house. A typical ice accretion prediction software consists of four main modules:

- A module to compute the flow field. This module yields the velocity distributions over the airframe surface and in the flow field. The former is used to compute the heat transfer coefficient distribution over the geometry, while the latter is used as an input for the module calculating the droplet trajectories. A pressure coefficient distribution obtained for a wing geometry is shown in Figure 1.
- Computation of droplet trajectories and collection efficiencies. This module yields the amount and rate of water that is caught by the surface. Also, the impingement zone, i.e. the region on the airframe that is wetted by the droplets is calculated. A plot of droplet trajectories and a distribution of collection efficiencies calculated on a wing geometry are shown in Figures 2 and 3.
- A thermodynamics module used for determining the energy balance on the surface using the first law of thermodynamics.
- A module used for calculating the ice growth rate on the surface. This module usually makes use of the Messinger Model or the Extended Messinger Model. In Figure 4, calculated ice shape for a wing geometry is illustrated. The cross-sectional views of the ice shapes at wing root, midspan and wing tip are shown in Figure 5.

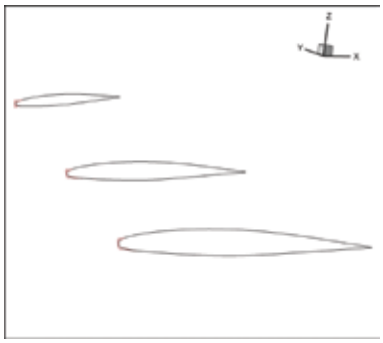


Figure 5. Cross-sectional views of the ice shapes at wing root, midspan and wing tip

Aeroms Engineering, Inc. is an SME founded in 2014 within the Middle East Technical University's (METU/ODTÜ) Teknokent. The company has an expertise in computational ice accretion prediction and has developed two types of in-house ice accretion prediction software AEROMSICE2D and AEROMSICE3D for 2-D and 3-D geometries, respectively. The software are capable of analysis over wing, nacelle, intake and probe geometries for Appendix C, O and P icing conditions. The company is serving companies in the Defense and Energy Industries in Turkey for their requirements related to in-flight icing, icing certification and software development. The companies that Aeroms Engineering, Inc. has collaborated with so far include Turkish Aerospace Industries, Roketsan and Borusan EnBW. Aeroms Engineering, Inc. is also a member of the Teknokent Defense Industry Cluster within ODTÜ Teknokent and proudly provides service to the Turkish Indigenous Fighter Aircraft (TF-X) Program.

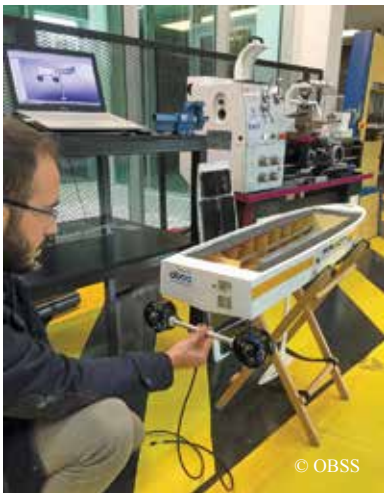
Short Biography of Prof. Dr. Serkan Özgen

Prof. Dr. Serkan Özgen is the founder and CEO of Aeroms Engineering, Inc. located at the Middle East Technical University (METU/ODTÜ) Teknokent. He was born in 1970, in İzmir, Turkey. He obtained his B.Sc. (1992) and M.Sc. (1994) degrees in Aerospace Engineering, Middle East Technical University, Ankara. He received his Diploma with Honours at the Von Karman Institute for Fluid Dynamics, Belgium in 1995, where he was awarded a Ph.D. degree in 1999. Prof. Dr. Özgen has been a full-time faculty member at Dept. Aerospace Eng., Middle East Technical University since 2000. He was employed at Turkish Aerospace Industries, Inc. as a Senior Design Specialist during his sabbaticle leave in 2007. His professional interests include aircraft icing, morphing air vehicles, flow instabilites, and aircraft design

OBSS - Powerhouse of Intellectual Capital in Turkey, Technologists at Heart with Entrepreneurial DNA

With Bragging Rights of an Epic first 10 years, Istanbul based OBSS is Exploring the Future of Technology in its Second Decade, Positioned for Expansion into the U.S.

Founded in 2005, OBSS (Open Business Software Solutions) is a software service company providing customized solutions to the most reputable enterprises in Turkey. OBSS constitutes one of the corner stones of the IT Industry in Turkey as the largest software house in the region with more than 350 talented engineers. With qualified employees, transparent and continuously improved processes, OBSS has been able to establish and



maintain long term cooperation with customers, locally and globally, enabling customers to focus on their own core business areas.

They take pride in the following key competencies:

- Software Architecture: OBSS developed the J2EE framework (RedMound and GrayMound) that are being used by 4 banks and 2 insurance companies globally. These institutions are developing all their enterprise software products on the framework "manufactured by OBSS".
- Application Lifecycle Management: OBSS developed OneCycle which is a software platform that seamlessly automates the most labor intensive and error prone aspects of enterprise-scale application development, while also integrating essential but often disconnected workflows that traditionally occur beyond the province of today's ALM solutions.
- Autonomous Vehicles: OBSS has worked on an unmanned autonomous surface vehicle named Piribot and focused on interoperability of unmanned vehicles. In this way, OBSS plans to enhance its product family with the technology of the future.
- Mobile Application Development: With one of the largest native mobile application development teams, serving the largest mobile providers, banks and the largest online retailers, they have extensive knowledge of both iOS and Android development platforms, methods and best Practices.

Tests. Solar Panel Test at Sea of Marmara

Unmanned Vehicles R&D Activities

When it comes to unmanned vehicles, today mostly unmanned aerial vehicles come to mind. However, the unmanned vehicles sector, which is pushing the boundaries of technology in the world, is carrying out studies involving a wide range of spectrum from space vehicles to the depths of the sea, both military and civil, almost endless application and product range. These applications are positively affected by technological developments. For example, global positioning systems, communication technologies, battery technologies, developments in material science and innovations are affecting the sector in a direct and radical way. The field of unmanned vehicles is powered and influenced considerably by

PİRİBOT Unmanned Boat

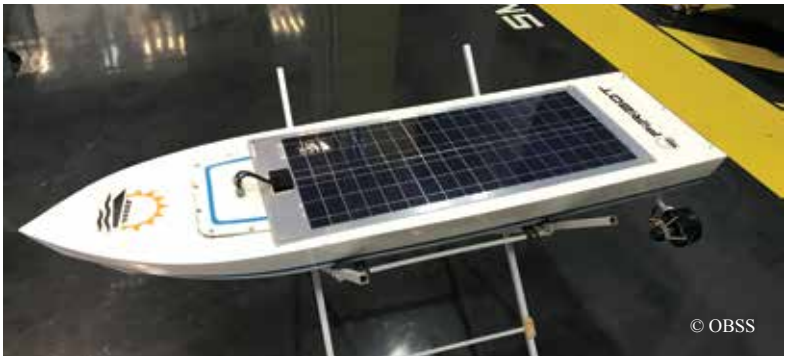
the developments in information technologies, software and related fields as well as many other areas.

The unmanned vehicles sector is a platform for the studies that can be defined as “swarm” ability that robots can work with, it is the aim of effectively using the collective mind, which can achieve much more successful results than controlling a single robot, including pushing the limitations of imitating nature.

From this perspective, the swarm technologies and unmanned vehicles are a system of systems. Swarm technologies are a game changer and it will change the paradigm of unmanned vehicles and modern warfare.

OBSS has more than 350 qualified engineers who are able to maximize the use of the latest software technologies. They have deep experience in mobile communications. Most importantly, they have the power to use software technologies at an advanced level in systems of systems. With a passion for technology they have the aptitude to use the outputs of other leading fields effectively.

OBSS strives to be proficient in learning how developing technology will affect unmanned surface vehicles for military and civilian naval applications. In order to delve into this area, they decided to practice an example to be able to see what their talents were capable of in this sector before they headed toward further targets. An autonomous surface vehicle was developed, with heuristic routing algorithms.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Their teams are eager to explore the magic of imitating nature with swarms of unmanned vehicles to support the paradigm change.

Piribot

OBSS created a Robotics Laboratory at Teknopark Istanbul in order to carry out their studies on unmanned vehicles and to make prototype productions.

Piribot, the product of their first studies, is an unmanned boat that can reach its destination with its autopilot software and solar energy through its solar panels. Piribot’s autopilot software, developed by OBSS engineers, includes heuristic algorithms to achieve more effective results.

Pilot Battery	%100
Humidity	%47
Temperature	35-C
Last Reported	Jul 07 10:19:59
Distance to Target	1148m
Mission Status	On
SMS Feedback	Enabled

Crossing the Mediterranean from Turkey to Egypt as an extreme condition test

Piribot is equipped with the following sensor package, however it can be configured according to the need and requirements.

Verification tests were conducted in the Marmara Sea with the first prototype.

After that, a mission of 1000 nautical miles was planned to be an example for a very large sea area usage, and Piribot was put out to sea from Antalya and reached Egypt autonomously.

It is anticipated that Piribot will find many areas of application to meet civil and military requirements. For example:

- surveillance and reconnaissance
- Maritime Security
- Security and maintenance of infrastructures
- Intelligence
- Search and Rescue
- Mine Detection
- Scientific and Environmental Research
- Hydrographic, Oceanographic
- Seismic
- Shipyard Support
- Hull Survey
- Dry Docking Security
- Propulsion System Control
- Cathodic Protection Survey
- Integration of Unmanned vehicles to the Combat Management Systems
- Operating as fleet or swarm to achieve a defined mission


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The Leading Turkish Dermocosmetic Brand Dermoskin

Company Background and Activities

Dermoskin is a Turkish brand serving customers in the field of cosmetics. Their Research & Development activities started in 1982 and their first products were introduced to the market under the Dermoskin brand through contract manufacturing in 2005. In 2011, with the establishment of their production facilities in Sultanbeyli, they had the opportunity to develop their R&D capabilities and start their own production activities. Their formulations are developed by R&D manager Pharmacist Hatice Sarıyer mainly for hair, skincare, antiacne and sun protection lines with over 35 dermosmetic products and 7 food supplements under the Nutrafarm brand.

In addition to their production facility work force, they also employ 55 well trained sales and product representatives who make regular visits throughout Turkey, presenting Dermoskin products to all dermatologists and pharmacists from Edirne Uzunköprü to Hakkari Yüksekova, covering all areas in Turkey. The company focuses on the field of cosmetics and food supplements and aims to fullfill customer satisfaction. They proudly present globally recognized and effective personal care products to consumers through pharmacies.


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Pharmacist Hatice Sarıyer - Dermoskin R&D Manager

In their R&D Lab in Teknopark Istanbul, which was established in 2014, new products are being developed and they regularly increase their product range every year with the experience and effort of R&D manager Pharmacist Hatice Sarıyer and her team that consists of a specialist chemistry engineer, a pharmacist and a chemist.

Continuing Programs and Projects for the Defense Industry

The Dermoskin R&D Center is located in Teknopark Istanbul, which was established in cooperation with Undersecretariat of Defense Industries and the Istanbul Chamber of Commerce; Dermonskin has expressed honor to serve all demands of the Undersecretariat of Defense Industry. Due to a recent call, they made a presentation in cooperation with Tubitak to the Undersecretariat of Defense Industries.

At first glance, cosmetics and the defense industry might be regarded as distinctive from each other, but hygiene is crucial in the defense industry, as is is in many other areas. For instance “No-Rinse” shampoos which have not yet been presented to the market, are formulated by Dermoskin and have accomplished all tests and have been approved by their R&D department will be a practical solution for hair cleansing for soldiers, especially in tough conditions with limited access to clean water. Additionally, Dermoskin Miscellar Water Facial cleansing wipes will be an excellent solution to wipe off the facial colors used by soldiers, due to its cleansing properties for oil based products and easy to carry packaging. There can be various other examples of usage for many different situations. Personal hygiene is essential in the field and in every condition. Dermoskin is pleased to contribute their capabilities and background in terms of dermatological solutions for the demands of defense industry.


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International Projects for Export Markets

As a company policy a main target area for exportsis to middle east countries. Connections have been established with plans in place to open liason offices initially in Cairo, Riyadh, Tehran, Erbil and Beirut. Due to the uncertain economic situation caused by the Arab Spring, activities were paused and the company is waiting for more stable political and economic circumstances.

Research and Development Activities and Investments

Dermoskin is a fast growing Turkish company; one of the biggest of four main dermatological brands in the pharmacy channel. They continue intense research and development activities to present safe and effective solutions to consumer requirements in the light of the latest trends and develop their product range variety.

In order to present newly developed products to the final consumer, in 2018 they will open a new factory in the Eskişehir Industrial Zone which has a closed area of over 8000 square meters, in accordance with GMP guidelines with seperate and fully automatic, integrated shampoo, cream and lotion production lines for dermocosmetics and capsule, tablet and syrup production for food supplements. They have started related studies for the pharmaceutical field and will continue the construction of their second building for pharmaceutical production mainly in the field of dermatology. Necessary connections to support export channels are being developed for the cosmetic, food supplement and medical devices products that will be produced in accordance with GMP guidelines in the Eskişehir facilities. Upon completion of the pharmaceutiacal factory in the same location, the company aspires to make investments in the field of technology every year so that maximum benefit can be achieved from information technologies and sectoral innovations; Dermoskin endeavors to be a pioneering company on global scale.


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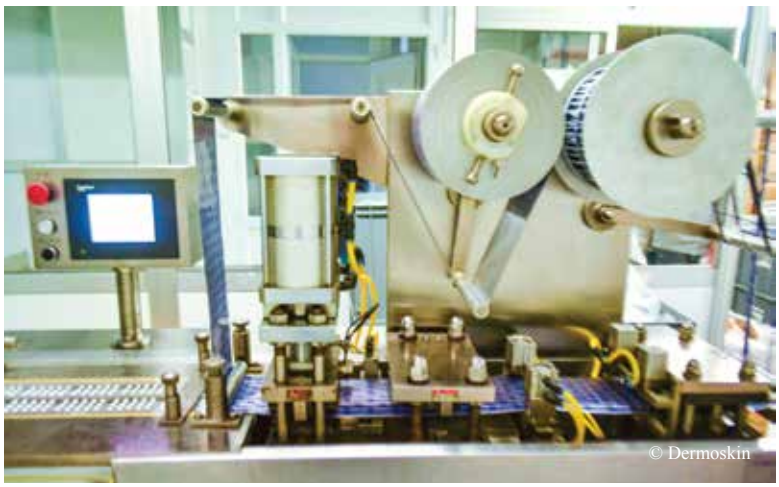
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SMEs Face Arduous Challenges, but Attractive Opportunities Abound

By Yalçın Yılmazkaya- General Secretary of Aerospace Cluster Association

Aerospace and defense are highly demanding and compelling industries with their high quality, high technology requirements with long term sustainability. In addition, numbers are low, order periods maybe long. Still, these sectors are so tempting for companies who are ready to invest, willing to change and those that want to generate value added production.

Aerospace and defense sectors have attracted the attention of Turkish SME's more and more since the last decade. With noteworthy national projects, incentives and support to achieve national defense export targets set for 2023, companies are looking more closely at these industries. As an aerospace and defense cluster, we could measure this interest by the increasing number of new members, demands that we received during events, meetings or with new investments in aerospace and defense by the companies actively operating in different sectors.

Aerospace Cluster Association (ACA), (Havacılık ve Uzay Kümelenmesi Derneği - HUKD in Turkish) while celebrating its 7th year; is focused highly on helping SME's to develop their technical capabilities and to assist in finding solutions to certification requirements, not only to prepare them for local national projects but also to help them compete in global markets. In order for an SME trying to integrate into aerospace and defense sectors, they must differentiate themselves from the competition by using unique technologies in the products and services that they offer and they must have educated human resources to be able to maintain high quality to be competitive in the global arena. However, on this path the biggest challenge appears to be the lack of international certification, which requires funds and dedicated time and manpower where many SME's are not able to spare.

Clusters: Facilitating the Integration of SME's

Even though a company may be very passionate, in order to integrate themselves into the aerospace and defense sectors and to be ready to invest, they should be aware that this process will take time, which sometimes can be lengthy and discouraging. However, although the challenges are arduous, the opportunities at the end are also attractive. Subsequent improved quality levels lead to access to new markets and higher profits.

At this point, SME's need support from organizations like clusters, NGO's and other supporting organizations as they can provide insights, critical communication and networks, awareness of the market and information flow. As for clusters, their strength is increasing daily as government institutions, ministries, Undersecretariat for Defense Industries (SSM) acknowledge the value of the network that these clusters manage. Therefore, being a member of a cluster becomes a beneficial investment for the SME's. There are several cluster organizations that are focused on this mission. SAHA Istanbul in Istanbul, OSSA and TSSK in Ankara, ESAC in Eskisehir, ACA in Izmir, along with BTSO – Bursa Cluster in Bursa are among these organizations. As ACA, we always strive to raise awareness and be realistic in explaining the challenges to those companies during integration as well as in the long run.

Recently, ACA is preparing its second International Competitiveness Enhancement Project (Ur-Ge) which is supported by the Ministry of Economy (75%) that funds training, consultancy, trade committee visits and fair/ event participations as well as supplier / buyer days in Turkey. This project aims to help integrate SME's into aerospace and defense industries by supporting their training needs in pursuit of competitiveness, providing critical communication and contacts within prominent sector players and OEM's. The project will be submitted to the Ministry of Economy in May 2017. During needs analysis and management of this project, the above critical needs of the attending SME'S will be investigated and solutions will be created according to the company

profiles and their needs. Our project team has already started working on available company profiles to match up the best group of companies for the highest level of project success.

Global Challenges, Local Targets

An industry can only be as strong as its SME's. Since there are a few main players in Turkish defense and aerospace sectors like TAI, Roketsan, Aselsan, Havelsan and even a smaller number in private companies like KALE, TEI, Alp Aviation etc., creating ecosystems to support the growth of these industries is a crucial goal. Supply chain management gains more significance in being able to successfully integrate more SME's to projects.

Export figures of companies operating in aerospace and defense has shown a decrease since last year. There was an 11.7% decrease in March 2017 numbers compared to March 2016, according to Exporters of Turkey (TIM) data. The same tendency can be seen in the figures for the last twelve months, as there has been a 6.5 % decrease.

Despite the slowdown in the global economy, upcoming years anticipate positive growth in the global aerospace and defense markets. Also, Turkey still has high targets while approaching 2023. These targets can only be achieved by the sustainable growth of Turkish main players. However, increasing the number of capable SME's in the aerospace and defense sector is the key for our long term success. Aerospace and Defense Clusters can play a vital role in this integration.

The Development and Future of Defense Sub-Industry

Sub-industry Companies of the Defense Industry are the Essential link in Turkey's Defense Industry Chain

Taking into consideration the geographical position of our country and the developments in nearby geographies, the requirement for a powerful and domestic Defense Industry is increasing daily. Even though currently the major defense industries are representing the Turkish Defense and Aerospace Industry as pioneers, over 90% of the defense industry companies are composed of the Sub-Industry and SMEs and this fact underlines the importance of the development of Sub-Industry and SMEs to build a powerful and domestic defense industry infrastructure.

Defense Industry activities involve high technology and when the problems faced during the procurement process and the potential issues are taken into consideration, serious risks are possible due to foreign dependency. As a matter of fact, these risks are at the top level for our country located at the middle of sensitive balances. Therefore, the indigenization of the defense industry is indispensable to our country. The sub-industry companies play an important role in increasing the domestic participation rate in the defense industry and the significance of this role has been steadily increasing. The importance of outsourcing activities by the main industry companies to sub-industry companies has been increasing particularly in recent years and as a consequence the main defense industry companies develop new technologies by focusing on their core technologies while the sub-industry companies develop and strengthen themselves as a result of the assigned work.

Another important factor is sustainability. In pursuit of achieving sustainability sub-industry development should be supported by governmental policies and the main defense industry companies. The incentives provided by the government through the Offset policies which have been implemented by the Undersecretariat for Defense Industries since 2011 provide significant amount of finance to sub-industry companies in addition to assisting them in their development. Moreover, the major defense industry companies support the sub-industry companies through free training, material and equipment transfers and joint development or technical consultancy activities. Another critical step towards sustainability is achieved by conducting value-add activities. Today economic development is based on information and technology and the sustainable growth of companies does not seem possible when operations are based on activities that do not create an opportunity for knowledge accumulation or activities that do not include innovation. Powerful sub-industry companies of the future will not limit themselves merely with production, instead they will be the ones providing added value through design activities and while continually building upon experience and expertise.

The advancement of the defense industry from the point as which it has already reached can be achieved through the contribution of domestic suppliers. Therefore, the cooperation and clusters established by sub-industry companies are very important in developing joint methods in order to solve complicated problems. Within this context, clusters such as SAHA (Istanbul Defense and Aerospace Cluster), OSSA (Ostim Defense and Aviation Cluster), TSSK (Teknokent Defense Industry Cluster), ESAC (Eskişehir Defense and Aviation Cluster), HUKD (Izmir Aviation and Space Cluster), Bursa Chamber of Industry and Commerce's Defense and Aerospace Industry Cluster provide important platforms for the establishment of such cooperation. Such organizations enable sub-industry companies to create a pool of joint information and technology and to generate rapid and reliable solutions for the problems.

In conclusion, sub-industry companies of the defense industry are the essential link in the defense industry chain that presently needs to be strong and domestic. In the future, this role will be strengthened further through the investments made in technology, innovation and information as well as with both governmental support and the support of the main defense industry companies.

Tekom – Prouldy Engaged in National Projects

Since its establishment in 2000, Tekom has become the alternative manufacturer of foreign-dependent products within the defense and security requirements of the Turkish market. Tekom utilizes technology and know-how developed as a result of the activities conducted in the electro-mechanics such as armored vehicle lighting, military type limit switchers, control boxes, DC-DC convertors, relays, power supplies.

As a result of its R&D investments in the past few years, Tekom has been the solution partner of the leading brands within the scope of the projects conducted with the Undersecretariat for Defense Industries, particularly at home. In line with the security requirements increasing at home and abroad, Tekom has been performing activities in the following areas:

- Armored Vehicle Lighting Lamps,
- Military Type Limit Switchers,
- Control Boxes,
- Power Supplies,
- DC/DC convertors, Military type voltage converters,
- Military purposed Electronic Relay design and manufacturing,
- Sensors (Speed sensor, magnetic and heat sensor units),
- Meteorological Observation and Evaluation design and manufacturing for military applications,
- Command and control distribution box design and manufacturing in military standards,
- Electronic Circuit Cards
- Servo engine and driver design

Tekom offers its customers high quality products by using 100% domestic facilities from the design to logistics stage within its system solutions.

Having accomplished numerous special projects within its 17 years, Tekom has become a reliable partner of its clients with service quality, technological product infrastructure and brand strength.

Tekom made its mark with significant accomplishments, its dynamic personnel structure and technological know-how within the scope of the indigenization projects for products manufactured for the requirements of the Armed Forces in the Defense Industry. Some of these projects are listed below:

MKE 1304 National Chaff System

In 2008 – 2010, Tekom was involved as the partner company as part of the project for the indigenization of the US-based MK-36 Chaff Launcher system, for the Naval Forces Command's War Fleet. Within the scope of this project, Tekom accomplished the indigenization of the Indigenous Chaff Launcher System named MKE1304 with the Mechanical and Chemical Industry Corporation and executed its installation to 25 vessels. The Indigenous Chaff Launcher Systems manufactured by Tekom are still being successfully utilized in the surface combatants of the Fleet Command.

MKE1304 DHS Indigenous Chaff System is a system outfitting on-board and it is used protect the vessel from general purpose bombs.

Fırtına Project

Within the scope of T-155 Fırtına Howitzer project, Tekom carried out the design and production of the various electrical, electronic, electro-mechanical spare parts requested by the Turkish Armed Forces and contributed to their indigenization. Tekom continues to support the process through novel products in the project named 'Fırtına2' which is the sequel to the aforementioned project.

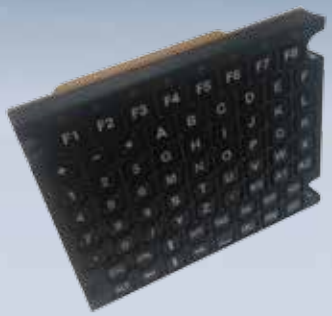
Armored Vehicle Lighting Lamps

Regarding the armored vehicle lighting lamps, companies such as BMC, Otokar, Nurol Makina and FNSS, the major armored vehicle manufacturers of Turkey, preferred Tekom's products for their armored vehicle projects.

Indigenous Light Helicopter Project

According to the contract signed between the Undersecretariat for Defense Industries and TAI on 26 June 2013, with the objective of designing, production, testing, civil and military configuration design and manufacturing of a general utility light twin-engine helicopter in the 5-ton category with 12-seat capacity.

A subcontractor contract was signed between Tekom and TAI for the design and production of the equipment of the indigenous helicopter lighting system as part of the aforementioned project. According to the ongoing project, the interior and exterior lighting equipment of Turkey's first Indigenous Light helicopter will be designed and manufactured by Tekom. All designed products will be compatible with International aviation standards (RTCA D0-160).



Tekom will introduce its high technology led lighting products, that align with aviation standards, for the first time to its domestic and foreign customers in Turkey during IDEF 2017 at hall no.3, at stand 326 C.

Powerpack Development Event Held in Kayseri

Head of the Department of Subsystems of the Undersecretariat for Defense Industries Dr. Şenlikçi: "If we achieve enhancing the interoperability mindset, we will be able to use both our resources and time efficiently. If we use both of them effectively, we will easily gain success".

The Powerpack Development event, with the contribution local sources, was held in Kayseri with the cooperation of the Undersecretariat for Defense Industries, Erciyes Technopark and Technopark Istanbul. The event took place in Kayseri which is also the location of the 2nd Main Maintenance Central Command. It was organized for the maximum utilization of existing domestic facilities and capabilities so that important negotiations on the development and production of engines, transmission, cooling kits and other subsystems could be conducted between the domestic companies. Concerning the national system development activities of the domestic companies, Head of the Subsystems Department of the Undersecretariat for Defense Industries Dr. Ata Şenlikçi said, "If we achieve enhancing the interoperability mindset, we will be able to use both our resources and time efficiently. If we use both of them effectively, we will easily gain success".

In his speech at the opening ceremony of the Powerpack Workshop which took place in a hotel in Kayseri and was organized by the Undersecretariat for Defense Industries, Erciyes Technopark and Technopark Istanbul, Dr. Şenlikçi stated that the Undersecretariat, established in 1985, has been conducting activities toward the development of all technologies that would enable indigenization, technology ownership and independence in the defense industry and he added that they adopted improving interoperability capability as a target.

"Our resources allocated to the programs are limited. We need to collaborate in order to utilize these resources in the most efficient way. The subcontractors and subindustry need to assume responsibilities in other technologies requiring know-how while main contractor companies are assuming many responsibilities, we wish to mature an effective structure in which all shareholders could operate efficiently. In this way, we aim to elevate the rate of local participation with the support of our domestic companies all over Turkey, to the highest level. To this end, the companies were given the opportunity of introducing themselves on 20-21 April 2017 and the issues were examined in detail with over 200 B2B negotiations. We assess that with the Indigenous Powerpack and aerospace engine that will be accomplished with the maximum rate of local participation, a great contribution would be achieved for country's economy, and that our country's foreign dependency on aerospace engines would be abolished", added Dr. Şenlikçi.

The President of Erciyes University (ERÜ) Prof. Muhammet Güven underlined that the most important source of the information were the universities in the countries moving into information based economies and emphasized that the universities were making major contributions to the industry in their cities through faculties, institutes, research centers, technoparks and business incubators within their premises. Prof. Güven said, "Industrialized countries which transferred into information based economies or those that are in the process of transfer are the ones in which the cooperation between the universities and the industry functions best. At this point, the activities and studies of technoparks, technology transfer offices and research centers within the universities bear great importance."

Prof. Güven reminded the audience that Erciyes University was the major partner and manager of the Erciyes Technopark, which is the greatest technopark of its region and the fifth greatest technopark of Turkey and said, "Erciyes Technopark is conducting its activities to transform the traditional entrepreneurship in Kayseri into technology based entrepreneurship. The activities related with the subject of engines are actively being executed at the Engines Laboratory within the premises of the Mechanical Engineering Department of Erciyes University. Being the leader of its region, Erciyes Technopark is conducting its activities in an outdoor area of nearly 252 thousand square meters and 30 thousand 500 square meters indoors in five separate buildings. At Erciyes Technopark products with high added value and export potential are being developed and innovative approaches that serve the development vision of the country are being developed. 195 businesses and business incubators are conducting their R&D studies as of today. Erciyes Technology Transfer Office which executes its activities under Erciyes Technopark has signed over 60 university-industry cooperation projects."

Following the opening remarks, the event continued closed to press. Throughout the workshop held on 20 - 21 April, numerous B2B negotiations were conducted between the main contractors and potential subcontractors on the development and production of engines, transmissions, cooling kits and subsystems.

OSTİM Defense and Aviation Cluster

The OSSA Defense and Aviation Cluster, OSSA, was founded by OSTİM Management in the OSTİM Organized Region in 2008 as a result of an analysis completed measuring the international competition levels of companies within the region.

The OSSA is currently working with all the actors from Governmental Instutitions to NGO's, from universities to companies in the defense and aviation sector to make this naturally specialized and condensed region more globally visib

As a civil society organization, the OSSA developes policies on domestic producers supported by organizations such as the Undersecretariat for Defense Industries, Republic of Turkey Ministry of Economy, SSI, OSTİM Organized Region, Ankara chamber of Industry, SaSaD, Middle East Technical University Technopark (ODTÜ), Ankara Chamber of Commerce, Technology Development Foundation of Turkey and the Small and Medium Size Enterprises Development Organization.

Since its establishment in 2008, the OSSA has become the most important cluster in the defense and aviation industries with its research and development, precision engineering and flexible manufacturing capabilities.

Almost 200 companies, 7500 employees and hundreds of engineers prove the OSSA's strentgth and efficiency.

Today the OSSA takes pride in the members that have become certified suppliers of key industry companies like TAI, Aselsan, Roketsan, Havelsan and FNSS. The OSSA as an internationally known cluster, due to work with international sectoral clusters and the membership of the European Aerospace Cluster Partnership (EACP), is proud of becoming a success story in Turkey. The OSSA received numerous awards both domestically and internationally such as the "Defense Industry Special Award" by the Undersecretariat of Defense Industries, the "Best Practice Award at International Competetiveness Projects" 2 times in a row by the Ministry of Economy and the "European Cluster Excellence Initiative Bronze Lable Certificate" by the European Commission.

Mr. Mithat Ertuğ - The Chairman of the Board of OSSA Cluster

The cluster member companies in the defense and aerospace sectors;

- Engineering & Software
- Machining
- Surface Development
- Heat Treatment
- Plastic
- Sheet Metal Forming
- Composite
- Robotic Automation
- Wire Harness
- Electromechanics&System Integration as well as production processes such as;
- Machinery manufacturing
- Conditioning Systems
- Ground Support Units
- Fire & Security Systems
- Aircraft Cabin Interiors

producing final products with high quality and standards.

We know that business meetings and fairs with foreign key industry companies are of great importance for SMEs, in line with their objectives, such as the opening up of abroad markets, creating export opportunities, and achieving growth targets.

So, the OSSA organizes "Industrial Cooperation Days in Defense and Aerospace (ICDDA)" under the auspices of the SSM every 2 years, a supply chain oriented business forum for contract manufacturers to meet through pre-planned B2B meetings and to discuss partnership or business opportunities with OEMs and their Tier 1 suppliers for the defense and aerospace sectors.

OSSA has awarded "Promotion Special Award" from SaSaD

Key industry companies coming from abroad are represented by officials who are authorized to assign work to the defense and aerospace industry of our country. In brief, the representatives of these key industry companies coming from abroad attend our event exclusively to meet with Turkish SMEs and to give business to the Turkish defense and aerospace industry. While SMEs participating in overseas exhibitions have to compete with other foreign participants, the ICDDA focuses on enabling only Turkish SMEs to develop business relations with the foreign key industry companies. Thus, the ICDDA plays a significant role in the development of the industry in our country.

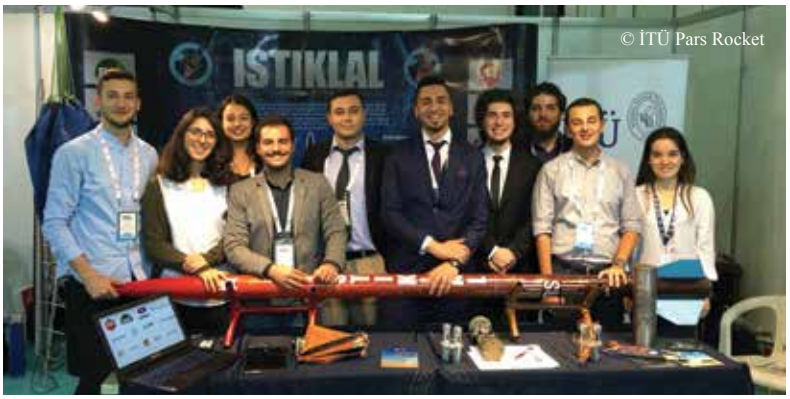
We organized the 3rd Industrial Cooperation Days in Defense and Aerospace (ICDDA) event in 2016. During our event, 5,400 registered business meetings were held with the participation from 33 countries. The OSSA has been awarded the "Defence Indusrty Promotional Award" by the Undersecretariat for Defense Industries by the success of the ICDDA held on October 11-13 2016.

The OSSA will continue its strategic activities to strengthen the SMEs and to increase their competitiveness with the participation of IDEF 17 on May 9-12 at Hall 10, booth 1012D.

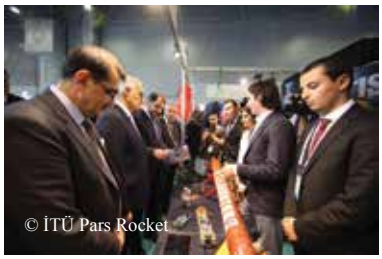
Innovative Rocket Engines Capture Global Attention

ITU - Pars Rocketry Group's Student Engineers eager to launch and ready to beat MIT and Yale Again at Upcoming IREC'17

Pars Rocketry Group was formed under Istanbul Technical University's Faculty of Aeronautics and Astronautics. The team, which has been working in the field of altitude rocketry since June 2012, aims to create awareness about rocketry throughout Turkey and to indigenously design and produce rocket systems and subsystems for completely different tasks. PARS Rocketry Group performs its studies under the leadership of Prof. Alim Rüstem Aslan.



Pars Rocketry Group carried out infrastructure preparation studies during the 2012-2013 academic year. Within the scope of these studies, one of the team members, Mr. Nazmi Erdi Coşkunpınar received the 1st and 2nd level certificates in the test shootings conducted by an international organization namely Tripoli Rocket



Association and became the first person that holds such certificates in Turkey. In addition, PARS Rocketry Group produced its own indigenous motor case, built Turkey's first civil launching ramp, and provided the required structural materials for these studies. Apart from these, the most important thing was to create a certain know-how and a team structure. In this direction, he performed studies on system design and carried out their reporting activities. In the field of rocketry, he has created more than 450 pages of Turkish language resources and an important knowledge for our country. In addition, he participated in many organizations such as Turkey Innovation Week and MÜSİAD High Tech Port in order to promote the team.

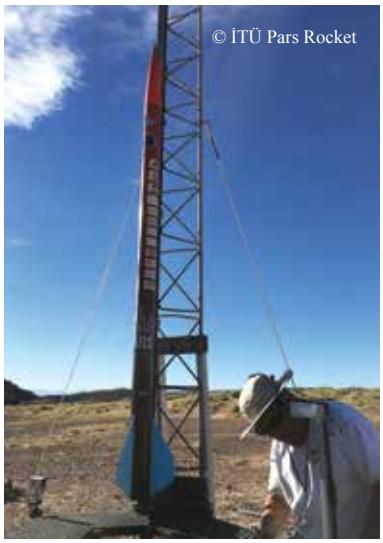
Pars Rocketry Group's activities were not limited to these examples. In 2014, they designed and fired Turkey's first student-made hybrid rocket engine and achieved successful results. Hybrid rocket engines, unlike solid and liquid fuel engines, are engine types that provide propulsion using two different phases of fuel instead of using a single-phase fuel. One of these fuels can be solid and the other can be gas or liquid. It is considered more advantageous than solid fueled rocket engines in terms of fuel control, and more advantageous than liquid fueled ones due to its non-complexity.

Thanks to these features, it started to be used in the rocket industry and will certainly become a technology to be used throughout the world in the near future. For this reason, Pars Rocketry Group has also been continuing its activities in this regard since 2012.

The first version of The Rocket Propulsion Test Stand, which was designed in 2013 was produced and considered to be the first student-made stand in Turkey. The team that accelerated R&D studies related to hybrid rocket engines after the production of this test stand designed and produced Turkey's first student-made hybrid rocket engine in 2014. The ignition test of the hybrid rocket engine, the

production of which was completed on June 8, 2015, was carried out on the Rocket Propulsion Test Stand. As a result of their 6th place ranking in IREC'16 competition, many companies have shown interest and increased their support for them. With this support, the team has optimized the design of the test stands and will be able to test the rocket engine in every variation regardless of the fuel type when the test stand production finishes. The team aims to participate in IREC'17 with one solid fueled rocket and a hybrid engine rocket.

In addition to its R&D activities achieved so far, the Pars Rocketry Group also participates in the IREC (Intercollegiate Rocket Engineering Competition) sponsored by the companies such as SpaceX, Aerojet Rocketdyne and Orbital ATK in June of each year. The purpose of the competition is to achieve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3048 km altitude with a payload size of 4 kg and then demonstrate a successful recovery. The team joined the competition in 2014 with a double-stage rocket, but due to some troubles emerged in the cargo, the team could not achieve the desired success for Turkey. It made a flawless flight in 2015, but did not make a successful recovery. In 2016, after a successful flight and recovery, it was ranked 6th with 1107 points leaving behind many reputable universities such as MIT and Yale. The team that left behind all American universities reached 2nd place on a country basis because 5 universities


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placing ahead of it were from Canada. Using this experience gained during the three years that it took to reach this goal, the team worked independently for a year and completed all the design and production studies of the rocket. The team, exerting intense dedication and effort will again participate in this year's competition with 2 rockets, one of which is solid fueled and the other with hybrid rocket engine.

A total of 11 students from different departments are working at Pars Rocketry Group:

Sinan Zobi: Department of Mechanical Engineering, 4th grade, Team Leader

Ömer Uçar: Department of Aeronautical Engineering, 2nd grade, Mechanical Team Supervisor

Hüseyin Emre Tekaslan: Department of Aeronautical Engineering, 2nd grade, Aerodynamic Design Supervisor

Hasan Hüseyin Özkan: Department of Electronics and Communication Engineering 2nd grade, Electronic Systems Supervisor

Merve Karakaş: Department of Astronautical Engineering, 2nd grade, Mechanical Team Member

Miray Karpat: Department of Astronautical Engineering, 2nd grade, Mechanical Team Member

Tegin Berkay Budak: Department of Astronautical Engineering, 2nd grade, Mechanical Team Member

Samet Tataroğlu: Doctoral student at Department of Aeronautical and Astronautical Engineering, Mechanical Team Member

Ege Türkyılmaz: Department of Astronautical Engineering, 3rd grade, Mechanical Team Member

Betül Yıldırım: Department of Physics Engineering, 2nd grade, Mechanical Team Member

Metehan Duman: Department of Mechanical Engineering, 1st grade, Mechanical Team Member

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18th Public Quality Symposium: "Managing Change"

The 18th Public Quality Symposium was held with the cooperation of the Undersecretariat for Defense Industries on March 23, 2017 with a theme of "Managing Change". Participating as speakers were the Minister of Development, Mr.Lütfi Elvan and Undersecretary for Defense Industries, Prof. İsmail Demir.

At his speech during the Symposium, Undersecretary for Defense Industries Prof. İsmail Demir said that the institutions need to identify dynamic strategies in order to be able to keep pace with the competition and pursue their productivity in the competitive environment. "Even though the only thing that does not change is change itself, we observe that human beings are resistant to change consciously or unconsciously. In our daily lives, sometimes it is difficult to change even routine things. When we consider this from a broad perspective, setting a will for change and accomplishing it could not be that easy and possible. As per the theme of today, we need to establish an infrastructure in order to manage change and dynamism in the public sector. All institutions, organizations and companies carry out important studies to raise awareness. We thank KALDER for its incentives and efforts in this regard.

Adapting to the changes in the world and the ability to lead such changes by foreseeing them have become a very significant factor. I observe that several brainstorming activities are being realized at public platforms to achieve this and I am pleased to see the ideas, plans and determination of public executives at various levels of meetings we have attended to this end. Especially during this period in which the sectors where industrial transformation is accelerating are connected to each other, the institutional failure to keep up with this change can be a parameter that slows down the entire chain. Some institutions may be more conservative due to their internal dynamics, while others may have completed their transformation. In this context, I would like to emphasize that some studies have been initiated under the coordination of the Prime Ministry Undersecretariat. Efforts are ongoing for establishing a single structure for the interoperability of the public services."

Mr. Lütfi Elvan - Minister of Development

The present and the future of the SEEs were discussed within the scope of the quality studies performed during the Panel on Quality and Efficiency in the Public Sector Companies within the scope of the 18th Public Quality Symposium. Within the context of the Innovative Implementation Panel for Improving the Citizen's Quality of Life, the innovative practices of the Social Security Institution and AFAD were communicated by the presidents of the institutions.

The studies of Azerbaijan's State Agency for Civil Service and Social Innovations (namely Asan Service Center), established by the Azerbaijani Presidency for the purpose of managing public services from a single center, coordination of public sector personnel working at service centers, mutual integration of databases of state institutions, and the regulation and development of electronic services were discussed at the symposium.

The future of the defense industry was discussed in the panel "Executives Managing the Change in Defense and IT Sectors" with the participation of Havelsan General Manager Ahmet Hamdi Atalay and Meteksan Savunma General Manager Tunç Batum under the chairmanship of Deputy Undersecretary for Defense Industries Dr. Celal Sami Tüfekçi.

In the panel "Change Management and Leadership in the Public Sector", change and leadership issues in public administration were discussed with public and private sector perspectives.

Prof. İsmail Demir - Undersecretary of SSM ; Mr. Lütfi Elvan - Minister of Development

Prof. İsmail Demir - Undersecretary for Defense Industries

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