TEI-TJ300 Turbojet Engine Ignited!

by Cem AKALIN

Turkey's first Medium Range Anti-Ship Missile Engine TEI-TJ300 was tested at TEI – TUSAŞ Engine Industries Inc. premises in Eskişehir with the participation of the Minister of Industry and Technology Mustafa VARANK. Governor of Eskişehir Erol AYYILDIZ, President of the Digital Transformation Office of the Presidency of the Republic of Turkey Ali Taha KOÇ, MPs of Eskişehir Harun KARACAN, Prof. Dr. Emine Nur GÜNAY, Metin Nurullah SAZAK, President of TÜBİTAK Hasan MANDAL and Director of TÜBİTAK SAGE Gürcan OKUMUŞ attended the ceremony as well.

Designed and manufactured completely through indigenous and national facilities, the engine weighs less than 30 kilograms. It is the first turbojet in the world that is capable of generating a thrust of 1,300 Newton in its own thrust category and TEI Chairman & CEO Prof. Dr. Mahmut F.AKŞİT informed Minister VARANK on the engine prior to the test. Briefed shortly before the test, Minister VARANK ran the ignition system and fueled and revved up the engine. Starting with 4,500rpm (revolutions per minute), the engine's number of revolutions was increased to 26,000rpm under control during the ignition test, with the injection of the main fuel.

Minister VARANK made a brief statement following the test and underlined the importance of the engine developed by the engineers of TEI for the defense industry. VARANK: "Today we ignited the TEI-TJ300 engine developed with the support of TÜBİTAK. These engines were designed to be employed in medium range anti-ship missiles and they could be utilized in many other platforms as well. I also witnessed the first powering of the core engine of our GÖKBEY TS1400 turboshaft engine. The chairman of TEI promised that they would be delivering the engine this year to TUSAŞ. Following the delivery, TUSAŞ will be launching the engine integration activities.

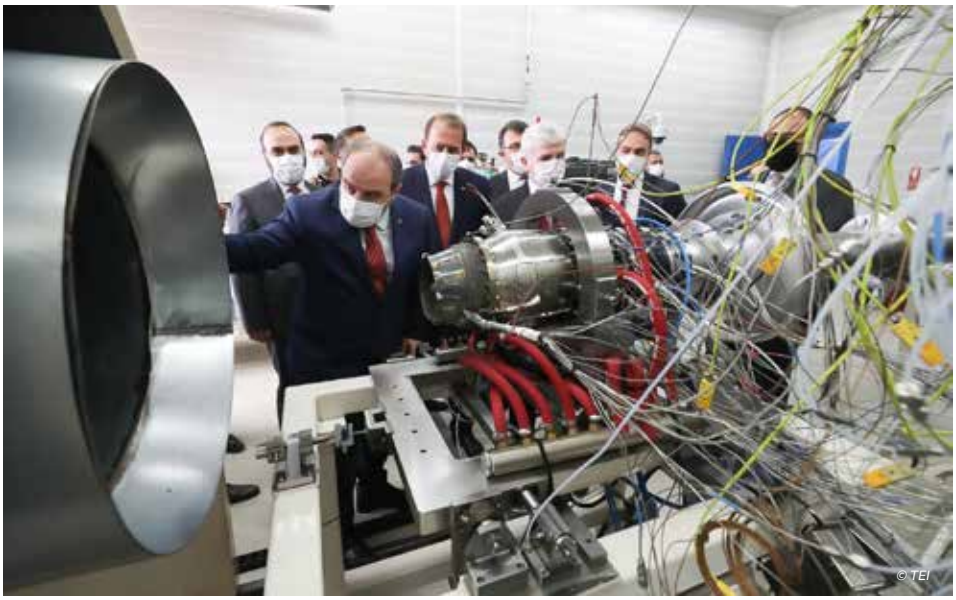
This engine, at the same time, is the symbol of a critical development as it displays the progress of our defense industry. Despite its physical size, the TEI-TJ300 engine generates a thrust of 1,300 Newton and produces nearly 400 horsepower. The most critical infrastructure regarding the power systems of air vehicles, in particular, has already been established at TEI in our country and this infrastructure is producing products rapidly. And because of this, which we are proud of, we are capable of independently developing many products of foreign restrictions." Stating that all software, equipment and test systems of the engine test infrastructure were also developed by TEI through indigenous and national facilities, Minister VARANK added, "A country may manufacture a product, but if the testing environment needs to be supplied from a foreign

country and in the event that no country makes this technology available, then even the test of the product could not be achieved."

VARANK and the accompanying delegation posed for photographs in front of the engine and the big poster of the new medium range anti-ship missile.

Giving brief information on the development process of the engine, Prof. Dr. AKŞİT said, "The engine which we are standing in front of is in fact the first engine that we manufactured and powered, the engine that we powered today at the test cell is the second engine we manufactured. We ran the first engine in February, yet could not hold this ceremony due to the measures adopted as part of COVID-19 pandemic. We will be manufacturing five engines for testing purposes this year. This is an engine completely designed by the engineers of TEI and it is comprised of only off-the-shelf components that could be procured anywhere. These are standard cables, spark plugs, etc. We are indigenously manufacturing most of the parts in Turkey. Gür Metal supported us significantly in casting. We had certain additive manufacturing parts produced at the R&D center of Sabancı University. All remaining parts were manufactured here."

Minister of Industry and Technology VARANK then powered the engine



of GÖKBEY Helicopter TS1400 in the testing environment. The core of this engine had been successfully powered previously. T700-TEI-701D engines will be powering T-70 helicopters and TEI conducts the indigenous and serial production of the engines (two engines per month). Minister VARANK closely examined 6 of these engines that are ready for delivery and was informed on the developments by TEI Chairman & CEO AKŞİT. AKŞİT said, "We have already delivered eight of these serial production engines. We have six left and two engines are about to be completed. Current local content rate of these engines is around 50%. The local content rate decreases to this level because we procure the gearbox from the supplier. Even the combustion cell and the core engine are being manufactured by TEI."

Minister VARANK was informed again by TEI Chairman & CEO Prof. Dr. Mahmut F.AKŞİT on 5 TEI-PD170 engines that were manufactured by TEI through serial production for the ANKA and AKSUNGUR platforms which are ready for delivery, and the engine block which has been produced indigenously for this engine for the first time.

VARANK then successfully conducted the final control test of a TF33 engine which is maintained by TEI that powers the NATO AWACS aircraft and concluded his visit at TEI's Eskişehir premises.