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TURKISH DEFENCE REVIEW

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JUNE 2015 / 07 • ISSUE: 12 • ₺ 65, US \$ 30, € 24 • ISSN: 2149-2514

INTERVIEW:
Dr. Tamer Saraçyakupoğlu,
General Manager of THK Teknik

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Doors to Space**

**SASAD Published 2014
Defence Industry Data**

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**the Islamic Republic of
Iran's Ambassador
to Turkey**

Brigadier General Jozef Viktorin
**Defence Attache of
Slovakia to Turkey**

T129

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**Turkey
Makes its Choice
for the Regional
Aircraft Project**

Turkey
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LAND DEFENCE SYSTEMS HOUSE OF TURKEY



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ARMA 6X6

COBRA

APV

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“No Gunpowder” at IDEF

This year’s IDEF, which was opened by Recep Tayyip Erdoğan, the President of the Republic of Turkey, and was supported once again at the highest level by the government, on the whole met the expectations of its participants, and was completed with a general air of satisfaction.

Although the numbers seem to support this general perception of the exhibition, we would like to play the devil’s advocate, and share our thoughts and assessments about a topic that we consider important for the future of IDEF; a topic that we can summarize with the words of the classical Turkish proverb “crossing the river, yet drowning in the stream”. In this case, we will take the liberty of rewording the saying to suit our needs, “crossing the sea, yet drowning in the stream”.

By its very nature, defence is a sector in which companies aim constantly for the best, striving to become number one and to stay at the peak. The competitive environment and the race in this sector is reminiscent of a battlefield; and in contrast to contests in which the top three contestants take a place on the podium and receive awards, this battlefield is one where only the first-ranking contestant survives and climbs to accept their award.

The necessity of “working hard to become number one” is also valid for a defence exhibition – especially if the opening of this exhibition is attended by the President of the Turkish Republic. In this context, we observed problems in various areas, such as:

- The badges provided at the exhibition,
- The transparent plastic covers provided for these name badges,
- The cords provided for hanging these badges around the neck,
- And many other aspects, from the organization of the parking areas to overall security.

So, how appropriate is it for such problems to occur in the organization of an exhibition which we expect to become “number one” in its area, and whose development we have been following for so many years? Now imagine how all these problems are perceived by the visitors of the event, by putting yourself in the place of foreign guests who have come from all around the world to visit and take part in IDEF, many of whom have been to countless international exhibitions before. All these problems remind us of the historical anecdote in which a commander lists the problems on the battlefield as follows: “First of all, there is no gunpowder. Secondly... never mind, there is no need to list the rest.”

Immediately before IDEF, we had the opportunity to visit Orhan Akbaş, the General Manager of the Turkish Armed Forces Foundation (TAFF), who shared with us his vision for raising the quality of the event to the highest level. He said that many things would change and improve by the time of the next IDEF exhibition, which will be held between May 9 and 12, 2017. We thus would like to lay this subject to rest for now by expressing our belief that new solutions will be implemented in line with IDEF’s requirements with the goal of turning IDEF into a leading international exhibition. As such, we will be following closely future developments in this issue.

An Expected Appointment at the SSM

Just as we were concluding our preparations for the June issue, an important and long-awaited appointment was made at the Undersecretariat for Defence Industries (SSM). In line with the decision published in Official Gazette number 29375 and dated June 3, 2015, Mustafa Murat Şeker was assigned as the Deputy Undersecretary of System Projects and Logistics, and this development was followed by the appointment of new Department Heads at the SSM. Although we will be covering the details of these new appointments at the SSM in our next issue, there is one that we would especially like to mention owing to its connection to IDEF, and also due to the fact that a mistake we had made nine years ago has finally been remedied.

We first would like to share the news published nine years ago in our 12th issue in 2006, where we made the error in question:

The DSA 2006 in Photographs

At DSA 2006 – the international exhibition in which Turkey has made the most comprehensive appearance with the most participants until now – the successful participation award given to Asuman Vangölü, the Head of the Foreign Relations and Exports Department of the SSM, has further crowned and honoured the successful participation of our young and rising defence industry at this event. Following the strong demands of DSA 2006’s participants, and with these photographs that we have selected with great difficulty from among the thousands of others we currently have to hand, we would like to share with you once again, without further ado and without taking any more of your time, the four days we have spent in Malaysia and the DSA exhibition, in honour of the award received by Turkey during the event.”

The error in this passage is that Asuman Vangölü was titled as a “Department Head,” but she was actually an “Office Director.” By great of coincidence, Vangölü, within the new assignments at the SSM, has now been appointed as Head of the “International Cooperation Department”. Vangölü is well experienced in the SSM’s international cooperation activities, and throughout her term in office, we believe that she will closely scrutinize and address the problems we mentioned above relating to IDEF. We would like to conclude by expressing our high expectations that Vangölü’s term will result in significant progress in our sector.

We hope to see you again in our July issue, where we will be sharing with you the most noteworthy developments of the month of June, as well as the second section of our special dossier highlighting the developments at IDEF.

Ümit BAYRAKTAR
Managing Editor



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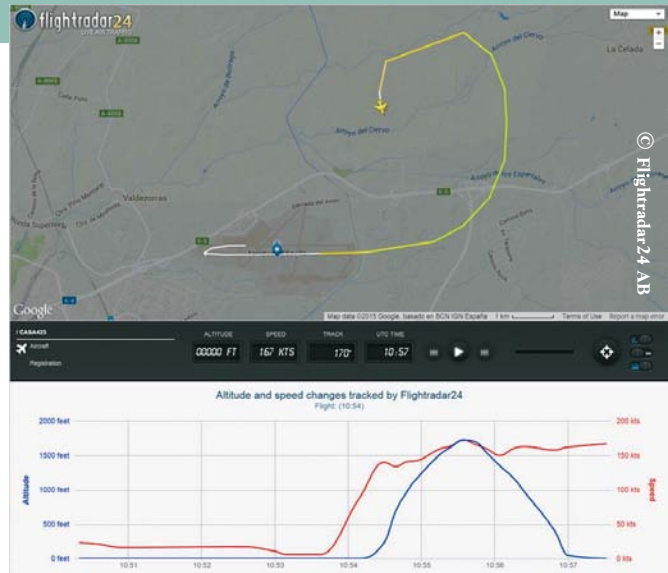
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A400M Crashed in Test Flight

On 9 May 2015, the Airbus A400M Atlas cargo plane bearing the serial number 23, scheduled to be delivered to Turkish Air Force in June, crashed near Sevilla shortly after the take-off for the first company test flight. Four of the six crew members were killed and the remaining two were hospitalized due to serious injuries. All were Spanish employees of Airbus Defence and Space.

While the accident investigation by Spain's military air crash investigation agency was going on, Airbus Defense and Space requested on May 19th, that all operators to conduct one-time specific checks on electronic control units (ECUs) fitted to the TP400 turboprop engines on the aircraft. 20 days after the accident, on May 29th, news quoting Airbus announcing that incorrect software version installed in ECUs caused the fatal crash, appeared in the foreign press. According to media, "The black boxes attest to that there are no structural defects [with the aircraft], but we have a serious quality problem in the final assembly" said Airbus Chief Strategy Officer Marwan Lahoud.

On June 3rd, Airbus announced that initial analysis is completed with the examination of the data on digital flight data recorder and cockpit voice recorder. The findings



On May 9th, the A400M, using callsign CASA423 was tracked by Flightradar24. According to the charts posted after the incident, it reached a maximum speed of 173 kts at an altitude of 1,725 feet, then it started descending. The last log, shows the plane has hit the ground at 167 knots with a vertical speed of about -3,000 feet per minute.

indicate that after take-off number 1, 2 and 3 engines stopped operating and did not respond to pilot inputs, while number 4 engine was operational. No other malfunction was observed on any other system of the aircraft. Airbus concluded that no other information beyond its alert message to operators on May 19th is necessary.



ARES Shipyard Continues Deliveries at Full Pace

In a press briefing on May 20, ARES Shipyard provided the latest information regarding its 2014 and 2015 delivery and sales performance. The company reported that it has delivered a total of 16 boats of different models to its Turkish and foreign customers – both civil and military. In the first quarter of 2015, the company completed deliveries of five boats, three of which were ARES 42 HECTOR-class boats constructed for the Coast Guard Command of the Turkish Republic of Northern Cyprus, while the two others were ARES KND30-class boats constructed for the Nigerian Customs Service.

Aviators of the Future Meet at the Ankara Aviation Museum

A school project by fourth-grade student Ela Yazicioğlu from the İhsan Doğramacı Foundation Private Bilkent Elementary School (BLIS) brought together potential aviators of the future at the Ankara Air Museum in Etimesgut on May 26. The trip to the museum was organized as part of Yazicioğlu's project, which was aimed at emphasizing the problems in education around the world, and argued that a good education is associated not only with the students' willingness to learn, but also the means and capabilities offered to them. In addition



to the participants from Bilkent Elementary School, students and teachers from Taşpınar Elementary School also participated in the trip. During the visit to the

museum, the students were able to make a close inspection of the cockpit and engines of the aircraft on display, showing particular interest in the fighter aircraft that had once

been part of the Turkish Air Forces (TurAF) inventory. Emphasizing in her project the importance of imagination and dreams in education, Yazicioğlu gave model aircraft to the students as a gift at the end of the museum trip, aiming to spark their interest and imagination in the field of aviation. As MSI Turkish Defence Review, we wish the best of success to the students – the potential aviators of the future – who took part in this project. We believe that this will be of great benefit in raising young generations with an interest in aviation and space.

Meeting of NATO Tigers Concluded Successfully

The NATO TIGER MEET Exercise, which brought together the NATO Tiger Fleets, was successfully executed on 4–15 May at the 3rd Main Jet Base Command range under the auspices of Turkish Air Force (TurAF) Command's 192nd Fleet. A statement released by TurAF said that, within the scope of the NATO TIGER MEET – where, in contrast to other exercises, different social and cultural aspects

played an important role – the guest Tiger pilots were warmly greeted with sherbets, offered by people in traditional attire. The Flag Ceremony organized on May 4 was carried out with the participation of General Abidin Ünal, the Commander of the Combatant Air Force and Air Missile Defence, and started with the national anthems of visiting countries'. Following the speech of Brigadier General (Pilot) İshak Dayıoğlu, the

Commander of 9th Main Jet Base Command, the ceremony ended with a Mehteran concert. The Tiger fleet pilots attended the Flag Ceremony in uniform and with accessories of their own design. Nearly 300 sorties were flown within the scope of the NATO TIGER MEET Exercise, providing the opportunity to evaluate the capabilities of different aircraft, and giving all parties experience in interoperability.

May 12 was the Distinguished Observer and Press Day of the exercise, and attracted hundreds of air photographers from 27 countries. Following a general assessment briefing, the exercise ended – similar to how it had started – with a Flag Ceremony. Awards were given to the deserving fleets, as is tradition in these kinds of exercises. In 2016, the NATO TIGER MEET Exercise will be hosted by the Spanish Tiger Fleet.



Announcement by BMC Regarding VURAN

Following claims made by various press organizations concerning the VURAN vehicle displayed by BMC during IDEF 2015, BMC released a press statement on May 25.

We share this statement with our readers:

“Respectfully announced to the public.

As is well known, BMC, a national value and asset for our country, after five years on the brink of bankruptcy and closure, was purchased by our shareholders in 2014 through a transparent and open tender. Together with our 1,200 workers, we are making extraordinary efforts to strengthen this brand once again, and to bring it back to its feet as a value that can represent our country around the world.

For this reason, we are astonished and concerned to see attempts to tarnish these efforts – which will contribute greatly to our country – by certain groups who are apparently displeased and envious of our efforts. Acting as spokespersons and representatives of these groups, certain media organizations, for quite some time last year, published news claiming that we had only purchased the company to acquire its lands; that we would demolish the BMC company building and build residences in its place; that we would fail to pay the tender costs; and that we would make all company employees redundant. Despite the fact that these entire claim were eventually proven to be groundless and unsubstantial, none of these groups or media organizations have to date apologized for these unfounded statements, or issued a statement correcting their error.

After acquiring BMC on August 15, 2014, paying the entire tender price of 751 million in a single payment, all of the 1200 company employees returned to work, all previously inactive facilities were once again rendered operational, and the company once again became an exporting industrial organization that contributes to our country's economy.

Unfortunately, certain media organs have now initiated a new campaign aiming to tarnish our organization. We would like to share now all of the details concerning the Vuran armoured vehicle we presented during IDEF 2015, which was the subject of news published recently by certain media organs.

When we first took over the company, we examined all completed

and incomplete vehicle projects that had been undertaken in the past. Under the previous management of BMC, an armoured vehicle named Vuran had been designed for the company by an Israeli-based firm; however, although the development of the Vuran was nearly 90 percent completed within the frame of the project agreement signed by the previous management, payments for the development of this vehicle could not be completed due to the company's economic difficulties. Consequently, none of the rights pertaining to this vehicle were transferred to BMC.

Based on our own analyses, we determined that this vehicle could make an important contribution to our armed and police forces. Based on this view, meetings were held with the Israeli company in question, and a commitment was made to pay a considerable project fee concerning the completion of the Vuran project, and the transfer to BMC of all rights pertaining to the design, production and both domestic and foreign sales of the vehicle.

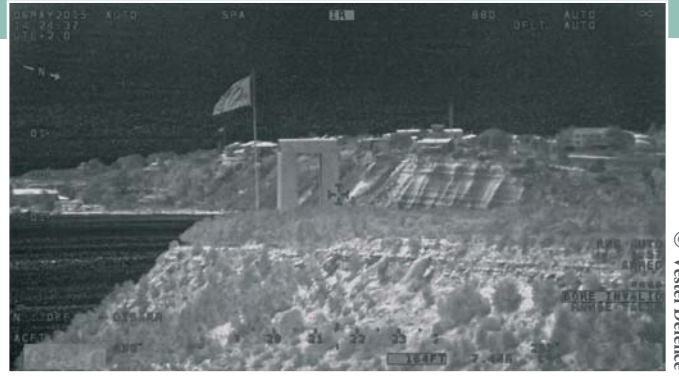
Upon the completion of this project within only a few months, our country will acquire an important armoured vehicle that it can both produce and use, and which it can also export independently. As the new management of BMC, we have, in addition to the company's tender-related costs, also made a significant investment with the contributions of our shareholders for the completion of this project, and have ensured the transfer of significant technologies to our country. Consequently, we believe that the Turkish people can effectively discern the motive and intentions of those directing insincere and malevolent criticisms towards all of these achievements that are more worthy of praise and congratulations.

As the Executive Board of BMC, we have, together with our 1,200 employees, closed our ears to such reports for the past nine months, and will continue to focus on our work while continuing to ignore such groundless statements. We would like to express on behalf of our shareholders that we will never compromise in our efforts to transform BMC into a brand that will be a source of pride for our country and its people.

Sincerely
BMC Executive Board”

Tactical UAVs Make their Mark in the DENİZKURDU Exercise

The DENİZKURDU-2015 (SEAWOLF-2015) exercise planned by Turkish Naval Forces Command (TNFC) was carried out in the Marmara, Aegean and Eastern Mediterranean Seas between May 14 and 28. An important feature of this year's exercise was the flights by both Kale-Baykar's Bayraktar Tactical Unmanned Aerial Vehicle (UAV) and Vestel Defence's KARAYEL UAV during the exercise. MSI Turkish Defence Review readers may recall us speaking about this issue in our interview with Yakup Taşdelen, the Head of the Unmanned and Smart Systems Department at the SSM in our May issue. At the time, Taşdelen had said: "We have recommended that the TNFC lease a different system for the taking of images until the Vessel-Based UAV (GİHA) project reaches sufficient conceptual maturity. In this regard, we are currently considering a model in which the TNFC's Tactical UAV requirement will be met initially by an externally leased system in the near future, and later by a newly developed system that will be included in the TNFC's inventory. The GİHA will eventually take up the role of the initially leased system. We have already made a decision concerning the initiation of the Leased UAV Image System Procurement Project. During the DENİZKURDU-2015 Exercise, both Vestel Defence Industry and Baykar Makina will be providing images as requested by the TNFC, and these will be transferred to Aksaz through the TNFC's communication infrastructure and displayed in real-time on Distinguished Observer Day. The purpose of these activities is to create a



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general awareness within the TNFC regarding the use of UAVs. The Request for Proposal (RfP) for the Leased UAV System Image Procurement Project is in the process of being prepared. Immediately after this tender is finalized, which will be towards the end of this year, we will initiate the procurement process for the tactical UAVs that will be included in the TNFC's inventory. The procurement itself will take place in mid-2016."

Officials from Baykar Makina merged live coverage from two different television channels of the participation of the Bayraktar Tactical UAV in the exercise, and shared links to the videos on its official Twitter account.

Vestel Defence, on the other hand, issued a press release on May 17 related to its participation in the DENİZKURDU-2015 exercise. Taking part in the exercise after taking-off from Çanakkale Airport, the KARAYEL effectively displayed its ability to operate from different types of airfield, including civil airports. The release emphasized that the KARAYEL was Turkey's first tactical UAV system to take-off from a civil airport, and to participate in a military exercise. It went on the state that KARAYEL remained in the air for 10 hours and 50 minutes during the proceedings, thus performing its longest flight ever, and that the KARAYEL had completed all of its missions during DENİZKURDU-2015 with great success.



STM Publishes its Cluster Report

In a statement released on May 15, STM announced the publication of its sectoral report on industrial clusters. The report, which was prepared with the aim of "providing support to efforts aiming to reveal the main strategies and objectives of clusters targeting specialization in technology," described the following subjects in its relevant sections: "The Prerequisites of Clustering," "The Analysis of Clusters (Porter

Diamond Model)," "Examples of Clustering in Turkey," "Examples of Innovation-Based Clustering in Foreign Countries" and "The Objectives of Technology-Based Clustering". The conclusion of the report recommended subjects/areas in which clustering initiatives should be focused as a priority. These included:

- In addition to production, clusters should also carry out R&D and develop products in areas of high strategic value and return.
- The members of the cluster should be provided with ideas, information sharing and research targets, which may increase their competitive strengths and profits.
- Clusters should engage in international cooperation and use risk capital.
- An environment of mutual trust for the exchange of information should be created.

- Clusters should form an effective information network, comprising data on technology, information, product and human resource inventories and their statistics.
- Monitoring and inspection mechanisms should be developed for the projects conducted in clusters.
- Special forms of support/incentives should be provided to SMEs to ensure their sectoral development.
- Cluster members should be provided with much-required support in the specific areas of patents and intellectual property rights.
- An environment of awareness should be created through promotional activities regarding clusters.
- An input procurement strategy should be developed to identify imported products that may be produced locally in the cluster.
- Even though companies are competing with one another, activities should be identified and implemented that may increase their level of cooperation.
- Companies that are experienced or specialized in the acquisition of certification should be encouraged to join clusters in order to remedy the problems that companies face in this regard.
- A structure that is open to the participation of foreign investors should be developed in the cluster, with efforts made to attract foreign investors to the region.

The report can be found at the following link:

http://www.stm.com.tr/img/doc_1431525023.pdf



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Thermal infrared and radar signatures expose combat vehicles to sensors and target acquisitions systems, making them vulnerable to attack. The Saab Barracuda Mobile Camouflage System (MCS) is a flexible solution offering multispectral protection for vehicles in any scenario. When operating in hot climates, combat vehicles are also effected by interior heat build-up caused by solar loading effects. All configurations of MCS are designed to passively reduce the heat penetration. We call it the *thinking edge*.

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The Second Act in DEHOS

On May 22, the TÜBİTAK Defence and Security Technologies Research Support Group (TÜBİTAK SAVTAG) issued a request for proposal (RfP) in the "Naval War Game Simulation Infrastructure (DEHOS) – 2" project. The aims of this RfP, opened within the scope of the Support Programme for Research and Development Projects of Public Institutions (1007 Programme), are to acquire the functions and capabilities that were not part of the first DEHOS project, and to develop an infrastructure that would enable multiple war games scenarios to be run simultaneously. The project budget has an upper limit of ₺18 million, while the maximum duration of the project will be 36 months. The "DEHOS-1 Technical Data Package" will be delivered to the Project Coordinating Organization deemed most suitable for the conduct of the project, and will be used in project-related activities. The first DEHOS Project, which was also supported within the frame of the 1007 Programme, was conducted by Meteksan Defence. The closing date for the RfP was determined as August 21, 2015.

Strategic Acquisition by HAVELSAN

In a statement released on May 7, HAVELSAN announced the acquisition of Quantum3D, a manufacturer of image generators used in military and civil simulators and training systems. The statement said that with the acquisition, HAVELSAN will acquire all of Quantum3D's product groups and intellectual property rights, and is planning to open offices in the cities of San Jose and Orlando in the United States. Quantum3D will retain its own name and brand, and will continue to conduct activities through its experienced workforce. The most notable Quantum3D products include the Mantis, an award-winning real-time visual simulation software, as well as Independence IDX-series image developers and GeoScapeSE-series visual database products, which are in wide use around the world.

Commenting on the acquisition, Sadık Yamaç, the General Manager and CEO of HAVELSAN, said: "As HAVELSAN, our activities in the areas of simulation and training are very important and possess great potential. Quantum3D products are well-known for their level of realism and high performance, and we believe that we can create new opportunities by merging our strategies with Quantum3D products, and that we can transform Mantis into the most innovative solution on

the market. Through the skills and abilities we acquire with the acquisition of Quantum3D, we will not only strengthen our basic capabilities worldwide, but will also present seamless training solutions to the US market." Yüksel Öztekin, the Chairman of the Board at HAVELSAN, said: "Entering the US market and producing high technology products with the Quantum 3D is a strategic move for HAVELSAN."

In a further press statement released on May 15, HAVELSAN announced another important development in the area of simulation. While in Izmir for the NATO North Atlantic Council Meeting held on April 21, Jens Stoltenberg, NATO Secretary General visited the Flight Training Centre with his accompanying delegation, and performed flights in the centre's KT-1T and T-38M Full Mission Simulators, which have been designed and developed by HAVELSAN. The centre, which was established within the frame of NATO's "Smart Defence" initiative, will be available for use by all NATO allies based on the principle of pooling and sharing training systems. The release emphasized that allowing the air force personnel of other NATO countries to access HAVELSAN simulators is a significant step in increasing the recognition of HAVELSAN's name and capabilities at an international level. To date, over 40,000 hours of flight training has been performed at the International Flight Training Centre, which completes its first year in February 2015. The management and operation of the centre is being conducted by HAVELSAN Training Services, and boasts a mission readiness ratio of over 98 percent.





OSSA Signs a First with NATO

On May 12, the OSTİM Defence and Aviation Cluster (OSSA) attended the NATO Industrial Advisory Group (NIAG) meeting at the NATO Headquarters in Brussels. Representatives from the cluster participated together with a number of Turkish prime contractor companies under the lead of the Turkish Ministry of National Defence (MSB) and the Mechanical and Chemical Industry Corporation (MKEK), which currently holds the Presidency of NIAG Turkey. OSSA became the first cluster to make a presentation at NATO when Hilal Ünal, OSSA Coordinator, gave a briefing to the representatives of NATO countries on OSSA and its activities, providing information about each OSSA member company and their capabilities. Ünal stressed that OSSA is open to cooperation, and that it can provide consultancy services to companies from NATO countries who may be willing to cooperate with Small- and Medium-Sized Enterprises (SMEs) in Turkey.

Another important development for OSSA in May was the opening meeting of the 3rd International Competitiveness Development (URGE-3) Project, supported by the Turkish Ministry of Economy. OSSA had initiated the first of these projects under the name URGE-1 in 2012, and had successfully completed the project by 2015, achieving all of the project objectives with percentage changes above the



envisaged ratios. The URGE-2 Project was initiated in 2014. The main accomplishments of the URGE-1 and URGE-2 projects are summarized below:

- Companies taking part in the URGE-1 Project achieved an overall 107 percent increase in exports.
- The total number of foreign sales agreements signed by the URGE-1 and URGE-2 companies reached 71, with a total budget of approximately \$92 million.
- OSSA member companies have signed 126 confidentiality agreements within the frame of various international fairs.
- The number of members with AS9100 certification has reached 31.
- The share of work/activities transferred by main contractor companies in Turkey to SMEs has increased by 10 percent.

The Opening Meeting of the URGE-3 Project was held on May 15. During the acquaintance and information meeting, attended by the 30 companies in the project, Hilal Ünal provided information and answered questions. In the subsequent stages of the project, various field visits will be made to the companies, and a road map for the companies will then be determined based on the results of sectoral and market analyses.

EDA Seeks Answers to the Question: “When and Why do Countries Seek Cooperation?”

The Egmont Doctorate Award of the European Defence Agency (EDA) was given on May 20 to Dr. Andrea Gilli for his doctorate thesis on cooperation in defence projects. In his thesis, in which he investigated why countries sought to work with other countries in certain weapon systems while avoiding cooperation in others, Dr. Gilli listed his conclusions regarding European countries as follows:

- Countries seek cooperation when important technological changes (the term used in the field of technology

management is “architectural changes”) render their own defence industries less competitive in export markets. On this subject, Dr. Gilli provides the example of naval platform weapon systems.

- Countries seek cooperation when competitiveness requires the use of highly advanced components (the term used in the field of technology management is “modular innovation”). Concerning this, Dr. Gilli provides the examples of air-to-air and air-to-ground missile systems.

- Countries avoid cooperation in areas where products display evolutionary (linear) changes, based on the thought that doing so would adversely affect their own industries and employment. Concerning this, Dr. Gilli provides the example of warships, noting that the hull designs of such ships exhibit an evolutionary change.
- Countries also avoid cooperation for products that experience radical changes and innovations, preferring instead to carry

out their own strategic investments related to these products so as to develop their own industries. Concerning this, Dr. Gilli provides the example of unmanned aerial systems (UAVs). Although cooperation agreements have been signed in the past two years concerning UAVs, the fact that such agreements have been signed many years after this new and radical innovation first appeared and only after years of discussion supports Dr. Gilli’s findings.

S-97 Raider Makes First Flight

On 22 May Sikorsky has completed the first flight of S-97 Raider, a predecessor of SB-1 Defiant to be developed together with Boeing to compete in US Army's JMR (Joint Multi Role) Program. During the one-hour flight conducted at Sikorsky's Development Flight Center in West Palm Beach, Florida, pilots tested the aircraft's hover and low-speed capabilities. Sikorsky is working on the co-axial counter rotating rotor technology used in S-97 Raider since 1960s.

The, so called, Advancing Blade Concept (ABC) first flew on XH-59A in 1973. XH-59 program was completed in 1981, after demonstrating a 240 knot (445 km/h) horizontal flight speed with the aid of turbojets. High vibration levels caused by the ABC had prevented the aircraft go into production. Nevertheless, technologies and materiel developed in the next thirty years, helped Sikorsky to attain vibration free speeds of 250 knots (463 km/h) in 2011, this time with a pusher prop, with its X2 aircraft developed on its own.

In order to increase the maturity of the technologies demonstrated on X2, Sikorsky initiated the S-97 program in September 2010 to be funded entirely by Sikorsky and its 54 industry partners. Sikorsky is funding 75 percent of the Raider program out of pocket, with the remaining 25 percent coming from 54 principal suppliers. Two prototypes will be built, one for performance testing and one for demonstrations of mission systems and weapons. In the JMR Program that is conceived as the technology

demonstration phase of the 100 Billion Dollar FLV (Future Vertical Lift) Program of US Army, the Sikorsky-Boeing designed SB-1 Defiant will compete against Bell's V-280 Valor, which employs the proven tilt-rotor technology. FLV Program targets to replace over 4000 aircraft, most of which are either UH-60 Blackhawks or AH-64 Apaches, from 2030 and on. Had the US Army not cancelled its new scout helicopter program to replace OH-58 Kiowas, S-97 would be competing for this program, as well.

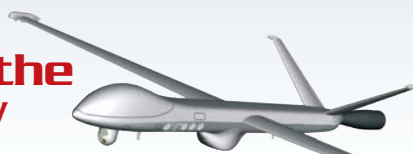
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Europe Signs for the MALE UAV

The development project of the Medium-Altitude Long-Endurance (MALE) class unmanned aerial vehicle (UAV), which has been on the agenda for many years, and involves the cooperation between a number of European countries, was officially launched in early May 2015. A joint statement concerning this UAV, which is to be developed by Germany, France and Italy, was released by Airbus, Dassault Aviation and Finmeccanica,

which will assume responsibility for the industrial aspects of the project. The statement said after signing a Declaration of Intent on May 18, Germany, France and Italy, through their respective aviation companies, will conduct an initial "specification" study that will last for two years, at the end of which, the parties will decide whether system development and procurement activities for this UAV should be undertaken. Last May, the three companies issued a declaration concerning the need to carry out studies for such a UAV if Europe to acquire its own MALE UAV capabilities. Both France and Italy are currently using US-made MALE UAVs, while Germany is leasing Israel-made systems. It is worthy of note that the United Kingdom, which currently uses US-made MALE UAVs, will not be participating in the project, but is cooperating with France in a separate combatant UAV project.

When the intention to develop a MALE class UAV in Europe through an inter-country cooperation was first announced prior to 2010, Turkey was listed among the countries expected to take part.



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3D concept models of the aircraft in development (above and right).



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Dr. Tamer Saraçyakupoğlu, General Manager of THK Teknik:
“We Want to Become a Reference for the General Directorate of Civil Aviation (SHGM), and an Exemplary Institution for the other Organizations in our Sector”

Turkish Aviation Association (THK) Technic Aircraft Maintenance Services Inc. (THK Teknik) is an aviation organization with a highly advanced technical infrastructure and sophisticated maintenance capabilities in the fields of aircraft avionics and mechanical systems. The company conducts aircraft maintenance, repair, modernization, technical publication, quality activities, logistics and supply support for nine different types of aircraft, while also conducting training activities for both its own personnel and the personnel of independent aviation organizations. We had the opportunity to discuss with Dr. Tamer Saraçyakupoğlu, the General Manager of THK Teknik, the steps and initiatives being taken by the company towards becoming an important player in the aviation sector.

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MSI TDR: First of all, could you please tell us a little about yourself?

Dr. Tamer SARAÇYAKUPOĞLU: My career in the field of aviation began in 1994 with my appointment to 1st Air Supply and Maintenance Centre Command in Eskişehir as a lieutenant. In Eskişehir, when I first heard the sound of the J79 engines that powered the F-4 Phantom aircraft, I said to myself, “I’m glad that I am here.” It was not only the magic of fighter aircraft that enamoured me. The fact that I began my career next to Şenay İdil, whom I consider my “master”, and who is currently the General Manager of Alp Aviation, made me feel that luck was really on my side. It was Mr. İdil who taught me about flight safety in aviation, and that success is never the product of coincidence. He also taught me how to be solution oriented, that good quality jobs can only be carried out together with qualified individuals, and that dedication is the greatest



Cessna 172s of Turkish Air League (THK).

reward I can ever give myself. He later sent me to a language school after I promised him that I would be among the best ranking students of my class and year; and fulfilled this promise when I completed my nine-month education as the first-ranking student in my class. In parallel to my duties at 1st Air Supply and Maintenance Centre Command and my education at the language school, I also completed my postgraduate and doctorate education. I would like to take this opportunity to respectfully thank and remember Prof. Dr. Yaşar Pancar, my advisor, who supported me during those years of my doctorate degree at Osman Gazi University.

I was subsequently assigned in 2004 to the office of Turkish Air Forces (TurAF) Command responsible for coordinating the F-16 Project. In my new post, I was tasked with the coordination of offset projects, and was soon afterwards included in the Joint Strike Fighter (JSF) Project, for which I frequently travelled to the United States to take part in numerous meetings and joint studies. During that period, I was also assigned to the NATO Airborne Early Warning & Control (NAEW&C) Programme Management Agency (NAPMA) in Brunssum, Netherlands, where the AWACS aircraft programmes are managed. Later, I was quite unexpectedly assigned to the office in the Korean Republic



A Cessna 172 in the Maintenance Shop of THK Technic.

A CL-215 with engines removed for maintenance in THK Technic's shop.



responsible for the KT-1T aircraft, and had to live away from my family for 1.5 years. In Korea, I took part in the processes and activities pertaining to the production and delivery of the first five KT-1T aircraft. Later I returned to Turkey, where continued to work on the project for another 1.5 years, taking part in the production processes of 35 more aircraft. At the time, I was at the head of the delegation that signed the documents concerning the acceptance of these aircrafts on behalf of TurAF Command. Before the project was completed, and right after I signed the document for the 23rd aircraft, I decided to leave TurAF Command.

It was somewhat of a sudden decision; but looking back, I know that my decision was the right one. I wanted to become an Airbus A319 pilot, and so applied to the Turkish Aviation Association (THK). But I found myself in a new position in THK Gökçen Aviation Inc. I was now working at an important institution that had been founded by the directive of the Great Atatürk himself, and this new assignment was a great source of pride for me. I was now going to take part in a project for the domestic production of Turkish aircraft., I would have accepted this position even if they had asked me to pay for it, let alone paying me a salary! The time and moment that, after all these years in my profession, made me feel the most proud was December 21, 2014 – which was the day on which the aircraft we had produced in the project finally took to the skies. It was as if the airplane that took-off from the ETİ-29 runway was not just an aircraft we made; but a tangible manifestation of our labours, our efforts and the many sleepless nights we spent away from home. While the aircraft flew through the pattern of the air traffic, we were looking at the very skies to which Great Atatürk had once pointed and said, "The Future Lies in the Skies". At the end of this project, which had been ini-



CL-215's internal combustion engine going through maintenance.



Another CL-215 in maintenance.

tiated by three aircraft engineers, one industrial engineer and me, we were finally saluting the T19A. As we watched the final run of our aircraft, 17 minutes after it first took-off, me and my colleagues stood together, both architects and witnesses to one of the most important moments in

Turkish aviation history. Afterwards, I was appointed on February 11 as the General Manager of THK Teknik Inc.

MSI TDR: Now, could you please give us an idea of the basic organizational outline of THK Teknik?



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Dr. Tamer SARAÇYAKUPOĞLU: THK is an institution that Turkish people know very well, and which they have supported for many years. Over the years, THK has contributed greatly to the development of Turkish aviation, and I don't believe it is necessary to describe all over again what THK is to the readers of MSI Turkish Defence Review. THK is one of the Republic of Turkey's most deeply rooted institutions, whose past and origins can be traced back to the first years of the Republic. In Turkey, everything that has been made within the field of civil aviation, had originated from the work and efforts of THK.

Founded in February 16, 1925, under the name Türk Tayyare Cemiyeti (Turkish Aeroplane Society), THK initially worked on the maintenance of aircraft and flight operations. Eventually, the institution's aircraft maintenance activities were transferred to an external company that, despite being outside the institution, was still linked and affiliated with THK. Following the necessary official applications, the company in question was named THK Teknik Aircraft Maintenance Services Inc. on July 1, 2013, and this new company was incorporated under THK Gökçen Aviation. THK Teknik continues to conduct various maintenance activities related to a number of different types of aircraft at the airfields of Etimesgut, Efes, Çorlu and İnönü. In its current structure, the activities of THK are distributed under different companies and subsidiary organizations. For example, based on the services that our company provides, we can send invoices to the Turkish Aviation Academy; however, if the Aviation Academy does not like our

prices or offers, they can choose to work instead with competitor companies. Given these conditions, and to ensure that we remain competitive under these circumstances, we must constantly update our own quality systems. We constantly raise the quality of our services while working also to maintain our prices at reasonable levels, both in Turkey and abroad. We are constantly working to ensure that we can become the most preferable partner from the customers' standpoint.

Now, allow me to continue with THK's historical background. Over the years, there have been times when THK Teknik fell behind in certain areas, such as maintenance, repair and renewal activities, and the main sources of these problems were the lack of proper documentation and procedures. For example, we faced issues such as the failure to properly calibrate devices used for aircraft maintenance in hangars, which earned us frowns from the General Directorate of Civil Aviation (SHGM) – the Turkish aviation authority to whose rules and directives we fully submit. There was even a time where all maintenance activities over here were suspended. Sometimes, the best way to become successful is to first hit rock bottom. After activities were suspended, THK was able to turn the SHGM's frowns into smiles through dedicated efforts to remedy these problems; and consequently, maintenance activities were reinitiated at THK. Today, we have become a SHY 145 (equivalent of EASA Part 145) Certified Maintenance Organization that provides the highest quality maintenance services in the region, in accordance with the requirements of the "SHY 147 (equivalent of EASA Part 147) Maintenance, Training and Examination".

MSI TDR: What types of services are you currently providing? And for which types of aircraft do you provide services?

Dr. Tamer SARAÇYAKUPOĞLU: We mainly provide maintenance services to C-172S-series aircrafts, but we are also the only organization providing base and line maintenance to CL-215 fire-fighting aircraft. We also provide services for the Piper (PA-44) Seminole, Cheyenne IIIA (PA-42-720), Cessna 206, Cessna 208, Cessna 402B, Cessna 421 and TECNAM P 2006 T aircraft. In addition to providing 50-, 100-, 200- and 600-hour maintenance services for these types of aircraft, THK Teknik also implements applications and practices related to the Airworthiness Directive (AD) and the Service Bulletin (SB) published by the producer companies, which requires considerable engineering infrastructure, as well as significant knowledge and experience.

The Forest Fire Season in Turkey began on May 1, and all fire-fighting CL-215 aircraft have now left our maintenance hangars, and will be responsible for fighting any fires that break out in the forests of our country until the end of September. This is quite a heavy and important task for these aircraft, and I monitor personally the control flights of the aircraft that leave our hangars. This year, we were able to render an aircraft fully functional once again by working day and night, and will soon be delivering this aircraft to the relevant party. In case one of our aircraft operating in any region suffers a malfunction, we immediately send a substitute aircraft to the relevant authorities, allowing them to continue their fire-fighting efforts without interruption.

Information Technologies Make a Big Difference

MSI TDR: You mentioned earlier the subject of documentation. Could you please elaborate on this?

Dr. Tamer SARAÇYAKUPOĞLU: People who write, draw, read and store technical documents are better capable of identifying



Cheyenne IIIA (PA-42-720)



BAYRAKTAR TB2

TACTICAL UNMANNED AERIAL VEHICLE SYSTEM

Indigenous design

World ceiling record in its class: 27,030 feet

National endurance record: 24 hours 34 minutes

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TECNAM P 2006 T

and resolving any existing issues and deficiencies. We used to have problems pertaining to writing and documentation, but we are now in the process of resolving these shortfalls. For example, as of March 23 we have transitioned to a computer-based maintenance management system. This means that we are now able to monitor digitally all units on aircraft that have meters and gauges. Were we not following such information before? Of course we were, but using analogue systems. Let me give you a typical example: all aircraft carry electronic location transmitter (ELT) units. As you may remember, following the accident of the late Muhsin Yazıcıoğlu, all news agencies described that his helicopter could not be found in a timely manner because its ELT unit had a weak battery. The battery in this critical unit not only has a shelf-life, but also has a limited lifespan once installed on an aircraft. With the new system we have adopted, we have begun to monitor the lifespan of these units automatically. For example, the system will now give a warning 17 days in advance about a need to change this unit, and will not allow the aircraft to fly in the last three days before the battery is spent. We thus aim to minimize any human error that might occur during aircraft maintenance processes. There is another point I would like to mention. Looking back, we see that we also had problems with regards to historical records and documentation. On June 7, 1952, THK sold a THK 5A aircraft to Denmark that served as an air ambulance for four years. Documents related to this aircraft are completely absent from our own archives, while Denmark still has the aircraft documents. We are now trying to change the existing mentality and ap-



proaches towards documentation, and our short-term goals include ensuring the management of our human, time and financial resources through the ERP management system. It is imperative that we become an institution that not only learns, but is also capable of teaching and passing on what it learns.

A Reference, as well as an Exemplary Institution

MSI TDR: What kind of changes can we expect following your appointment at THK Teknik?

Dr. Tamer SARAÇYAKUPOĞLU: In terms of corporate vision, there are two concepts, or goals, that I like to emphasize. The first one is the necessity for THK Teknik to become, in the end, a consulting organization that is recognized by the SHGM for all other aviation organizations within our sector. By "consulting", I mean that, when the SHGM inspects another aviation organization performing maintenance, repair and renewal (MRR) activities, I want them to say: "We encounter such and such problems; however, our colleagues at THK have more experience and knowledge on this subject. Let's consult them to learn their opinion on this matter." When I say this, I don't mean that there should be a legal connection or association between these two institutions.

As an institution that represents the very roots of the Turkish aviation sector, we must reach a level where the SHGM can take decisions as though we are a reference institution. On the other hand, we aim to take a lead role for the other aviation organizations within the sector. For example, we would like other organizations to say: "We plan to establish a chemical storage facility; but let's first see how THK has done it before. They must have already identified a good solution and approach for this." In this context, we are reviewing all our systems, by which I do not mean only our maintenance-related systems, but also our personnel management systems. I want all of our personnel to be well-trained and motivated. The English language is very important for us, as all around the world, aviation and English go hand-in-hand. For this reason, we have initiated a set of activities to improve the language skills of our personnel. I should also place emphasis on this point: Aviation is a highly critical area for technology. I believe that we have no room or chance for error. For us, 99 percent success still means failure, as we must ensure 100 percent success under all circumstances. In doing so, we must also avoid any concerns or issues that may stem from rushing things, and all data must be properly entered and evaluated in our systems.



When I look at my hangar, I imagine this place to be an organization that has become fully integrated with the European aviation community; which has received all relevant certifications; which performs the maintenance of aircraft engines and frames; and which provides both distance and formal education to its personnel. To achieve this dream, we must take at least one step forward every day. In this context, we have fully embraced the thoughts and words of the Great Atatürk: "We need nothing else, except for one thing: working hard."

MSI TDR: Based on what you have described, can we assume that THK Teknik needs to undertake comprehensive business development activities?

Dr. Tamer SARAÇYAKUPOĞLU: Yes. I recently had a talk with one of my friends about this. In one of our regular morning meetings, I said to him: "Do not see me just as a general manager. In this organization, I also want to act as the business development manager." It really saddens me whenever I see a unit sitting idle in the hangar, doing no work. My view is that if we have a machine, it should be working every second. We receive numerous requests from many flight training organizations in Turkey, but as soon as we are able to resolve a few bottlenecks that slow down or interrupt our processes, I believe that we will be able to take on an even greater volume of business. For example, we have had talks with a Dutch company concerning the provision of MRR services for their aircraft, and we are now in the

process of signing a Letter of Intent and a Maintenance Services Agreement for this project.

Of course, there is also a concept known as "Continuing Airworthiness Management Organization" (CAMO) – a role which we are ready to assume.

From an organizational standpoint, THK lacked a business development department when I first came here, but we are now trying to establish such a department within our organization that should also include units for contract management and customer satisfaction.

To this end, I have signed seven maintenance support agreements and four letters of intent for joint activities since I assumed office at THK.

MSI TDR: Do you have any plans for expanding your current capacity?

Dr. Tamer SARAÇYAKUPOĞLU: We have taken the decision at our facilities to specialize exclusively in the maintenance of C-172 aircraft, and we are designing our systems accordingly. We can, in fact, provide services to all aircraft in the region, but the C-172 is one of the most commonly used aircraft for pilot training. Looking at current studies and analyses, it seems that there will be an estimated need for 651,000 more airline pilots by 2030, and it is for this reason that we have decided to place emphasis on the C-172. The CL-215 also has a special place. We will continue to provide maintenance for these aircraft as long as the Ministry of Forestry asks us to do so. In fact, we can even provide services to the other countries in our region concerning the

CL-215, as the terms of our current agreement includes the provision of maintenance services outside of Turkey, if necessary.

MSI TDR: What is the current turnover of THK Teknik? What level of turnover you are targeting for the future?

Dr. Tamer SARAÇYAKUPOĞLU: Rather than describing our turnover objectives, I would like to speak about our business approach, since our corporate turnover will eventually be determined by this approach. Direct maintenance activities involve a cost of 50 USD per hour, while indirect maintenance activities involve a cost of 70 USD per hour. With its 117 personnel, THK Teknik has the largest personnel network in its sector in Turkey, and as such, it must strive constantly to increase its level of revenues compared to the previous year.

THK Teknik was structured initially to provide maintenance services to THK aircraft under the organizational umbrella of THK; however, as we are becoming one of the main actors in our sector, we must now focus on acquiring more business from external parties through our contract management activities, and organize the distribution of our revenues accordingly (i.e. by increasing the share of external revenues).

On behalf of our readers, we would like to thank Dr. Tamer Saraçyakupoğlu, the General Manager of THK Teknik, for taking the time to answer our questions, and for providing us with such valuable information.

General Necdet Özel, the Commander of the Turkish Armed Forces together with Mr. Recep Tayyip Erdoğan, the President of Republic of Turkey.



IDEF 2015 Brought News of the Future

IDEF has come to serve as an arena where nearly all players in the Turkish defence and aerospace sector gather to demonstrate their capabilities, and the 2015 event was once again a showcase for the main developments in the sector. Many of the platforms and systems on display during the exhibition, organized between May 5 and 8, 2015, are expected to have entered the relevant inventories by the time of the next IDEF in 2017. In this respect, it is possible to say that IDEF 2015 brought news of future developments.

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Hall #7, where most of the Land Vehicle Manufacturers and Turkish Armed Forces were located.



In a manner similar to other traditional exhibitions around the world, this year's IDEF event – which is the 12th to be organized since 1993 – was not expected to see many significant changes in terms of the organization, and IDEF 2015 confirmed such expectations. The total area did not change significantly, while both the size and locations/halls of the stands of the main integrator companies taking part in the event remained more or less the same. Company participation – especially foreign ones – changed slightly based on recent political developments and the currently ongoing projects in Turkey.

This year's event saw the participation of 781 companies and company representatives from 53 countries, and was visited by 123 delegations from 76 countries and representatives of international organizations. Throughout the fair, procurement authorities held nearly 2,230 scheduled meetings with the participating companies and foreign delegations.



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Emphasis on Cooperation

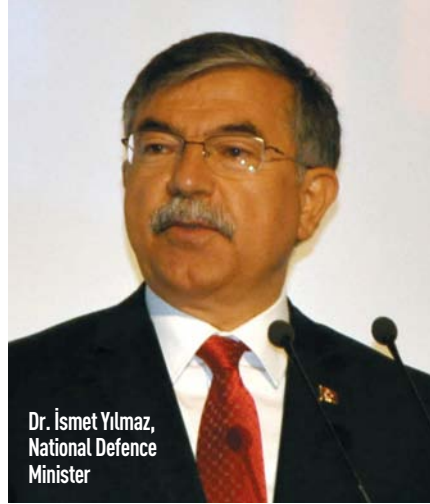
The first speech at the opening ceremony on the first day of the exhibition was given by Orhan Akbaş, the General Director of the Turkish Armed Forces Foundation (TAFF), the main organizer of the fair. Akbaş shared his general assessment of the current status of the exhibition: "Concerning IDEF – which is organized with the support and under the auspices of the Ministry of National Defence, and under the management and responsibility of the TAFF – our main goal is to create a suitable platform for promotion and cooperation within the defence sector, as well as domestic and foreign procurement authorities. In this context, we have succeeded in making IDEF one of the world's five largest defence exhibitions. With the increasing number of participating countries, delegations and companies at every event, as well as the growing number of new tech-

nological products being featured, IDEF has today become an important cooperation, marketing and promotional platform for defence sector companies and procurement authorities."

Speaking after Akbaş, Dr. İsmet Yılmaz, the Minister of National Defence, emphasized the fair's contribution to cooperative activities: "IDEF is the largest defence industry exhibition in its region, and one of the five largest in the world. IDEF is an important platform that brings together defence industry companies and ministers responsible for procurement from around the world, and which provides a basis for international defence sector activities. During this international defence fair, which is attracting more countries and companies with each passing year, many new cooperation agreements and protocols will be signed that will give further momentum to bilateral relations."



Gen. (R) Orhan Akbaş,
General Manager
of Turkish Armed Forces
Foundation (TAFF)



Dr. İsmet Yılmaz,
National Defence
Minister



Mr. Recep Tayyip
Erdoğan, the President
Republic of Turkey

Keeping our Defences Ready at all Times is an Obligation

The final speech of the opening ceremony was given by President Recep Tayyip Erdoğan, who shared the following thoughts about the current state of the Turkish defence sector: "Today, our national defence sector is capable of meeting 54 percent of its own requirements; although it is our objective to completely eliminate our external dependence by 2023. Today, two of the world's 100 largest defence companies are Turkish, and the manufacturing volume of the Turkish defence sector exceeded \$5 billion last year. The Turkish defence sector invests over \$1 billion every year in R&D, making it the country's largest in terms of R&D and technology investments."

President Erdoğan described Turkey's defence concept as follows: "If there is a raging fire nearby, its sparks will eventually reach you. Turning your back to this fire is not a solution; the solution lies in finding ways to extinguish this fire through cooperation and collaboration. No form of policy, diplomacy or interest can be more important than the suffering, tears and deaths of millions of people. Now, what is the name of this event? It is a defence exhibition. Defending your country, homeland and people, while making every preparation and taking all necessary measures to protect them is not only our right, but also our duty as administrators. We would never approve the use of these capabilities to usurp the rights of other societies, but as long as there are aggressors around the world, keeping our defences ready at all times is an obligation. Based on this perspective, we support and strengthen our defence sector not only for our own use, but also for our friends and brothers. We present our knowledge, know-how and experiences to the benefit of our friends. We are not just concerned about selling products, as what we aim is to establish long-term partnerships and to develop joint projects."

Busy Agendas for the SSM, SSI and SASAD

During the event, the Undersecretariat for Defence Industries (SSM), the Defence and Aerospace Industry Exporters' Association (SSI) and the Defence and Aerospace Industry Manufacturers Association (SASAD) agendas were as busy at those of the participating companies. Prof. Dr. İsmail Demir, the Undersecretary for Defence Industries, endeavoured to visit every stand at the fair whenever he found the time in his intense meeting schedule. During his visits to the stands, Prof. Dr. Demir obtained first-hand information about many company products, especially those of Small and Medium-Sized Enterprises (SMEs).

Similar to the previous event, the SSM and SSI opened a joint meeting area at IDEF 2015. Latif Aral Aliş, the Chairman of the Board at SSI and the Turkish Defence Alliance (TDA), engaged in various meetings during the exhibition, aiming to further increase the export performance of the sector.

SASAD, on the other hand, took an important step towards establishing a new partnership. On May 7, SASAD signed a memorandum of understanding with PATROMIL, the Romanian equivalent of SASAD. K. Nail Kurt, Chairman of the Board at SASAD, and Viorel Manole, Chairman of the Board at PATROMIL, made speeches at the signing ceremony, emphasizing the importance of their cooperation.

The next fair, IDEF 2017, will be held between May 9 and 12, 2017, and will once again be organized in Istanbul at the TÜYAP Fair and Congress Centre.

As MSI Turkish Defence Review, our entire team took part at IDEF 2015. We will present our news concerning the Turkish and foreign companies at the fair, the products they displayed and the agreements they signed to the attention of our readers in two separate sections. You will find the first section of the IDEF 2015 Special Issue in the following pages.



FNSS

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A New Era for the Armored Combat Vehicles Begins



PARS 4X4



ASELSAN Emphasizes Product Range

Mirroring previous years at IDEF, ASELSAN once again boasted the largest stand at the event in terms of total area. Almost all of ASELSAN's products were on display, ranging from air defence systems to border security, naval systems to electro-optics systems, communication systems to radar and electronic warfare systems, and guidance and navigation systems to avionic systems on a total stand area of 2,200 square meters.

ASELSAN signed a series of cooperation agreements during the exhibition, the first of which was between ASELSAN and the Scientific and Technological Research Council of Turkey (TÜBİTAK) Informatics and Information Security Research Centre (BİLGEM) on day two of the exhibition. The protocol envisages cooperation between TÜBİTAK BİLGEM and ASELSAN in the fields of information, personnel, infrastructure, planning, development, execution, intellectual property management, technology transfer, commercialization, production, promotion and marketing, sales and field support with regard to the projects that they will implement in the future. Details will be agreed upon for each specific project through either a sub-protocol or a project agreement. Speaking at the signing ceremony, Prof. Arif Ergin, Head of TÜBİTAK BİLGEM, said, "TÜBİTAK and ASELSAN have been in a friendly competition for many years in military and critical technology projects in Turkey. I believe that today's agreement is a historical milestone, and a step towards competing not against each other,



KORKUT, weapon system platform

but against the world, shoulder to shoulder." Dr. Faik Eken, General Manager at ASELSAN, said, "We will join forces in order to ensure that our country can develop stronger and more competitive products."

The agreement for the Military Satellite Communication System Supply Project (KASUMSİS), with a total cost of \$37,976,640, for the Kılıç-Class Fast Boats project, was signed between the SSM and ASELSAN on the third day of the exhibition. The agreement envisages the de-



DENİZGÖZÜ-YUNUS, electro-optical system



ASELSAN Anti-tank missile system



livery of systems for nine boats between 2015 and 2021. Another agreement was signed on the same day between ASELSAN and Terma in the form of a memorandum of understanding determining potential areas of cooperation, and covers the transfer of the intellectual property rights related to Terma's F-16 Modular Reconnaissance Pod to ASELSAN. One final memorandum of understanding was signed again between TÜBİTAK BİLGEM and ASELSAN on the last day of the exhibition, paving the way for the two organisations to look for potential areas of cooperation in the use of the Real-Time Operating System (GIS) developed by TÜBİTAK BİLGEM as part of the SARP remote-controlled stabilized weapon system.



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Vestel Defence Presents KARAYEL, while AYESAŞ Highlights its Data Link Capabilities

Brother companies Vestel Defence and AYESAŞ participated once again at IDEF with a joint stand. Vestel Defence took the opportunity to showcase its KARAYEL tactical UAV, which has shown significant progress since the previous IDEF event, having now performed its initial flights carrying a payload. Just as Vestel Defence was a guest of LH Aviation's stand last year at the Eurosatory exhibition, within the framework of the cooperation between the two companies, LH Aviation was a guest at Vestel Defence's stand at IDEF 2015.

The key event for AYESAŞ at IDEF was a signing ceremony on May 7. A Memorandum of Understanding on Technological and Service Cooperation in the field of Tactical Data Link Systems was signed between AYESAŞ and ViaSat, as a result of two years of meetings and talks between the two companies. The new agreement envisages cooperation between the two companies in the field of tactical data links, includ-



ing software and hardware development, as well as testing, production, maintenance and repair services. Following the signing of the agreement, Dr. Jay Kaufman, the General Manager of ViaSat Tactical Links, and Aziz Sipahi, the General Manager of AYESAŞ, gave brief speeches. Dr. Kaufmann said: "Our cooperation with AYESAŞ is evidence of our willingness to spread our Link 16 products and services not only to

Turkey, but also to the markets of NATO and allied countries. The combination of AYESAŞ' experience with tactical data link software and ViaSat's experience with Link 16 systems will enable military personnel to engage in voice communication on the battlefield, and to share and communicate real-time situational awareness." Aziz Sipahi, the General Manager of AYESAŞ, shared the following thoughts: "This sign-

ing demonstrates the progress achieved by the Turkish defence sector in recent years. In the past, these types of agreements were made for only a small share or a low level of involvement in production. We have today signed a comprehensive memorandum of understanding with ViaSat, one of the world's leading companies in tactical data terminals and systems. Our target is not just Turkey, but world market at large."

Superior Performance Under Extreme Conditions



EJDER YALÇIN 4x4



Nurol Makina has brought a new vision to the industry with EJDER YALÇIN 4x4 which is a first in its class. Nurol Makina relentlessly continues its innovative approach and activities on development of indigenous platforms. With this vision, Nurol Makina continues to offer powerful and reliable platforms with high performance that meet the expectations primarily of Turkish Armed and Security Forces and ally armed and security units.



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BMC Returns to IDEF

Focusing once again on its activities in the defence industry following changes in its shareholder structure, BMC returned to IDEF this year after missing the 2013 event. During the exhibition, BMC made the official launch of its VURAN 4x4 vehicle at its stand during the visit of Recep Tayyip Erdoğan, the President of the Turkish Republic. The vehicle was unveiled in front of President Erdoğan, who was then given information about the vehicle and other BMC products by company officials. In addition to VURAN, BMC also showcased its KİRPİ 6x6- its 6x6 Tactical Wheeled Vehicle, its TOMA solution and a minibus with concealed armour. Developed as a 4x4 vehicle offering protection against land mines, improvised explosive devices and ballistic threats, VURAN can carry between six and ten people in its personnel carrier configuration.

Technical Characteristics of the BMC VURAN 4x4

Engine	6-cylinder water-cooled engine, Cummins turbo diesel intercooler (capable of operating with F34 fuel)
Transmission	Fully Automatic; six forward and one reverse gear
Transfer Box	Low/high speed operation
Axle	Planet gear -reduction, differential switch for both front and rear
Suspension	Independent suspension with coil spring
Brakes	<ul style="list-style-type: none"> ● Service: Full air brake, double circuit, ABS ● Hand Brake: Air operated ● Deceleration: Engine brake ● Emergency Brake: Operates automatically when air pressure within the system drops below the critical level
Steering	Hydraulic power steering
Electrical System	24V, with anti-radio interference
Fording Depth	80 cm (optionally, 120 cm)
Gradient	60%
Side Slope	30%
Range	600 km





BMC's Objective: ₺3 Billion Turnover and 35 percent Exports

During the exhibition, MSI Turkish Defence Review had the opportunity to make a brief interview with Bülent Denkdemir, the Chief Executive Officer of BMC. Denkdemir informed us about the objectives and activities of BMC, signalling that BMC is set to become a sector leader in the upcoming period.

Ümit BAYRAKTAR: What can you tell us about BMC's current structure, its perspective towards the defence industry and its current activities?

Bülent DENKDEMİR: BMC was established in 1964, and is today in its 51st year. During this period, the company has been managed under different shareholder structures, but after experiencing some difficulties in the 2000s, the company was seized by the Saving Deposits Insurance Fund (TMSF) in 2012. The reasons for this included BMC's high level of debt to its suppliers, workers and dealers, as well as the difficulties it was encountering in the market. As ES Mali Yatırım ve Danışmanlık A.Ş., we purchased BMC in May 2014 through a competitive bid.

I would like to describe briefly BMC's new shareholder structure. The majority of shares, accounting for 50.01 percent of the total are held by two Turkish entrepreneurs, being Ethem Sancak, the Chairman of our Board, and partner Talip Öztürk. In the past, Ethem Sancak has made significant investments both in

Turkey and the region, especially in the field of pharmaceuticals and healthcare, and is also the owner of two large media groups. Ethem Sancak is himself, one of Turkey's most important brands. Our other partner, Talip Öztürk, is often confused with the owner of Metro Tourism, who shares the same name. Mr. Talip Öztürk is originally from the city of Rize, and is Turkey's largest producer of tea. Another area in which Talip Öztürk is active is the trailer sector. Under the brand Öztreyler, he conducts important businesses both in Turkey and abroad, with a current annual production capacity of 2,000 units. The remaining 49.99 percent of the shares belong to the Qatar Armed Forces, which is both a shareholder and a customer.

We won the tender for the purchase of BMC in May 2014; however, completing the official procedures, as well as the handover procedures of the company, lasted until late August, early September. In this regard, it has been only eight months since we started actually managing the operations of the company.

BMC's vision is to become a regional brand in commercial vehicles, buses and the defence industry. While we hope to become a world brand in the future, our initial intention is to start off with more realistic goals. BMC's history is filled with significant achievements in the area of exports, having sold buses to the United Kingdom, while also exporting to Eastern Europe, Azerbaijan, Turkmenistan, Macedonia, Saudi Arabia, Pakistan and Tunisia. Today, BMC has great export potential in both the defence industry and the bus and truck markets, and for this reason, our objective for the following 10-year period is to ensure that BMC becomes a leading commercial vehicle and defence industry company in Africa, the Middle East, the Near East and Eastern European markets, encom-

passing 30 to 40 different countries, where Turkey enjoys a central position. We have set off with this vision, and for us what matters the most is that we implement our intentions properly. As you might remember, various groundless claims were directed against us in the media when we first made a bid for the company, with suggestions that we were purchasing the company only to acquire its land and property, and that we would demolish the company's facilities to build new residential areas. We purchased BMC at a tender price of nearly ₺750 million, although the company's value at the time was actually far lower than this. We were aware of this, but we realized that if we successfully managed a brand as valuable as BMC, the company's value could increase five- to ten-fold within a period of five years. We have thus formulated a five-year business plan covering the period until the end of 2019, and we are providing funds to the company in order to achieve this plan. For 2019, our turnover objective is ₺3 billion, while our personnel objective is to reach 4,000. Regarding our export objectives for 2019, we envisage our exports with reach 35 percent of turnover. Our current business plan details which vehicles will be sold to which countries, as well the number of units and prices at which they will be sold. We purchased BMC for ₺750 million, and we plan to inject another ₺750 million into the company in the following 18 months. Should we identify new areas of investment, we will make new investments in these areas as well. We hope people will begin to understand how we perceive BMC, and what our intentions are. We of course want to make money, but you should see this as a secondary priority. Our first objective is to serve Turkey; our second objective is to become a regional brand; and our third objective is to ensure an economic yield from our businesses.



Ümit BAYRAKTAR: Will BMC making new investments in the defence industry? For example, are there any plans to purchase companies outside of İzmir in other sectors, such as the aviation or maritime sectors?

Bülent DENKDEMİR: Although it is a good thing to have dreams and ambitions, it also important to be grounded in reality. I believe it is important to first understand BMC's area of expertise. BMC is a company specialized in the production of land vehicles. The defence industry is a very important area for us; but we would like to prioritize our activities in the following way. In the ensuing five-year period, we will focus mainly on land vehicles, adding new vehicles to our family. BMC's tactical wheeled vehicle family – in other words, its military trucks – is a very valuable product. We plan to further develop these vehicles to create more advanced versions with, for example, armoured cabins and improved personnel-carrying capacity. Many different logistic vehicles are required on the battlefield, such as water and fuel tankers that we would also like to develop. As soon as we assumed the management of BMC, we made investments in the area of armoured vehicles, and developed VURAN in addition to KIRPI. We are now working on a smaller version of KIRPI that will complete the KIRPI family. As a company, we wish to achieve growth through our land vehicles by adding new armoured vehicles, tracked vehicles, tactical vehicles and logistic vehicles to our range of land platforms. Over time, we wish to present different models to the service of Land Forces Command, but we also aim to provide maintenance and repair services, as

well as spare part and maintenance shop services. We plan to introduce a set of new services with added value that will not only reduce costs for the Turkish Armed Forces (TAF), but also reduce supply, provision and repair timeframes. I believe that we will achieve considerable success with these activities in the upcoming five years, and if things progress as we expect, we may consider entering the field of naval and aerial vehicles in the ensuing second and third five-year periods. That said, our priorities are quite clear at the present. We will advance based on realistic goals that are grounded in reality.

Ümit BAYRAKTAR: During this period, do you have any plans to purchase new companies in Turkey or abroad?

Bülent DENKDEMİR: Rather than acquiring new companies, our plan in the upcoming years is to establish a BMC corporate culture. BMC still carries the group culture of its previous owners, and we can also speak of the culture that was acquired during the brief period when the company was under the management of the TMSF. When a company grows through the acquisition of other companies, the integration processes are not always easy, and so we look at project-based partnerships more favourably. In the short-term, we have no plans to acquire new companies.

Ümit BAYRAKTAR: During our conversation, you mentioned both civil- and military-related activities. What kind of balance do you hope to achieve between the civil and military areas?

Bülent DENKDEMİR: Since our main goal is to serve Turkey, military vehicles are

very important for us. We place great importance on the development of Turkey's military vehicle portfolio and R&D capabilities. Looking at our company strategy, you can see that military vehicles are our main priority. In the business world, we often speak of the synergy between the military and civil areas. When you first begin to construct buses and trucks, you gain a dealer and service network that provides you with a strong base. The bus and truck markets are highly competitive, and operate based on a healthy tender system; and for this reason, the profit margins are not very high. However, the dealer and service network established in the bus and truck sector provides an advantage not only to BMC, but also to TAF. For example, when you sell KIRPI vehicles to TAF, your pre-existing dealer and service network can provide spare parts and repair services within a few hours, as necessary. For this reason, we believe that these two areas complement one another. To preserve our commercial strength and presence, and to continue providing our services to the defence industry, we plan to continue working in the area of commercial vehicles, and to preserve and strengthen our dealer/service network.

BMC Moving Forward on Every Front

Ümit BAYRAKTAR: Could you tell us about the latest situation in your defence product range?

Bülent DENKDEMİR: BMC is expanding its defence industry product family. Before, the company was producing 2.5-ton 4x4, 5-ton 4x4, and 10-ton 6x6 vehicles, but we are now adding a 25-ton 8x8 vehicle to this list. In the area of armoured vehicles, our



first vehicle was the 4x4 mine-protected armoured KIRPI, and we have now developed the next version of this vehicle, the 6x6 KIRPI. We have also added remote-controlled weapon stations to the KIRPI, which can be equipped with 12.7 mm machine guns, 7.62 mm machine guns or 40 mm grenade launchers. As a result, KIRPI now not only protects against mines, but has also taken on combat capabilities. To date, KIRPI has been subjected to 40 different instances of mine or improvised explosive attacks in Turkey, and three in Tunisia and in none of these attacks were the soldiers inside the vehicle harmed. This is a source of pride for us, and gives us hope for the future, and this performance has made KIRPI one of the most recognized and visited vehicles during IDEF. Another member of our armoured vehicle family is the VURAN. This vehicle has won a tender of the Turkish National Police (EGM), and during IDEF we are displaying a prototype of the vehicle that we will deliver to the EGM. All vehicles in this project are scheduled to be delivered by the end of this year. VURAN provides a high level of protection and manoeuvrability to its users, and will, in a manner similar to KIRPI, also feature a remote-controlled weapon station that can be equipped with 12.7 mm machine guns, 7.62 mm machine guns or 40 mm grenade launchers. Our goal is to develop three different versions of VURAN to meet the different requirements of our customers. We are also featuring a 6x6 tactical towing vehicle at IDEF, developed according to a requirement of ROKETSAN that will serve various logistic roles in the future. Nowadays,

for their logistic services, armies tend to use towing vehicles that can pull large trailers or containers, and we believe that this vehicle will find a broad area of use. Aside from this, there are also 4x4 and 8x8 prototypes that we are developing for a ROKETSAN air-defence project. Another one of our vehicles is the TOMA featuring an armoured cabin – being the first of its kind in Turkey. This year, we will deliver 180 of these vehicles to the EGM, all of which are characteristically 4x4. Finally, we have also developed a minibus with concealed armoured for urban transportation, which we are also displaying at IDEF.

Ümit BAYRAKTAR: Could you please tell us about the latest situation in your company's export-related activities?

Bülent DENKDEMİR: We are able to design and customize our defence products according to the requirements of our customers, and potential international customers are showing considerable interest in BMC products for this reason. At IDEF, we have received numerous visitors from regions such as North Africa, the Far East and the Middle East. Customers nowadays prefer a domestic production model (i.e. producing products in their own countries), and we have applied this model in several countries to date. We are already experienced in this area, and are ready to implement it in the area of defence as well. We are currently holding negotiations with a number of different countries concerning the sale of our products; and our partner Qatar has voiced very particular demands regarding KIRPI.

Ümit BAYRAKTAR: We see KIRPI is mounted with a turret produced by Yüksel Defence. Does this signify that BMC will cooperate with Yüksel Defence in the future, or is this cooperation just limited to IDEF?

Bülent DENKDEMİR: As BMC, we are open to working with all companies, including Yüksel Defence. Our first priority is quality, followed by the acceptance of the product by the customer. Concerning turrets, we have not, as of yet, taken a decision on this matter. I can say that this choice of turret was specific only to this exhibition and the KIRPI vehicle. For the EGM project, we are currently holding talks with Nurol Makina, another company that supplies vehicles to the EGM, and we would like to use the same turret as them, and to make deliveries with a single, uniform turret system.

Ümit BAYRAKTAR: Finally, can you tell us about BMC's current employee numbers, and also the latest situation in the company's R&D activities?

Bülent DENKDEMİR: Our employees are increasing in number in parallel to the pace of our activities. We have now reached 1,100 employees, nearly 800 of which are working on defence projects. We currently have an R&D centre and three different development centres that allow us to increase our specialization in certain areas, and to have more rapid reaction times.

On behalf of our readers, we would like to thank Bülent Denkdemir, the Chief Executive Officer of BMC, for taking the time to answer our questions, and for providing us with such valuable information.



FNSS Saves KAPLAN-20 and PARS 4x4 for IDEF

FNSS was undoubtedly the most active company during IDEF 2015. While many companies introduced new products for the first time at the exhibition, FNSS was the only one to call a press meeting to unveil their new products. The FNSS event was held prior to the opening ceremony on day one – usually considered to be the calmest, and hence, most productive time of the event for such meetings. FNSS unveiled the KAPLAN-20 New Generation Armoured Combat Vehicle-ACV (KAPLAN YN-ZMA) and the PARS 4x4 in front of the gathered media and participants, followed by a speech from K. Nail Kurt, the General Manager of FNSS. Kurt said: “First, I would like to thank all of you for coming here to share our excitement. FNSS began its adventure in the sector nearly 25 years ago, as Turkey’s first private defence industry company. In its first 10 years, the company gained experience by the production of a licensed vehicle, and by improving the design of the vehicle while increasing the local content. Within this 10-year period, we reached a significant level of excellence in this area. Of course, as we entered the 21st century, we knew that this would not be enough. The decision to design our own vehicles in the early 2000s was a result of this fact. This is how the PARS family of vehicles came into being. I believe that our leadership on wheeled vehicles, which began to yield fruit in 2005, contributed considerably to promoting the development of other new and original designs in our country. We had our first great success with the PARS family in Malaysia, and using the PARS infrastructure, we began to design of the Armoured Amphibious Assault Bridge. This project was Turkey’s first original design contract for a land system, where the Undersecretariat for Defence Industries (SSM) took a considerable risk in initiating this project, putting their full confidence in FNSS. We completed the project with great success, and we were similarly successful in the Amphibious Combat Engineering Armoured Bulldozer (AZMİM) project. After carrying out these design and development projects between 2000 and 2010, we had

to take the next step. Today, we have invited you here for the presentation of two new products that have been developed in line with the latest improvements in technology worldwide, and to satisfy the requirements of both Turkey and its allied countries. These products have been launched on this very day, and what we have achieved today is not the end or culmination of a 25-year period, but rather an important milestone that is a good example of what can be achieved when a dynamic private sector is supported by the state through appropriate strategies and correct incentives, and when a company, such as FNSS, has the right strategies, mission and vision.”

Emphasizing the importance of domestic design and original products, Kurt said: “Producing domestically is no longer enough for our country; we must also develop our own domestic designs and create our own products. Only in this way can we create high added value. I kindly ask SSM to continue to support industry with such strategies and projects.”

Following Kurt’s speech, the covers over the vehicles were removed, and members of the press were given individual presentations, with much information provided about each of them.





The New Generation ACV: KAPLAN YN-ZMA

The KAPLAN YN-ZMA was designed as a new generation tracked armoured combat vehicle, featuring a power/weight ratio of 22-25 HP/ton (depending on its combat weight) and an automatic transmission, and is capable of carrying out joint operations with main battle tanks.

FNSS has given its tracked family of vehicles the name KAPLAN. The model displayed during the previous IDEF in 2013 was 9 tons lighter (empty weight), and had been designed for the Weapon Carrying Vehicle project managed by the SSM. The KAPLAN YN-ZMA, which has a combat weight of 20 tons, is a significantly heavier vehicle, and has been designed to replace the ACV series vehicles in the Turkish Armed Forces (TAF's) inventory. Turkey is expected to open a tender for the procurement of the new generation ACVs in the coming years.

Personnel can enter and exit the six-wheeled KAPLAN YN-ZMA from the hydraulic ramp located at the rear of the vehicle, or via the personnel door in the ramp. The upper side of the vehicle contains a wide personnel hatch as well as a driver's hatch. For maintenance and repair, the power pack, located on the front of the vehicle, can be accessed through covers/lids that allow access from within the vehicle cabin. The vehicle has two armoured fuel tanks that are isolated from the rest of the vehicle, separated by an armour plate. To balance the weight of the vehicle, and to ensure the safety of the personnel on-board, the fuels tanks are located at the rear of the vehicle. The power pack cabin and the expanded driver station are located at the front of the vehicle, while the gunner and commander stations are located at the centre of the vehicle. The rear has the personnel (squad) area, which has room for eight persons in the armoured personnel carrier configuration, or for six persons in the armed turret configuration. The body of the vehicle is

FNSS KAPLAN YN-ZMA: Technical Specifications

Power/Weight Ratio	22-25 HP/ton
Engine	Diesel
Transmission	Fully Automatic
Personnel Capacity	3+6 or 3+8 (Gunner, Driver and Commander)
Length	6.50 m
Width	3.15 m (Excluding Active Protection)
Total Height	2.00 m
Electric System	24 V
Suspension System	Torsion Bar
Steering System	Transmission Connected
Swim	Amphibious
Maximum Range	650+ km
Maximum Gradient	60%
Side Slope	40%
Trench	2.6 m
Fording	0.70 m

made up of ballistic materials that are bonded using ballistic welding techniques.

The KAPLAN YN-ZMA at IDEF was displayed with rubber tracks, which ensure better traction on the road by increasing the contact area with the surface. Rubber tracks also significantly decrease vibration and noise signature. To facilitate the replacement of tracks in battlefield and combat environments, the KAPLAN YN-ZMA uses multi-section rubber tracks.

As one of the few vehicles of its class with amphibious capabilities, the KAPLAN YN-ZMA can, by utilizing the two water propulsion systems at its rear, engage in river-crossing operations through deep and flowing waters, and can traverse rivers without any required advanced preparation. In addition to being able to rotate on its own axis while in water, the vehicle requires no changes or modifications before entering a body of water.

KAPLAN YN-ZMA (below), its interiors (upper right) and the targeting station (lower right).



The vehicle also possesses modern sub-systems, such as a cooling system that reduces thermal signature, a laser warning receiver and a sniper detection system, and is also capable of operating under chemical and biological threats. The hatch design gives the driver an all-around view of the surrounding area from within the vehicle, and the vehicle is also equipped with laser-protected glass periscopes as well as integrated night vision systems that enable driving in the dark. Furthermore, images obtained from cameras placed around the vehicle, form an integrated image, allowing the commander to obtain a view of any direction he looks at with the aid of goggles that are sensitive to head movements. The image shown to the commander also provides information regarding the direction he is looking towards and the status of the vehicle. The information provided by the command and control system include critical data regarding whether or not there have been any previous mine explosions in the current area and data such as the amount of ammunition remaining on the vehicle. In addition to armour, the KAPLAN YN-ZMA also features active protection features. One of the vehicle's most innovative personnel protection aspects is its special seats that are resistant to explosions. Seats in common use around the world in such situations require adjustment according to the weight of the occupant personnel; the seats in the KAPLAN YN-ZMA, on the other hand, require no additional or special adjustment thanks to FNSS' special design, which means that anyone can sit on any seat in the vehicle, meaning that the vehicle is mission ready 24/7. Koray Ulu, the head designer of the vehicle, describes the compatibility between the seats and the vehicle, saying that "the seats were designed especially for the vehicle". Another important feature that allows the KAPLAN YN-ZMA to stand out from its competitors is the fact that its External Power Unit is considered as a vehicle sub-system, and has been since the design stage, meaning that it is fully integrated with the vehicle.

Speaking about the potential markets for KAPLAN YN-ZMA, Ulu said: "This vehicle is a product that can be competitive not only in Turkey, but also around the world. When you begin a task (i.e. designing a vehicle), it is important to determine what the market needs. We have 15-ton Armoured Combat Vehicles in the inventory, and there are 30- to 40-ton class vehicles on the market; however, there is a gap between these two segments. The 15-ton vehicles can float, but the 30- to 40-ton vehicles cannot. The ability to float/swim is one of the basic requirements of TAF, and

we aimed to develop a vehicle that has not only a high level of protection, but also high mobility and amphibious capabilities. The result was the KAPLAN YN-ZMA."

In addition to its functional characteristics, the KAPLAN YN-ZMA also draws attention with its industrial design. For example, the water compensation plate, which tends to be very noticeable and prominent in other vehicles, appears to be an ordinary and well-integrated component within the KAPLAN YN-ZMA's design. Concerning this, Ulu said: "We paid great attention to the vehicle's industrial design. The lines that you see on the front and rear of the vehicle merge function and design. The MILDESIGN contest contributed to the design process of the vehicle."

Testing of the KAPLAN YN-ZMA vehicle launched during the exhibition will be carried out within 2015.



FNSS TEBER Turret: Technical Specifications

Main Weapon	ATK Mk44 30 mm or 40 mm double-fed automatic cannon 250 rounds for ammunition
Secondary Weapon	7.62 mm Mk52 electrically-driven machine gun or 7.62 mm gas-driven machine gun 750 rounds for ammunition
Drive System	Electric, dual axis stabilization system Manual back-up (in two-person version)
Transverse Angle	360°
Elevation Angle	+45° to -8°
Maximum Speed	>60°/sec
Tracking Speed	0.3 milsec/sec
Movement Range	Automatic and Programmable
Weight	2500 kg (Unmanned, Level 2 Protection) 3500 kg (Two-person, Level 4 Protection)
H-Gear Radius	1.6 m
Weapon Rotation Radius	3580 mm
Width	2350 mm
Height	660 mm
Smoke Grenade Launcher	8 x 76 mm or 80 mm



FNSS PARS 4x4: Technical Specifications

Power/Weight Ratio	25–30 HP/ton
Engine	Diesel, compatible with NATO's single fuel concept; EURO 3 power pack; can use F34 or JP8 fuel.
Maximum Road Speed	120 km/s
Floating Speed	8 km/s
Maximum Range	700+ km
Approach Angle	54°
Departure Angle	42°
Maximum Gradient	70%
Maximum Side Slope	40%
Fording	50 cm
Trench	90 cm
Rotation Radius	<7 m
Crew Capacity	5
Length	<5 m
Width	<2.5 m
Height (Body)	<1.9 m
Combat Weight	12 ton
Air Transport	C-130H, A400, C-17, C-5, CH-47 Chinook
Transmission	Fully Automatic
Numbers of Axles	2
Number of Axles Driven	All
Suspension System	Double-wishbone, independent and spiral coil
Brake System	All wheels have hydraulics and ABS Park brake with mechanical spring and hydraulic control integrated to the drive components.
Electric System	MIL STD 1275, MIL STD 461

KAPLAN has a New Turret

The KAPLAN YN-ZMA was showcased at IDEF with a new turret – the TEBER-30 turret – which is another new addition to the FNSS product family, with both manned (two-persons) and unmanned versions.

The turret has been designed to carry main weapons ranging from 25 mm to 40 mm calibres, while its secondary weapon is a 7.62 mm machine gun. The turret displayed at the fair was equipped with an electrically driven machine gun, most important advantages of which are the prevention of jamming through the ejection of unfired ammunition, and the significant



reduction of the amount of noxious gunpowder gases emitted during firing. The turret also possesses a sniper detection system as well as a laser warning system, both of which can automatically orient the turret towards the target when they receive a warning. Other systems on the turret include a meteorological sensor and a friend-or-foe recognition system. The turret has separate and independent visual systems for both the gunner and the commander. Still in its pre-prototype stage, the turret is expected to begin initial testing with its two-person version in 2016.

Now, It's the turn of PARS 4x4

The latest member of, the FNSS' family of wheeled armored vehicles, the PARS 4x4, has been designed to fulfil such special missions as forward observation, anti-tank, and command and control. FNSS' main motivation in developing this vehicle was the fact that not all 4x4 vehicles would be suitable for these types of missions, which require high speed and mobility, meaning that a specially designed vehicle was required. An important distinguishing feature of these vehicles is the



location of the engine at the rear. Koray Ulu, the head designer of the vehicle, explained the reason for this: "The vehicle's shape is actually based on tangible requirements. If a 4x4 vehicle is expected to have amphibious capabilities, high speed and high mobility, while making sharp turns safely, climbing high slopes and be resistant to rollover, then you have to adjust the weight distribution across the vehicle very carefully. Locating the engine at the rear presents important advantages when entering a body of water; and it also allows the vehicle to enter water at steeper angles. One of the problems faced by vehicles with front-located engines is that the air intake used to cool the engine is also on the front. Water can enter the engine very easily through these air intakes, which presents a very serious risk. To prevent this, vehicles with front engines need to either undergo special preparations before entering water, or need to be equipped with a number of elements/components that may have a negative effect on visibility, or may reduce the mobility of the vehicle. The PARS 4x4 requires none of these, since the vehicle's air intake is located on its upper rear side, allowing it to operate in deep and flowing waters without any preparations."

The vehicle has a power/weight ratio of 25-30 HP/ton, and a low silhouette of 1.9 m. Despite its low silhouette, the vehicle's underbelly is still as high as that of its competitors, and is compliant with the relevant standards. When descending from a higher position, the angle at which the PARS 4x4's underbelly contacts the surface (the breaking angle) is 20 percent better than its closest competitor.

To reduce pressure and increase traction on loose ground, the wheels of the PARS 4x4 have been designed slightly larger than those of its competitors. The vehicle's high mobility in water is ensured by two water jet systems located at the rear of the vehicle. The vehicle can make pivot turns in water and if required it can also reverse.

The vehicle can accommodate two personnel sitting at the front and three at the rear. A further advantage of locating the engine at the rear is that it allows a wide visual angle on the front side. The vehicle was designed taking into account the possible use or transportation of different types of equipment for different missions and different user requirements, and so features an open architecture that facilitates the integration of different types of equipment.

Another important feature of the vehicle is that the life-span of many vehicle components is the same as the life-span of the vehicle itself, leading to a reduction in operating costs. The power pack can be

rapidly disassembled and assembled in the field, while the vehicle has, overall, fairly easy maintenance and logistic support requirements.

After comments were made during the meeting about the similarity between the PARS 4x4 and KMW's Fennek, Ulu said: "Our vehicle has a rear engine, and we all know that the number of 4x4 vehicles on the market with rear engines is very limited. On the other hand, there are, to my knowledge, at least 20 vehicles with front engines. If you take a brief look at these vehicles, you will see that they generally have similar wheelbases, widths, doors, windows and engine locations. The reason why many people do not say 'These vehicle are all the same' is because there are so many vehicles with front engines that people now tend to focus on and see only the differences in their design details, such as differences in headlight design. However, there are only a few vehicles on the market with rear engines; and so when you build such a vehicle, it is so normal for comparisons to be immediately drawn with the few previous examples that exist." Ulu went on to highlight a key difference between the PARS 4x4 and the Fennek, noting that the former is a five-person vehicle, while the latter is a three-person vehicle. Furthermore, the PARS 4x4 has amphibious capabilities, while the Fennek does not.

At the exhibition, the PARS 4x4 was displayed with a SARP remote-controlled weapon turret. The testing of the PARS 4x4 is expected to be completed later this year.

The MILDESIGN Award Ceremony Enlivened the Fair

The Award Ceremony for the FNSS MILDESIGN 2015 International Military Land Vehicles Design Contest, the results of which had been announced on February 2, was held at IDEF on May 6. The ceremony, which was a very lively event, was organized in a setting with international participants, in parallel with the contest's international scope.



Participating in the ceremony was Orhan Akbaş, the General Director of the Turkish Armed Forces Foundation (TAFF), Levent Şenel, the Head of the Land Vehicles Department at the SSM, as well as other high-ranking guests, the contest's jury members, FNSS employees, visitors to the exhibition, and the contest's top-ranking participants and their families.

Speaking at the opening of the ceremony, K. Nail Kurt, the General Manager of FNSS, explained the motivations in organizing such a competition: "Why are we organizing this contest? Of course, our main goal is to encourage young designers. And what else can we do from now on? We can, for instance, increase the number of such contests. The defence sector is in great need of designers. Turkey is indeed raising its own designers; however, their numbers are far from enough. The sector is growing very rapidly, and compared to other sectors, the defence sector generates very high added value. Today, you can see commercials for a variety of products on TV and in newspapers. These branded products are generally produced in Turkey with 5 to 7 percent added value. In contrast, the level of added value, as well as the level of domestic contribution, in the defence sector is on average 50 percent. To continue generating such added value, it is imperative that we create our own original designs, and in this context we must also conduct design activities for sub-systems and components together with specialized companies. If no such companies exist, we must endeavour to create them. We have to follow a course of action that will enable us to further increase the added value we generate, while also increasing significantly the competitiveness of the sector. Without added value, you cannot be competitive; and without being competitive, how can we ensure the continued growth of the sector? The volume of Turkey's internal market is more or less finite, meaning that we must focus on exports, and this requires competitiveness, which in turn requires original designs. In this context, while thinking about how we might contribute to Turkey and the sector a couple of years ago, we came up with the idea of organizing this contest. As more contests are organized, and the further the sector expands, I believe that we will see a parallel increase in Turkey's capabilities. We hope sincerely that such design contests become more common and widespread, and that other companies and institutions partake in such activities. Our success will depend on how much we can promote these types of activities." The ceremony continued with presentations by Haluk Bulucu, an FNSS consultant, and Berna Dalaman, a Member of the FNSS MILDESIGN Advisory Board. The ceremony ended with the cocktail after the awards were handed to their recipients.

ABDS Protection to FNSS Vehicles

IDEF also saw FNSS sign a memorandum of understanding with US-based TenCate, which develops Active Blast Counter Measures Systems (ABDS) against mines and improvised explosive devices (IED) for land vehicles. In contrast to the armour solutions on the market that provide



passive protection, the ABDS is actively involved in the protection of the vehicle. For example, the various functions of the system include applying opposite forces to counter the force exerted by an explosion in order to prevent the vehicle from rolling over.

The cooperation between the two companies involves the integration of the ABDS onto certain FNSS vehicles, and the PARS 6x6 vehicle on the FNSS stand was equipped with such a system. In the forthcoming period, the two companies will conduct joint studies into integration concepts, verification tests and prototype development.

During the exhibition, FNSS announced another cooperation related to the protection of vehicles. German company ADS GmbH and FNSS have agreed to install an ADS active protection system against anti-tank missiles on FNSS vehicles, especially the KAPLAN YN-ZMA, and the two companies will initiate integration concept studies, verification tests and prototype development activities to this end.

FNSS to Work on Tank Development with Indonesia

A press release by the SSM on May 7 announced the signing of a Turkey-Indonesia Medium Weight Tank Development Programme Agreement between the SSM and the Indonesian Ministry of Defence. In accordance with this agreement, the two countries will work together in the design, production, integration and certification of two medium weight tank prototypes, the intellectual and industrial rights of which will belong jointly to Turkey and Indonesia. The agreement also envisages the manufacture of a single chassis for mine testing purposes.

For this purpose, FNSS will transfer technology on medium tank design to the Indonesia-based PT Pindad, and will provide on-the-job training in prototype production. The first prototype will be manufactured in Turkey with the participation of PT Pindad engineers, while the second prototype will be manufactured in Indonesia by PT Pindad. The duration of the programme is expected to be 37 months, during which the monitoring and supervision of activities will be carried out by a Steering Committee formed jointly by the SSM and the Indonesian Ministry of Defence.



HAVELSAN Signature on Simulator Projects

With the signing of simulator project contracts with a net worth of \$42 million, IDEF 2015 was a particularly lucrative event for HAVELSAN. The fact that these agreements were mainly continuations of previous projects is a strong indicator of the level of satisfaction among HAVELSAN's customers with the company's products and services.

On the second day of the event, HAVELSAN signed three agreements for simulator projects with the SSM, two of which were for amendments to the F-16 Training Simulator Procurement project that envisage the following procurements and activities:

- In addition to the 23 simulators delivered to Turkish Air Forces (TurAF) Command to date, a further full mission simulator will be delivered to 4th Main Jet Base Command, where F-16 pilots undergo orientation training. The base is currently operating one such full mission simulator.
- To support the theoretical training of pilots, a Computer-Based Training System (CBTS) supported by three-dimensional visuals and animations and capable of providing feedback regarding the training process, will also be delivered.
- A Virtual Maintenance Trainer (VMT) system that enables F-16 maintenance personnel to undergo theoretical training, as well as applied training in maintenance and malfunction procedures in virtual environments will be delivered to the relevant party.

The agreement amendment concerning the procurement of additional simulators also includes the extension by 20 months of



the performance-based integrated logistic support (ILS) services for all products delivered to date within the scope of the project until October 15, 2019. Following the delivery of all 23 simulators in the F-16 Training Simulator Procurement project, a 24-month period was envisaged for the ILS services, which aimed to achieve a 95 percent readiness ratio. A press statement issued by the SSM on this subject reported that the first 12 months of this service period had been completed with a 99 percent

readiness ratio. The total costs of the additional simulator purchase and the extension of the ILS services is \$25,284,123, and all related activities are planned to be completed over a 34-month period. On the other hand, the agreement amendment concerning the F-16 Computer-Based Training System and Virtual Maintenance Trainer has a budget of \$13,400,000, and a 36 months schedule.

The third document signed by HAVELSAN relating to simulators concerned amendments to the HELSİM SEAHAWK LOT-II Project. With the signing of the new agreement, HAVELSAN assumes the task of updating both the hardware and software of the simulators delivered previously to Turkish Naval Forces (TNF) Command within the scope of the HELSİM project in accordance with the technical changes made to the SEAHAWK helicopters (LOT-II). The project will involve the following upgrades to the Full Flight Simulator, the Partial Flight Simulator, the Sensor Operator Trainer, the Ground Station and the Computer-Based Trainer System:

- Hardware changes (new MFDs, as well as modified or newly added consoles and panels),
- Changes to the Ethernet-Hub cabling,
- Changes to the radar system,
- Changes to the sonar system,



- Changes to the electronic warfare system, and
- Changes to the LINK 11 system.

The project has a total budget of \$3,000,000, and is expected to be completed in 21 months.

Giving a brief speech after the signing of the documents, Sadık Yamaç, the General Manager and CEO of HAVELSAN, said: "In the forthcoming period, we hope to develop further our software skills in areas such as; big data, cloud computing and cyber warfare, allowing us to provide specialized services around the world. Our turnover objective for 2023 is \$5 billion." Yüksel Öztekin, the Chairman of the Board of HAVELSAN, emphasized the technological benefits of HAVELSAN-designed simulators to the Turkish Armed Forces (TAF) in the area of simulators, while Prof. Dr. İsmail Demir, the Undersecretariat for Defence Industries, expressed his feelings about the company: "HAVELSAN's skills in simulator systems have today reached an indisputably advanced level. We expect HAVELSAN to demonstrate these skills just as effectively in the world market through exports."

On the third day of the fair, HAVELSAN signed a cooperation protocol with TÜBİTAK BİLGEM, under which the two organizations will cooperate in the 2nd Phase of the ATC Airfield Control, Approach and Road Control Radar Simulator (atcTRsim) Project, conducted for the General Directorate of State Airports Authority (DHMİ). Speaking after the signing of the protocol, Dr. Arif Ergin, the President of TÜBİTAK BİLGEM, said: "TÜBİTAK is an institution tasked with producing science and technology. We are conducting activities to promote and disseminate various technologies with leading companies in Turkey; and within the frame of this protocol, we have agreed to cooperate with HAVELSAN for the application of the software and hardware we developed for the DHMİ." Sadık Yamaç, the General Manager and CEO of HAVELSAN, said: "We will create a new synergy by working together with public institutions, and this agreement will contribute to the production and dissemination of new technologies in Turkey. Our cooperation will continue in the ensuing stages." HAVELSAN also displayed for the first time at the fair its electronic ballot box (the e-box) and parachute simulator, as well as:

- In the area of simulators, and training and testing systems: The F-16 Weapon Tactics Trainer, the Combat Simulator, the Unmanned Aerial Vehicle Mission Trainer Simulator, the Artillery Forward Observer Simulator (AFOS) and the Advanced Weather Controller Trainer,
- In the area of command & control and weapon systems: The Air Forces Information System (HvBS), the Ship Integrated Combat Management System (GENESİS), the Acoustic Signal Processor (TORAKS), the Submarine Information Distribution System, the Aircraft Status Monitoring System and the DOOB,



- In the area of cyber security and information technologies: The Military Health Automation System (ASOS), the Image Processing (GAYE, HASAT, İGT-TUYGUN), Sezgin, HAVELSAT, the In-Cabin Entertainment System (IFE-SKYFE), city security, pipeline security, cybersecurity and big data solutions.

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All Kale Group Companies on the Same Stand

For IDEF 2015, Kale Group chose to feature the products of all of its partner and subsidiary companies at its stand, including Kale Kalıp, Kale Aviation, Kale Pratt&Whitney, Kale Arge and Kale-Baykar. The stand attracted the attention of many delegations and visitors, with the highlights of the display being the turbojet engine, the tactical UAV, the Modern Infantry Rifle (MPT-76) and the automatic grenade launcher. Osman Okyay, Head of the Technical and Chemistry Department of the Kale Group, shared his thoughts concerning the company's activities: "In 1989 we entered the defence and aerospace sector – which we viewed as an innovative and expanding area – with the production of Stinger missile parts. As a result of our activities in the defence and aerospace sector, we have today become an important player in both national and international projects, and are taking part in some of the world's most important projects. We produce first-class, critical parts together with the world's leading defence and aerospace brands,



such as Boeing, Lockheed Martin, PFW-Airbus, Spirit, KAI and Northrop Grumman. Furthermore, we have successfully reached the serial production phase in the National Infantry Rifle Project, in which we are partnered with MKEK, and are now working on the design of the National Machine Gun. As Kale-Baykar, we have produced and delivered the only unmanned aerial vehicle (UAV) that has entered the inventory of the Turkish Armed Forces (TAF) to date, and with the opening of the Kale Pratt&Whitney factory last year in Izmir, we have entered into the aircraft engine sector as an important partner in the F-35 project."

MKEK Joins Forces with Rheinmetall to Achieve 2023 Objectives

MKEK has joined forces with Rheinmetall to increase its business volume and conduct product development activities over a broader spectrum. With a memorandum of understanding signed on the first day of IDEF, the two companies agreed to form a joint venture company in Turkey named Rheinmetall MKEK Technology (RMT). The memorandum was signed by İzzet Artunç, the General Manager and Chairman of the Board at MKEK; Werner Kramer, the Managing Director of Rheinmetall; and Yaşar Bozkurt Aşıcı, General Manager of the Rheinmetall Defence Turk (RDT) company in Turkey. Concerning the activities of the new company, Artunç said: "In line with Turkey's export visions for 2023, this agreement will allow us to open up to the world markets with stronger and more modern products. The new company will be established as a Turkish company, subject to Turkish laws, eliminating the license requirements in foreign countries that we occasionally encounter during exports activities, while also providing us with many technological advantages and capabilities." Kramer, speaking at the event on be-



half of Rheinmetall, said: "Following long meetings and internal discussions, we have now reached the stage where we can take the first step. The cooperation of these two important players will have important results. There is an ideal synergy between the two companies. This new company will merge Rheinmetall's experience and technology with MKEK's excellent production skills."

A press statement released by Rheinmetall concerning the memorandum of understanding said that RMT's operational management will be organized by Rheinmetall, and that the production of all jointly developed products will be made by MKEK.



MPT-76

Nova Power Solutions Tested its Products Live

After opening its office in Turkey on March 31, Nova Power Solutions raised its flag for the second time at IDEF, attending with a high-level representation that included the company president and the CEO. The company hosted delegations and visitors from European and Asian countries at its stand, where information was provided on the company to the interested parties. Steve Ziff, CEO at Nova Power Solutions, speaking about the attention they had received during the event, said, "I am happy and confident to say that IDEF'15 is by far the defence exhibition at which we have attracted the highest number of visitors among all other events in which we have participated as Nova Power. We are very lucky to have met with so many prominent delegations and visitors from the defence sector. The business relations and intensive interactions that have developed during IDEF have concretized the existence and rising success of our company in Turkey and in the regional defence market." Süleyman Bayramoğlu, Business Development Manager at Nova Power Turkey, covering also the EMEA Region, stated that they had been very pleased with the connections and opportunities that were achieved at IDEF, saying, "We understood once again that it was a good move to put ourselves in the position of contributing to Turkey's target of developing and exporting original and high technology defence systems with our high-quality power supply solutions."



The company's stand featured a test mechanism comprising a Nova Power Solutions power conditioning unit and a smart uninterrupted power supply produced by another company. The two systems were subjected to simulated power failure, voltage drop and harmonic and frequency changes, categorized under the IEC 61000-4-13 International ElectroMagnetic Compatibility (EMC) standard, using an adjustable AC power supply. The Nova Power system's power protection solution provided a clean, regulated and uninterrupted output signal, despite the many anomalies; while the system of the other company was unable to regulate the input signal, with input anomalies reflected in the output.

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Nurol Makina Extends the EJDER Family with KUNTER

Alongside the EJDER YALÇIN 4x4 and EJDER TOMA, which were exhibited for the first time at IDEF in 2013, Nurol Makina this year promoted the latest member of EJDER product family: the EJDER KUNTER. The EJDER KUNTER is the latest product in Nurol Makina's strategy to develop vehicles that currently do not exist in Turkey, being an armoured truck that is capable of operating in the battlefield, mostly in logistic roles. The EJDER KUNTER will come in 4x4, 6x4 or 6x6 configurations.

EJDER KUNTER was displayed in a 6x4 logistic support truck configuration, along with a loading system provided by the HIAB Company. A tanker module manufactured by WEW, with whom Nurol Makina signed a cooperation agreement during the exhibition, was also on display as a supporting element for the truck. The EJDER KUNTER can carry a module that can be transported and unloaded by the vehicle without the need for external equipment, thanks to the vehicle's transportation system. Furthermore, its armoured protection and field performance make it suitable for operations in challenging terrains and battlefields, where it can unload one module and taking away another, if required, and departing from the region. Nurol Makina is currently the only manufacturer of an armoured-cabinet truck solution that is appropriate for land use. Nurol Makina also took the opportunity at IDEF to present its border surveillance vehicle version, as well as Ejder YALÇIN 4x4, EJDER TOMA and ILGAZ 4x4 vehicles.

Nurol Machinery signed three agreements during the exhibition, the first of which was with the Ankara-based GFDS Company within the context of an innovative technology development project. Armoured personnel carriers, due to the necessary protection requirements, allow only limited external visibility to the personnel inside. This brings two disadvantages:

- While the vehicle commander has good situational awareness as a result of the visibility system he uses, the situational awareness of the transported personnel remains at a very low level.
- Personnel moving into a combat zone or passing through a dangerous area cannot see precisely what is going on outside of the vehicle, which puts them under psychological pressure.

Combining forces in order to resolve these disadvantages, Nurol Makina and GFDS are cooperating in the design of an optical system that allows 360-degree outside observation from inside the vehicle. The solution, which is based on the Epson BT-200 enhanced reality glasses, was exhibited on an ILGAZ 4x4 platform during the exhibition. Speaking at the signing ceremony on the second day of the exhibition, Anil Karel, Deputy General Manager of Nurol Makina, informed



the participants of the advantages provided by the optical solution, and said that the signing ceremony represented an agreement to further develop the system.

Mert Oğuzata, the CEO of GFDS, said that they had selected non-commercially available glasses in the programme that are allocated only to special projects, and that the two companies had put their signatures to a prudential cooperation.

Nurol Makina signed their second agreement on day two of the event with Germany-based WEW for the use of the company's tanker and module systems on the EJDER KUNTER armoured truck. Speaking at the ceremony, Peter Hughes, WEW Business Development Director, said, "After following certain projects in Turkey, we contacted Nurol Holding as we saw that we would be able to establish a good relationship between our companies. We understood that Nurol Makina's engineering capabilities could create important opportunities." Speaking for his part, Anil Karel, Deputy General Manager of Nurol Makina, said, "We are working with specialized and expert companies. This signing is the first step towards future projects, and we will be looking for other markets, particularly in the defence and security application field."

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SAR 109 C - SAR 109 T Technical Specifications

CALIBER	9x19 mm	
LENGTH	(Retracted)	640 mm
	(Extended)	740 mm
BARREL LENGTH	220 mm	
BARREL TYPE	Rifled	6 RH
	Poligonal	6 RH
RIFLING	1/10 inches	
WEIGHT	Empty	2265 gr
MUZZLE VELOCITY	385 m/s	
RATE OF FIRE	900-1000 rd/min	

SARSILMAZ

All-Purpose Vehicle from Otokar

Otokar exhibited a total of 18 vehicles and six different towing systems at its large stand at IDEF, stressing that it was ready to respond to all of Turkey's ground system needs. Being presented for the first time at IDEF were the TULPAR-S and the ARMA 8x8 CBRN Reconnaissance Vehicle, being new additions to Otokar's TULPAR product family. A prototype of the ALTAY tank on which serial production will be based was also on display at OTOKAR's stand. The vehicles exhibited at Otokar's stand are as follows:

- ALTAY latest prototype in the serial production configuration ,
- TULPAR-S amphibious tracked armoured weapon carrier in the Antitank Weapon Carrier configuration,
- TULPAR tracked armoured combat vehicle (with MIZRAK-30 mm turret),
- ARMA 8x8 Chemical, Biological, Radiological and Nuclear Reconnaissance Vehicle (with KESKİN turret),
- ARMA 8x8 armoured combat vehicle (with MIZRAK 30 mm turret),
- ARMA 6x6 armoured personnel carrier (with BOZOK 25 mm MKT turret),
- ARMA 6x6 armoured personnel carrier (with BOZOK 12.7 mm MKT turret),
- COBRA II 4x4 amphibious version of tactical wheeled armoured vehicle,
- COBRA II 4x4 tactical wheeled armoured vehicle (with ÜÇÖK turret),
- 5-door version of COBRA 4x4 tactical wheeled armoured vehicle (with KESKİN turret),
- COBRA 4x4 tactical wheeled armoured personnel carrier,
- URAL 4x4 tactical wheeled armoured vehicle (with new generation BAŞOK turret),
- URAL 4x4 tactical wheeled internal security vehicle,
- KAYA II mine resistant personnel carrier,
- ZPT 4x4 Armoured Personnel Carrier,
- LAND ROVER DEFENDER 110 ENGEREK special operation vehicle,
- LAND ROVER DEFENDER 110 command and control vehicle,
- LAND ROVER DEFENDER 130 double cabinet,

Visitors to the Otokar stand were able to obtain information about the ALTAY tank, as well as the world's first combat tank, the Mark I, on the occasion of the 100th year of the tank's emergence as a weapon platform.

Besides vehicles, one corner of the Otokar stand was devoted to "Otokar Ballistic Armour Solutions", where various armour samples were subjected to firing tests, and information was provided on protection levels, external surfaces, base armour, internal armour, striking angles, areal armour and thickness.

Speaking about Otokar's participation in the exhibition, Serdar Görgüç, General Manager of Otokar, said, "We are Turkey's land systems manufacturer, with a range of vehicles that extends from 3/4 tons to 60 tons, along with various other vehicles in different versions ranging from 4x4 and 8x8 to tracked armoured vehicles, as well as turret systems designed by Otokar. Besides being the largest land systems supplier of Turkey, we export to nearly 30 countries on five continents. We analyse the different needs and expectations of our nearly 50 users, and develop solutions capable of responding to such needs. Our users having Otokar vehicles in their inventories become a reference for new users, and we raise our flag each year in new countries. We currently have more than 28,000 armoured vehicles in service in various parts of the



world, operating under the severest of weather conditions." Görgüç went on to provide details of the current status of the ALTAY project: "The ALTAY main combat tank, of which all of the design and intellectual property rights will belong to the Republic of Turkey at the conclusion of the project, is a very important technological symbol, and will decrease Turkey's foreign technological dependence. The Turkish army will add to its inventory one of the world's most cutting edge main combat vehicles with ALTAY, and the project is continuing as scheduled. The first preliminary prototype has passed successfully all endurance tests, and the second preliminary prototype has carried out hundreds of firings at the Şereflikoçhisar firing range, and has achieved quite successful results. We have produced the final two prototypes taking into account the data obtained from these preliminary prototypes. The PV1 tank of those prototypes will now be subjected to movement and endurance qualification tests by the Turkish Land Forces Command and Undersecretariat for Defence Industries (SSM), while the PV2 tank will undergo fire force qualification tests. Testing of the PV1 tank started in April, while the PV2 tank exhibited at IDEF will be made available for System Qualification and Acceptance Tests in the upcoming days."

TULPAR Family Expands

After promoting TULPAR in 2013, Otokar exhibited its TULPAR-S vehicle at IDEF this year. As the latest member of the TULPAR family, TULPAR-S is a multi-purpose platform offering high ballistic and mine protection that is integrated with various weapon systems. It has amphibious capabilities and the capacity to provide services in different operations thanks to its superior manoeuvrability in all land and weather conditions. The vehicle displayed at the exhibition was in the "weapon carrier vehicle" configuration, and was integrated with ASELSAN's remote controlled weapon station that includes four OMTAS/KORNET antitank missiles and one machine gun. There are 10 further antitank missiles inside the vehicle. Depending on the configuration, TULPAR has a combat weight of between 28 to 42 tons, whereas TULPAR-S has a combat weight of 15 tons. Besides its dimensions and weight, one of the most important differences of TULPAR-S is its amphibious



functions. The vehicle can move in water using its tracks. TULPAR-S is also the first Otokar vehicle to use rubber tracks, and was exhibited at the exhibition in this configuration. MSI Turkish Defence Review obtained information about the vehicle from Ufuk Aybar, Product Management Unit Manager at Otokar, who said that the rubber tracks offer advantages in terms of noise reduction and weight. Otokar will make its final decision on the use of rubber tracks after conducting related tests.

Aybar also stressed the common characteristics of TULPAR-S with other Otokar products, highlighting the advantages offered in terms of logistics and training. TULPAR-S has the same mechanical and electronic infrastructure as TULPAR, but considering the issue from a broader perspective, there are other common characteristics that extend to Otokar's broad product family. For example, the vehicle's hatches are the same as those used for ARMA vehicles. TULPAR-S's test calendar will begin after IDEF.

ARMA on a New Mission: 8x8 CBRN Reconnaissance Vehicle

Another product being displayed for the first time by Otokar at IDEF was the ARMA 8x8 Chemical, Biological, Radiological and Nuclear (CBRN) Reconnaissance Vehicle. Otokar developed Turkey's first CBRN reconnaissance vehicle based on the COBRA vehicle, and made it available for the Slovenian Armed Force in 2008, adding the ARMA 6x6 reconnaissance vehicle into its product family in 2011. Otokar used its experience in CBRN subsystems and vehicle integration issue in the development of the ARMA 8x8.

The ARMA 8x8 CBRN Reconnaissance Vehicle can undertake various operational tasks, including observation roles to identify CBRN attacks and risks, collecting information about a defined region or route, and carrying out detailed analyses of contaminated and possibly dangerous regions. During reconnaissance missions, the vehicle enables the crew to fulfil activities such as detecting and analysing chemical contaminations in the air and ground, detecting and analysing biological contaminations, detecting and warning against nuclear and radiological contaminations, and performing meteorological measurements – all without exposing the crew to CBRN threats.



Otokar TULPAR-S Technical Specifications

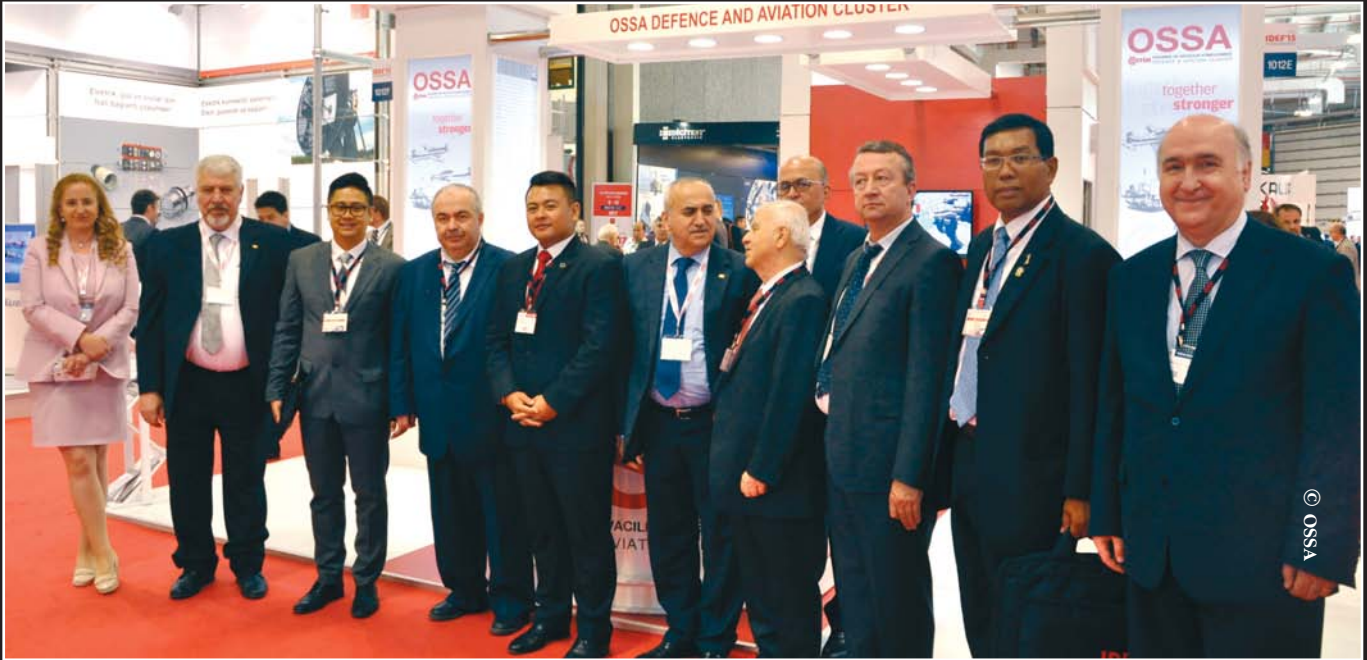
Combat Weight	15 tons
Seating Capacity	10
Total Width	2,900 mm
Total Length	5,700 mm
Total Height	2,000 mm (Above the vehicle ceiling)
Ground Clearance	400-500 mm
Engine	Diesel, ≥280 kW
Gearbox	Automated transmission
Suspension	Twistable shaft, damper
Track System	Rubber track or steel track with changeable pads
Electricity System	24V DC, maintenance free batteries
Vision System	3 periscopes on the driver hatch 8 periscopes on the commander hatch Front and back daytime and thermal cameras
Maximum Speed	> 70 km/h
Range	500 km
Climbing Over Erect Barriers	0.75 m
Climbing Over Ditches	1.9 m
Side Slope	40%
Inclination Climbing	60%



Furthermore, the ARMA 8x8 CBRN Reconnaissance Vehicle ensures that:

- The vehicle's position and the positions of troops are followed up,
- Samples of air, land and water are collected for detailed contamination analysis,
- Real-time monitoring of sensors and states of alert,
- CBRN threats and contaminated regions are marked on the digital map,
- NATO-compliant CBRN reports are prepared for sharing with the communication network,
- Decision support functions, such as dangerous zone estimations and distribution modelling are provided, and "CBRN Situational Awareness" is created in the command echelon.

The ARMA 8x8 CBRN Reconnaissance Vehicle, which is capable of carrying six people including the driver, also offers high-level protection and an integrated remote controlled weapon system aimed at addressing possible threats. The ARMA 8x8 CBRN Reconnaissance Vehicle was exhibited with a KESKİN turret at the exhibition.



OSSA, Together, Stronger

The OSTİM Defence and Aviation Cluster (OSSA) attended IDEF with 11 member companies: MEGE Teknik, ELSİS, Er Makina, Gökser Makina, Aril Havacılık, Nero Industries Defence, Digitest, T-Kalıp, Sadtek, YEPSAN Aviation and Altöy Defence. OSSA's stand was visited by several Turkish and foreign official delegations, as well as delegations from for-

ign companies such as Tawazun. The press release prepared by OSSA related to the exhibition provided information on the activities of the member companies over the course of the event:

- Digitest signed an agreement with Azerbaijan related to the installation, mounting and provision of training in polygon target systems.
- Gökser Makina debuted its newly-developed air-conditioning device for military tents and its specially manufactured heat transfer hose. After 30 years of experience in the field, the company promoted its new "THERMACOOL" product for the first time at the exhibition.
- ELSİS used the exhibition as an opportunity to meet companies operating in the nautical sector.
- MEGE Teknik held meetings with a number of main contracting companies.
- T-Kalıp established new connections with vehicle manufacturing companies.

- YEPSAN initiated negotiations related to the production of crew and passenger seats and safety belts for commercial and military aircraft in Turkey, in cooperation with Autoflug and Fischer. Ünal Kahveci, Member of the Board of Directors of YEPSAN, stated that they had received the required certifications in the aviation field within the last two years, and that they were ready to begin manufacture.



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ROKETSAN Unveils SOM-J

Considering IDEF as an opportunity to display its gradually expanding product family, ROKETSAN exhibited some of its new products at the exhibition for the first time. Among these were a scale model of a SOM-J cruise missile, a Pedestal-Mounted CİRİT (KMC), and TEBER-81 and TEBER-82 laser guidance kits.

Although various technical diagrams have been published in the past of SOM-J, the version of the SOM missile that has been developed to fit the internal weapons bay of F-35 aircraft, a scale model of the missile was exhibited for the first time at IDEF 2015. The model highlighted some differences between SOM-J and other SOM versions, the most prominent of which are the foldable wings and control surfaces to allow the missile to be carried in the limited space available in the aircraft. The aerodynamics of the wings and control surfaces had to be re-designed for this purpose. While other SOM versions feature a single set of surfaces at the rear, that function also as control surfaces, SOM-J has two cascaded sets. The forward set is used for control, while the rear set provides stabilization. The air inlet located on the lower part of the missile has been split into two on the SOM-J and moved to sides.

The dimensions of SOM-J are on the whole smaller than the other SOM versions, although the new missile has the same engine and avionics as its predecessors. SOM-J has been de-



veloped for use against surface targets, and so carries a warhead that is different and smaller than the other SOM versions. The smaller warhead reduces the negative impact of the decrease in dimensions on the range of the missile.

A Design Review Meeting for SOM-J is expected to be held in September this year, while sub-system design and testing will be initiated in November. The missile will be tested initially on F-16 aircraft, scheduled to start in the second half of 2017, while the development programme is planned to be completed in 2018. SOM-J will be compatible with the Block 4 version of the F-35.





ROKETSAN Takes the Initiative

KMC, another system being exhibited by ROKETSAN for the first time, has been developed through the company's own resources, in order to ensure that the CİRİT missile can be effectively launched from land platforms. The system, which may be integrated onto various wheeled and tracked vehicles, offers such capabilities as; 360-degree movement and firing, control from inside the vehicle, firing when moving or stopped, automatic targeting and reconnaissance with electro-optic systems mounted on an extensible pole, and is suitable for observation and tracking roles. During the course of development of the KMC, ROKETSAN used an armoured combat vehicle provided by FNSS, and KMC was exhibited on this vehicle at the exhibition.

TEBER-81 and TEBER-82 laser guidance kits were also developed by ROKETSAN through its own initiative. Having gained substantial experience in laser guidance with the CİRİT- and MIZRAK-series of antitank missiles, ROKETSAN transferred this experience into the TEBER-series of guidance kits that it has developed with its own resources. These kits comprise a laser seeker head, an inertial measurement unit and a global positioning system that it uses for guidance. Another difference offered by the TEBER guidance kits is that they can be used also on the MK-81 series of bombs. TEBER-81 and TEBER-82, the ground testing of which is about to be completed, are scheduled to be tested on F-16 aircraft in accordance with a protocol between ROKETSAN and the Turkish Air Force (TurAF). TEBER-81 and TEBER-82 guidance-kit-equipped bombs are considered to have a minimum range of 2 km, a maximum range of 28 km and "CEP-50" value of less than 3 m. The bombs onto which these guidance kits are to be inte-

grated will be suitable for use against moving targets traveling at speeds of less than 100 km/hour.

Also exhibited at ROKETSAN's stand were the CİRİT, MIZRAK-O and MIZRAK-U, HİSAR missiles; T-122 and T-300 Multiple Rocket Launcher Systems, T-107/122 and T-122/300 Multi-Purpose Multiple Rocket Launcher Systems, TR-300, TR-122 and TR-107 Artillery Rockets, fuses and various ballistic protection systems. The ROKETSAN staff also presented the company's Firing Test and Evaluation Center, ammunition destruction and ammunition life detection and extension capabilities to interested visitors. Among the guests welcomed at the stand were the Azerbaijani Defence Minister, the US Deputy Secretary of Defence, delegations from the Ministries of Defence of Britain, Colombia, Australia, China, Pakistan, Senegal, Somali, Poland, Kenya, Tunisia, Bangladesh and Rwanda, as well as the Commander of the Malaysian Armed Forces, officials from the Tawazun Company (United Arab Emirates) and the Saudi Arabian delegation.



TEBER-81 (front) ve TEBER-82 (back)

Sarsilmaz's SAR109 and SAR223 Ready for the Market

Having launched its SAR109 sub-machine gun and SAR223 infantry rifle during IDEF 2013, Sarsilmaz participated at IDEF 2015 with all of their testing and qualification procedures completed. The testing and qualification processes have not resulted in any significant changes to the rifle design. Hasan Özadalı, Sarsilmaz's Export Manager, whom we interviewed during the exhibition, said the only change made in the firearm was a redesign of the SAR109T's telescopic stock. The semi-automatic version of SAR109 has been introduced to the US civil market under the name TE54, and the company has developed a new version that prevents a stock to be attached to the weapon, which allows it to be sold in the pistol class. This version initially offered a bump behind the grip, which has been removed in a later design change. After the completion of testing and qualification on the 5.56 mm version of the SAR223, procedures will be initiated for the 7.62 mm version.



After the completion of testing and qualification on the 5.56 mm version of the SAR223, procedures will be initiated for the 7.62 mm version.

SDT to Become a Centre of Excellence in ACMI

SDT stood out at IDEF with its Air Combat Manoeuvring Instrumentation (ACMI) solutions. The ACMI pod, designed to have the same external form and centre of gravity as the missile carried by the relevant aerial vehicle, is capable of recording relevant aerial vehicle flight parameters and transferring them to the ground in real-time, where needed. Having completed the design an ACMI pod in the same physical shape of the AIM-9 Sidewinder missile for the Turkish Air Force (TurAF) as part of a project carried out by the Ministry of National Defence (MSB), SDT is now planning to complete the certification of the pod for the F-16 aircraft by next May.

The company demonstrated the results of the work it has been conducting in regard to the ACMI pod issue with two developments throughout the exhibition. KAI, a leading Korean aviation company, is planning to join the tender that is expected to be initiated for the provision of an ACMI pod for the Korean Air Force next year in cooperation with SDT. In this regard, SDT and KAI signed a memorandum of understanding in a ceremony on the third day of IDEF. Speaking prior to the ceremony, Fatih Ünal, SDT General Manager, gave an overview of the project that they have been conducting in Turkey to the participants, stating that they would be cooperating with KAI through this product.

Visitors to the SDT stand had the opportunity to view a different ACMI pod. The ACMI pod concept, which is mostly associated with jet fighter aircraft, can be mounted also on attack helicopters, and SDT had launched development of this kind of pod through its own resources even before the announcement of such a project in Turkey. The exhibited pod had the same external dimensions and centre of gravity as the Hellfire missile, and is adaptable into other anti-tank missile forms, primarily MIZRAK-U.



Besides the developments related to the ACMI pod, SDT also signed a Letter of Intent for cooperation with TÜBİTAK SAGE during the exhibition on May 7, with the two organisations calling the agreement "an important step towards a strategic partnership".



Sedef Shipyard Initiated LPD Program at IDEF

IDEF 2015 witnessed the signing of the contract for one of the most important projects in Turkey. The Landing Platform Dock (LPD) Contract Signing Ceremony was held on May 7, and began with a briefing by Müjdat Uludağ, Head of the Naval Platforms Department of the Undersecretariat for Defence Industries (SSM). Uludağ gave the following information about the project: "Following the completion of this project, which is scheduled for 2021, a domestically-produced landing platform dock will be available for use in the Aegean, Black and Mediterranean Sea theatres of operation and in the Indian and Atlantic Oceans, if needed, as required by Turkish Naval Forces (TNF) Command. The landing platform dock will be able to transport an amphibious battalion and various tanks and equipment, as well as the necessary combat and support vehicles, to crisis zones without requiring support from the main base, and will participate in landing operations with landing platforms that it will carry in its pool. The flight deck of the landing platform will consist of six spots with appropriate endurance and size for the safe landing of helicopters of various types. The flight deck will also have the appropriate structure and equipment to accommodate helicopters with a take-off-landing

weight of up to 35 tons. Furthermore, it will also permit the take-off, landing, safe parking and transfer of tilt rotor aerial vehicles and the UAVs. The platform will also be capable of carrying wheeled and tracked vehicles, and containers weighing up to 30 tons. There will be a hospital with a 34-bed capacity, as well as surgery, x-ray machines, dental facilities and intensive care and infection rooms, allowing the dock to serve also as a hospital ship in humanitarian aid operations." Uludağ said that support in the design will be received from Navantia (Spain), and that national systems will be integrated into the platform that have been developed by the ASELSAN-HAVELSAN Joint Venture, such as the STAMP and STOP weapon systems, GENESIS-ADVENT, battle management system integration and operation software, an electronic warfare suite, comprising a radar electronic assault and counter-measure systems, an infrared tracking system, an electro optics router and a torpedo counter deception system.

The project agreement was signed by Prof. İsmail Demir, Undersecretary for Defence Industries, Nevzat Kalkavan, COE of Sedef Ship Construction Inc. and Mehmet Kalkavan, Vice Chairman of the Board of Sedef Ship Con-



struction Inc. Rear Admiral Oğuz Karaman, Head of Naval Forces Command's Plan and Policies Division, witnessed the signing of the agreement. The ceremony ended with the presentation

of memory plaque and gifts and a group photo with Hasan Kemal Yardımcı, Deputy Minister of National Defence, and representatives from the subcontractor companies in the project.



Selah Shipyard Chooses Siteptalia for Data Distribution

Selah Shipyard, which has been contracted to build two ships in the Logistic Support Ship (LSS) project, has chosen Siteptalia as its partner for the supply of the data distribution system to be used in the vessels. Siteptalia will deliver to Selah Shipyard the Mini DDU product, which will display incoming data from meteorological sensors, gyro compasses, speed sensors, GPS, depth measurement devices and other systems on the ship's on-board consoles and screens. The product will also distribute the data and commands that need to be transferred to these systems. The agreement for the Mini DDU was signed by two companies on May 7.



STM Joins Forces with TÜBİTAK

Launching important projects in the fields of cyber and homeland security, STM has signed a protocol aimed at increasing its efficiency in these fields. The Framework Protocol on Cooperation in Cyber and Homeland Security was signed between STM and the Scientific and Technological Research Council of Turkey (TÜBİTAK) Informatics and Information Security Research Centre (BİLGEM) on May 7. According to the protocol, STM and TÜBİTAK BİLGEM will conduct market, customer and competition analyses for products owned by TÜBİTAK BİLGEM, and will then target the commercialisation and market penetration of these products. After signing the protocol, the two parties will establish working groups. Within the framework of the protocol and with the consensus of the parties, training, consultancy, joint Research-Development and technology development projects will be defined. Furthermore, work plans will be prepared and implemented for the organization of joint conferences; certification, graduate and post-graduate programmes; various domestic and foreign activities; and joint exercises.

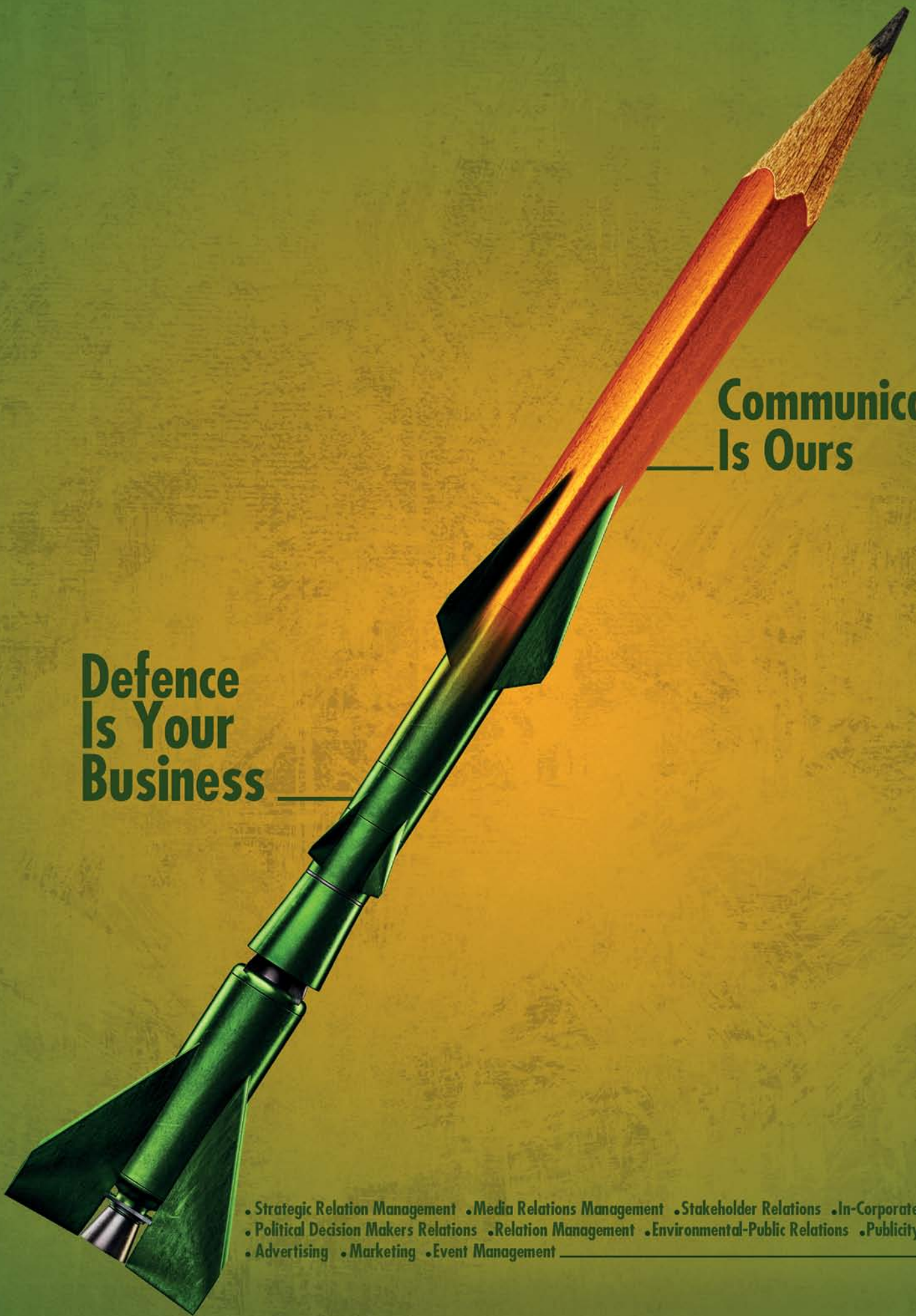
Prof. Dr. Arif Ergin, Head of TÜBİTAK BİLGEM, made the following assessment of the protocol: "TÜBİTAK is making efforts to fulfil its duty of developing science and technology in the best way possible, although it can bring these efforts onto real life only through industrial cooperation. STM has been one of the most prominent institutions in our country in the field of cyber and homeland security in recent years. As TÜBİTAK, we will make available all of our technological development in these fields to the entire sector and markets with STM." Davut Yılmaz, STM General Manager, said that this cooperation would



contribute to both TÜBİTAK and STM, as well as to Turkey as a whole.

News also came from STM related to the MİLGEM project during IDEF. A statement made by GE Marine on May 5 indicated that they had signed a provisional agreement with STM related to the LM2500 gas turbine for the third and fourth ships in the project. LM2500 gas turbines were also used in the first two ships of the project.

STM exhibited the MİLGEM corvette, Pakistan Naval Fleet Tanker, AY-class submarine modernization and Vertical Wind Tunnel models on its functionally-designed stand at IDEF, where it hosted high-ranking military and commercial delegations from Kazakhstan, Colombia, Kuwait, Azerbaijan, Poland, Pakistan, Saudi Arabia, Bangladesh and Gambia.



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TAI Agenda: GÖKTÜRK-1 and ATAK

The most important event in the intensive programme of visits, signings and press meetings of TAI at IDEF was the delivery of the GÖKTÜRK-1 satellite. The satellite, which had been undergoing integration activities in France, was delivered to the TAI Space Systems Integration and Test (USET) Centre on May 7, where it will undergo environmental tests. The delivery was broadcast live from Ankara to a big screen on the TAI stand, observed by Prof. Dr. İsmail Demir, the Undersecretary for Defence Industries (SSM); Celal Sami Tüfekçi, Head of the Space Department of the SSM; Prof. Ensar Gül, TÜRSAT General Manager; Brigadier General Sargun Göktun; and Dr. Lokman Kuzu, Institute Director of the Scientific and Technological Research Council of Turkey (TÜBİTAK) SPACE; as well as leading representatives from the space sector. Making a brief speech following the delivery of GÖKTÜRK-1, Prof. Dr. Demir said, "Our GÖKTÜRK-1 satellite will be transported to the launch site after environmental tests have been conducted in the final phase of the development process ... GÖKTÜRK-1 has been produced to meet a Turkish Air Force (TurAF) requirement for high-resolution images of any region in the world, without geographical restriction. Aside from its intelligence-gathering function, the satellite will also be able to meet the imaging needs for such civil applications as controlling forestry land, tracking illegal housing, rapid damage assessment following natural disasters, product yield determination and geographical map data production ... Turkey acquired advanced technologies and a specialized labour force in the field of space and satellite systems throughout the course of the GÖKTÜRK-1 project, while our country has gained the USET Centre, a strategic infrastructure for the domestic production of observation and communication satellites in the future. Vibration, acoustic, solar panel opening, thermal vacuum, electromagnetic compatibility and similar tests will all



be conducted on GÖKTÜRK-1 at this centre. GÖKTÜRK-3, follow-up GÖKTÜRK replacements, as well as military and civil-purpose satellites such as TÜRSAT 6A and the Independent Communication Satellite, will all be produced at this plant and will undergo all testing within Turkey before being sent to the launch site. Development of a satellite launching system is underway, after which we will be launching into space satellites that we have designed and produced through national resources in our country using our own launchers."

TAI Eyes Poland for Cooperation

TAI also emphasized its cooperation with Polish companies at the exhibition. In the "Kruk Programme" in Poland, efforts are underway for the procurement of new-generation attack helicopters, and the T129 ATAK helicopter is one of the candidates. Aiming to provide Poland with industrial cooperation opportunities, as well as a robust platform, TAI has signed MoUs with two Polish companies (i.e. MESKO and WCKBT) during the show. The agreement with MESKO relates to ammunition and missiles, and was signed on May 5, while the WCKBT agreement relates to ground support equipment for air platforms, and was signed on May 6. TAI signed other agreements on May 5 within the context of the Researcher Training Programme for Defence Industries (SAYP). Under the auspices of the SSM, five advanced research project agreements were signed separately by TAI with the Middle East Technical University (METU) and Gazi University. The projects are:



- Improving the Quality of Implementation of Aerospace Products through Augmented Reality Technologies (Gazi University)
- Development and Performance Analysis of Axially Channelled, Fixed Conductor Heating Pipes to be used in Space Applications (Gazi University)
- Effect of Errors on Mechanical Properties and the Interlaminar Performance of Composite Materials (Gazi University)
- Modelling and Application of Artificial Muscles (Dielectric Elastomer) Actuators (METU)

■ Determining the Design Criteria of Composite Structures for Repair Regions and Progressive Failure Analysis (METU)
 Following the signing of the agreements, Serdar Demirel, the Deputy Undersecretary for Platform Projects at the SSM, stressed the importance of these projects, saying that, "Today, we are probably signing one of the most important documents of the exhibition."

Successful Press Activities

TAI became the most active company at the exhibition in terms of press activities, which went beyond the many signing ceremonies. During the first three days of the exhibition, the Vice Presidents of TAI Aircraft, Helicopter, Space Systems and UAV Systems held separate press conferences to provide information on the latest developments in their respective departments, after which the TAI officials answered questions from the press. Özcan Ertem, Executive Vice President, Aircraft, gave information about the Turkish National Fighter (MMU) and HÜRKUŞ projects during the press conference of the TAI Aircraft Department. The most recent development in the MMU programme to be made public is the decision during a meeting of the Defence Industry



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Mr. Özcan Ertem,
Exec. VP of Aircraft, TAI



Executive Committee (SSIK) on January 7 to initiate the preliminary design phase. As a reply to a question asked by the press following the SSIK Meeting, Prof. Dr. Ahmet Davutoğlu, Prime Minister of the Republic of Turkey, had said "We are considering the strongest alternative, most likely the twin engine". While no final decision has yet been made on the design, TAI continues to provide technical support to decision-makers regarding aircraft design and engine selection.

The main contractor agreement concerning the MMU is expected to be signed between the SSM and TAI later this year. In accordance with the project model, TAI will cooperate with a foreign company on technical matters, and this company is expected to be determined and an agreement be signed within 2015.

A three-stage development process is envisaged for the MMU. Initially, the aircraft will fly with a clean configuration for the necessary tests to be carried out. Afterwards, the ammunition defined by TurAF will be integrated onto the aircraft and it will be provided with the first mobility capability. It is envisaged that the first orders for the aircraft will be received at this stage. In the third and final stage, the aircraft will be provided with all of its capabilities.

In this process, the initial aircraft prototypes will be integrated with foreign engines obtained through a direct procurement and production model, while several alternatives are being considered for the serial production stage, including the development of a domestically designed engine. It's not certain whether the aircraft or other subsystems, including the radar, will be developed with TAI as the main contractor, or through another model. At this stage, TAI is informing the decision makers which subsystems should be made available, and when; and in line with its domain expertise, it is also providing support in the determination of the various requirements of different subsystems.

As for the HÜRKUŞ project, two prototype aircraft are undergoing continuous flight testing, and had flew a total of 187 sorties by the time of the exhibition. One of the two structural prototypes has been tested under the heaviest load conditions, and has completed its mission, while the second structural prototype, which is currently in production, will be used in fatigue tests, planned to be initiated in August.

The HÜRKUŞ A configuration has undergone nearly 80 percent of the necessary certification works. Furthermore, EASA certification will be obtained by the end of this year, and flight tests are to be carried out later in the year.

As part of the New Generation Basic Training Aircraft Supply

project, a B-version that is suitable for military training needs has been developed, and the project is continuing in accordance with the schedule. The first aircraft is scheduled for delivery in June 2018, while the remaining 14 aircraft will be delivered in one year.

The conceptual design of HÜRKUŞ C, which will be capable of warfighting roles, is being conducted within the scope of the current contract of the aircraft's B version. The development of the aircraft, which will be able to carry a payload of nearly 1.5 tons on combat missions, will be shaped in accordance with the needs to be determined by the Turkish Armed Forces (TAF).

The press conference of the Helicopter Group was hosted by Görkem Bilgi, Business Development Manager, who gave information on the ATAK, Turkish Utility Helicopter and Indigenous Helicopter projects, after which the gathered participants were invited to visit the exhibited products. Stressing the capabilities achieved by TAI to date, Bilgi said, "We have modernization capabilities for every helicopter class in the world. We can liken ourselves to a tailor, having sewn a dress that fits TAF with T129, and this dress looks really good on TAF. We learned how to sew dresses and gained the skills to sew any kind of dress that we want for all body types around the world."

The UAV Group press conference was hosted by Sinan Şenol, Executive Vice President of the UAV Group (Acting). The TAI stand at IDEF featured the ANKA UAV in its "S" configuration at the exhibition, the most prominent feature of which is the radome enclosing the satellite dish to the front of the aircraft, and also ASELSAN's CATS electro-optics system on its nose. ANKA-S can also be supplied with relay characteristics and can carry a PLS interrogator, while the ground control stations of ANKA-S will be able to transfer UAV control from one station to another. The ANKA Block B, which conducted its first flight earlier this year, had achieved more than 10 hours of flight in three sorties by the time of the exhibition. Although ANKA-S is considered to be the version that will be delivered within the scope of the current agreement, the use of ANKA Block B, which has started to prove its worth, is also under consideration until the new version is made available. Seeing the potential in this issue, TAI has started to produce ANKA Block B aircraft on its own resources in order to provide the best possible service to its customers.

TAI is also continuing preparations related to the strategic UAV and rotor UAV. Concerning the target drone, TAI aims to provide services both to TAF and to companies developing aerial defence systems.

Turkey, the world's leading user of the Airbus CN235, is preparing to become the regional support and maintenance centre of the aircraft. On the second day of the exhibition, Airbus Defence and Security (D&S) and 2nd Air Supply and Maintenance Centre (HİBM) Command of Turkish Air Forces (TurAF) Command signed a Goodwill Agreement that sets the stage for the initiation of the necessary certification processes for the assignment of HİBM as the authorized Regional Maintenance and Support Centre for CN235 aircraft.

The Turkish Armed Forces (TAF) has currently a total of 59 CN235 aircraft in its inventory. To date, CN235 aircraft around the world have clocked over 1,200,000 hours of flight, with nearly 300,000 of those being made by the ones in TurAF's inventory.

In a press release, the SSM said that, in addition to the capabilities CN235 aircraft have provided Turkey since they were first procured in 1992, the aircraft have also enabled 2nd HİBM Command, the centre responsible for the Technical Management of these aircraft, to gain considerable experience and know-how in supply- and maintenance-related areas after entering TurAF's inventory. The SSM statement emphasized TurAF's superior capabilities and facil-



Strategic Partners for CN235 Aircraft: TurAF and Airbus D&S

ities for aircraft maintenance, repair and revision.

Aiming to better utilize TurAF's potential regarding the CN235 aircraft, officials from the SSM and TurAF decided during the "Technical Coordination Group (TCG) Meeting" held in Ankara between September 23 and 24, 2014 to "assess TurAF's capabilities, and to use it for the aircraft of other countries in the region, as well as for the current fleets of TAF, by providing more effective material support". Following the various assessments and discussions made during the meeting, it was determined that 2nd HİBM Command could effectively become a "Regionally Authorized Maintenance, Repair and Revision Centre" for CN235 aircraft

in Turkey and the surrounding region in such areas as maintenance, repair, half-life modernization and material support – after the necessary certifications are obtained from Airbus D&S. A road map was determined, and a "Goodwill Agreement" was prepared to delineate the scope of activities to be conducted.

Following the signing of the Goodwill Agreement and the certification of 2nd HİBM Command's maintenance capabilities, a test run will be performed on an aircraft from a friend/ally country. In the meantime, a Framework Agreement (or Statement of Work) will be prepared to formalize the "Strategic Cooperation" between TurAF and

Airbus D&S. With this agreement, which is planned to be conducted through the use of a circulating fund, 2nd HİBM Command's means and capabilities will be used to maximum effect for the maintenance of aircraft from other countries in the region, while Airbus D&S will provide support in the form of engineering, certification and material requirements.

According to information provided on the Airbus D&S website, there are currently 19 CN235 aircraft in the inventories of countries in the Middle East and North Africa region, with an additional six that have been purchased but have not yet been delivered.

Honeywell Monitoring Closely Developments in Turkey



Mr. Serdar Çetingül, Honeywell DSI Regional Manager

Honeywell, which displayed its broad range of defence and aerospace products at IDEF, is making preparations in anticipation of a growing business volume in Turkey in the coming period, and has opened a new office in Ankara to take advantage of upcoming opportunities. During IDEF, MSI Turkish Defence Review took the opportunity to share a few words with Serdar Çetingül, the Regional Manager of Honeywell Defence and Space International (DSI), who described Honeywell's willingness to assume an important role in Turkey's aim to develop more original and indigenous products. Among these project, the most notable ones are the Indigenous Helicopter Programme, the Turkish Fighter Aircraft (F-X) Project and the Regional Aircraft Project. Çetingül noted that, as Honeywell, they were aware that Turkey's intentions in developing these original products involved not only the need to meet its own requirements, but also the willingness to meet the requirements of friendly and allied countries. Emphasizing that Honeywell is willing to contribute towards such a goal, Çetingül said that Honeywell is "explicitly giving Turkey the message that it is open for technology-based cooperation".

EUROJET Explains the Advantages of EJ200 to its Customers

EUROJET, which is currently actively promoting and presenting its engines for the Turkish National Fighter Aircraft Development (F-X) project, held a press meeting on the second day of the exhibition, during which its technical team highlighted the advantages of its EJ200 engine to the company's customers.

During the meeting, Wolfrang Sterr, the Deputy Technical Director of EUROJET, provided comprehensive information about the EJ200's reliability and performance at every stage of flight. EJ200 engines had, at the time of the meeting, performed over 550,000 hours of flight in total, averaging approximately 1,100 flight hours per aircraft over the past 12 months. None of the engines had experienced any sudden shutdown during flight, and those used during the Libya Campaign demonstrated over 99 percent reliability. Sterr noted that whether in low-altitude air-to-ground or high-altitude air-to-air missions, the EJ200 surpassed its competitors with respect to

thrust and fuel consumption performance.

Touching on the concepts of maintenance and management, as well as life-cycle costs, Thomas Braun, the Service Operations Director at EUROJET, noted that engines play an important part in the life-cycle costs of an aircraft, and listed the advantages of the EJ200 provided in this respects as follows:

- The EJ200 has been developed according to a "condition based" concept, meaning that it has no pre-determined maintenance time or schedule. Instead, the status of the engine is monitored continuously, and is maintained and repaired only when necessary.
- The two-stage maintenance concept employed for the EJ200 reduces the amount of bureaucratic processes and maintenance personnel required.
- In case of a malfunction, the engine module in which the malfunction occurs is replaced (the EJ200 has 15 different modules),



Eurojet also displayed the vectoring nozzle technology that is offered to Turkey.



Mr. Clemens Linden, CEO of Eurojet

meaning that the engine can re-enter service with minimum delay. Up to seven modules can be changed without any special tests or procedures being required.

- The whole engine can be changed in less than 50 minutes.

At the end of the technical presentation, Sterr described the advantages of twin-engine over single-engine aircraft, and emphasized the EJ200's advantages stemming from its higher reliability and thrust, stating

that the EJ200 has even more potential for further development and growth, which it has not yet fully utilized.

At the press meeting, General Salvador Alvarez, the Commercial Director of the NATO Eurofighter and Tornado Management Agency (NETMA), also shared his assessments of the EJ200 as a customer: "I can clearly and openly state that the four countries whose air forces are NETMA members are highly pleased with the performance of the EJ200. The EJ200 demonstrated its reliability and performance during the operation in Libya and the patrol flights over the air space of the Baltic States. The reliability and maintenance concept of the engines enable EUROFIGHTER aircraft to be ready and mission capable at all times. I believe that the EJ200 will excel in meeting the requirements of the Turkish Air Forces," said General Alvarez.

Vericor Comes to Empower Turkish-Type Assault Boat

US-based gas turbine manufacturer Vericor Power Systems showcased at IDEF its TF50B gas turbine, a system it has proposed for the Turkish-Type Fast Boat project. Tony Wilcoxson, Vericor Naval Sales Manager, stated that the speed requirements of Turkish-Type Fast Boat rendered the use of a gas turbine a necessity, and that all except one of the designs proposed for this tender included a gas turbine solution. Wilcoxson described the advantages of the TF50B, stating that: "The direct assembly of the TF gas turbines ensures a solid and integrated structure between the turbines and the reduction gear. Furthermore, the direct connection feature to the reduction gear, without any other support being necessary, results in a very simple and light power package. The direct assembly feature has proven itself in all marine applications made by Vericor, including the Visby-class corvettes of Sweden, which use four TF-series gas turbines as a power supply." Reminding that TF-series gas turbines are also used on the US Landing Craft Air-Cushion (LCAC), Wilcoxson stressed that Turkey could use similar power units in the Landing Platform Dock (LPD), for which a contract was signed during the exhibition, since the use of a common power unit on both the assault boats and these platforms would bring various benefits in terms of logistics.



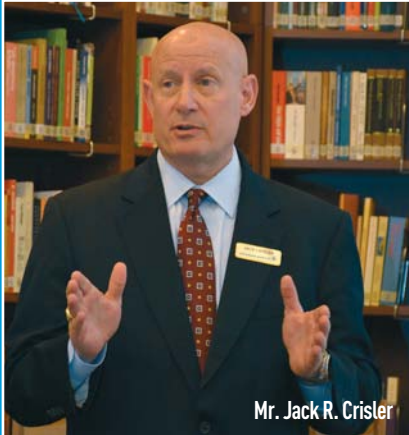
Mr. Tony Wilcoxson, Vericor Marine Sales Manager together with Mrs. Naile Bayraktar, General Coordinator of MSI-TDR Magazine.

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Mr. Jack R. Crisler



Lockheed Martin Emphasizes F-35 and PAC-3

Lockheed Martin organized two press events on the second day of IDEF. In the first event, Jack R. Crisler, the Vice President of Business Development and Strategic Integration, responsible for the F35 Program at Lockheed Martin, and Billie Flynn, the Senior Experimental Test Pilot, met with members of the press to speak about the current status of the F-35 programme, as well as Turkey's role in the project.

Crisler listed the key developments in the F-35 programme during 2014:

- The initiation of tests on the 3I and 3F versions of the software,
- The delivery of the first two aircraft to Australia,
- The completion of the first test programme performed on an aircraft carrier,
- The completion of tests on the 2B software, will be used on the F-35 aircrafts of the US Marine Corp as part of their initial operational capabilities, and
- The continuing decrease in the overall costs of the programme.

An information sheet distributed during the press meeting noted that the expected cost for the F-35 was \$85 million for 2018, which corresponded to a cost of \$75 million based on present-day exchange rates.

The most critical development to date in 2015 has been the production of the first aircraft at the production line in Italy. Crisler went on to list the expected developments for 2015 as follows:

- Naval trials will continue with the F-35B and F-35C.
- The US Marines will declare that the aircraft has reached the desired operational capabilities, and begin using the F-35.
- Denmark will announce its selection of the F-35 as its fighter aircraft, which Crisler expects to take place towards the end of 2015.
- Norway will receive its first delivery of F-35s.
- The 9th and 10th stages of the first low-intensity production agreement, comprising the production of 150 aircraft, will be signed in 2015.

The F-35 has completed 65 percent of its flight tests and verification programme. Recent developments concerning the aircraft's international customers include the following:

- After Israel and Japan, the Republic of Korea became the aircraft's 3rd FMS customer.
- Australia increased its order of F-35s to 72 aircrafts.
- Australia's and Norway's aircrafts advanced further on the production line; their production is expected to be completed in 2015.
- The Israeli Air Forces has ordered its second fleet of F-35 aircrafts.
- In the following five-year period, 50 percent of all deliveries will be made to international customers.

Crisler also described their cost reduction activities. Lockheed Martin, BAE Systems and Northrop Grumman are using \$170 million of their own resources in studies aiming to decrease the



Top to bottom, PAC-3, PAC-3 MSE and THAAD missiles



Mr. Jack R. Crisler, Vice President, F-35 Business Development and Strategy Integration at Lockheed Martin together with Mr. Billie Flynn, senior experimental test pilot for Lockheed Martin

cost of the F-35. Within the frame of these studies, the companies are reviewing the materials, production processes and supply chains involved in the manufacture of the F-35. Commenting on the F-35 from a pilot's point of view, Billie Flynn stressed that the basic characteristics of the fifth generation aircraft cannot be achieved by previous generation aircrafts through

modernization. Noting that the sensor fusion feature of the F-35 exists in no other plane except the F-22, Billie summarized the F-35's advantages as follows: "It can see everything on the battlefield, while remaining unseen to others. Unlike previous aircraft, the F-35 does not just make patrol flights; it has control over the entire battlefield."

Hit-to-Kill for Effective Missile Defence

At Lockheed Martin's second press event, Alan Merbaum from Lockheed Martin's International Business Development Department described the advantages of the Patriot PAC-3 air defence system's hit-to-kill technology. Air defence missiles generally neutralize their targets by activating their warheads within close range, and damaging the target through an explosion or a shrapnel effect. The PAC-3 missile, on the other hand, destroys its target with direct hits. Merbaum compared this to two bullets striking each other in mid-air. The hit-to-kill requires the missile to be guided accurately against its target, for which the guidance algorithms must operate very rapidly, and the missile must possess very high manoeuvrability. Another important requirement is that the missile be able to strike the target with high energy. Merbaum especially noted that the energy required to neutralize nuclear and chemical warheads was even higher, and that this energy can only be achieved through the hit-to-kill technology. Another point mentioned by Merbaum was that solutions other than the hit-to-kill approach results in debris and remains scattering over a larger area, while the hit-to-kill solution leads to a considerably less scattering of debris.

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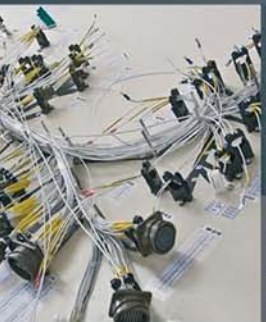
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An Acoustic Solution for Security from Siteptalia

In certain cases, the operational requirements of armed forces and security forces may require them to ensure the safety of facilities and ships without inflicting permanent harm or damage upon sources of threat. For example, it may be necessary to change the course of a civilian boat approaching a military ship without destroying it, or, if the boat does not comply to warnings, to neutralize the persons on-board without harming them. During the exhibition, Siteptalia, which has signed an agreement with Selah Shipyard regarding a data distribution system, featured a product that meets this specific security requirement at its stand. We had the opportunity to obtain information about the MASS CS-424 Stabilized Multi-Role Acoustic System, from Giovanni Morelli, the Deputy General Manager of Siteptalia. Morelli described the MASS CS-424 as a defence system that does not harm or adversely affect human health. The system can identify potential threats via its integrated camera, and send audio warnings over long distances. If the target continues to pose a threat, the system can cause temporary deafness by emitting high noises; dazzle and disorient the target with its high-power searchlight; or cause temporary blindness with its laser. Morelli said that the stabilization feature of the system allows it to be used not only on fixed facilities, oil wells or pipelines, but also on ships and land vehicles. The system is in active use in anti-piracy efforts and operations off the coast of Somalia. Morelli emphasized that



the system causes no prolonged health-related problems, and that consequently its use does not raise any legal issues.

The system's technical specifications are as follows:

- Audio system range: 3000 m
- Sound pressure: 156 db (at 1 m)
- Three-axes auto-stabilization, automatic target tracking
- Searchlight with 3,500 m range and 12 Mcd beam

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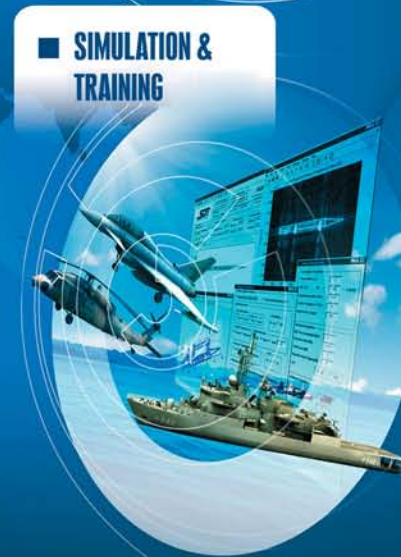
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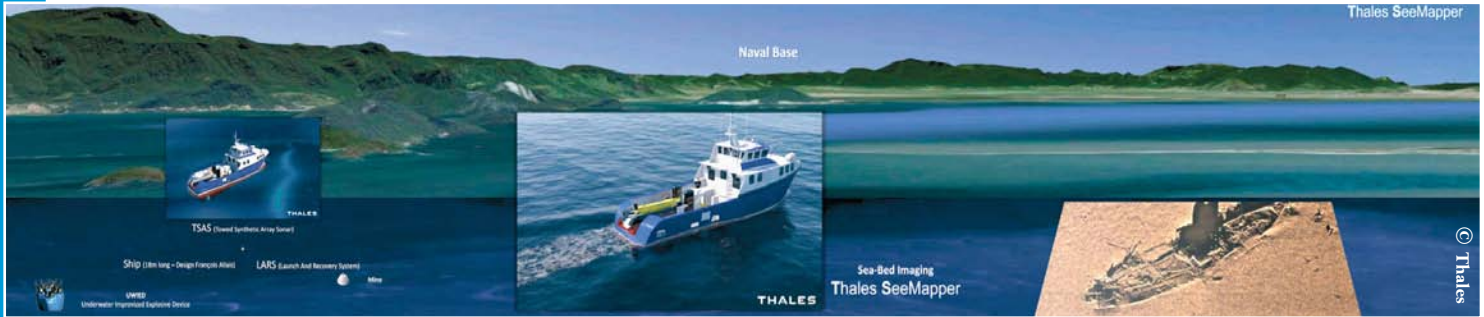
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Thales Focused on the Underwater Acoustics

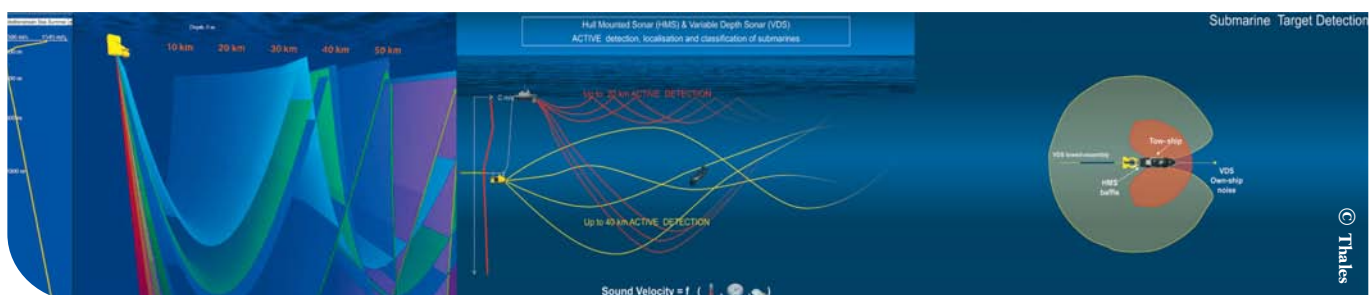
Thales held a press conference on May 6 to introduce the gathered participants to its underwater acoustic solutions. Andre Buhad, Thales Senior Sonar expert, spoke about Thales' Bluewatcher body-mounted sonar, CAPTAS-1 variable depth sonar and SeeMapper sea bottom imaging systems.

Thales proposes the Bluewatcher and CAPTAS-1 duo as an underwater acoustic solution for small tonnage ships such as the open sea patrol boats. Parameters such as sea water temperature and salinity rate impact upon acoustic wave emissions. For example, in a scenario in which only the body-mounted sonar is used, acoustic waves are unlikely to be able to go below a certain depth due to environmental conditions. For this reason, Thales suggests the use of CAPTAS-1 and Blue-

watcher in tandem. Bluewatcher has been adapted from the submersible sonar developed by Thales for helicopters, with low volume and weight being primary goals. Bluewatcher has a sensor aperture of 70 cm, and the disadvantage of such a small sensor is eliminated with the application of an adaptive beam forming method that provides the same performance as a 140 cm sensor aperture. Operating at a bandwidth of 3-5 kHz, Bluewatcher is capable of detecting submarines and issuing warnings about torpedoes heading towards the platform, and can be operated by a single person. Bluewatcher also offers certain capabilities for the surface, being capable of detecting surface objects such as containers, as well as noisy platforms such as speed boats, from a distance of 18 nautical miles.

Fitting into a standard container with all of its auxiliary units, CAPTAS-1 is able to submerge to a depth of 120 m. Depending on the sea water conditions; the detection range of CAPTAS-1 varies from 20 to 30 km. Mapping the sea floor using acoustic waves, Thales SeeMapper undertakes a critical task. The acoustic signatures of submarines are among the greatest secrets kept by the naval forces, and one of the methods used to acquire these traces is to place sensors on the sea floor close to common submarine sea routes. Therefore, the sea floor should be scanned at regular periods, and images should be compared in order to identify if any activity has taken place, and SeeMapper is used for this very purpose. SeeMapper can also be used for the detection of mines and hand-made explosives

placed underwater, as well as for identifying economic assets such as underwater oil reserves. When integrated onto a vessel navigating at a speed of 8 nautical miles/hour, SeeMapper can display an area measuring 2.4 km in two 150-m strips at a resolution of 3.5x5 cm every hour. The system operates on the basis of the synthetic aperture sonar principle. Its ability to take pictures from different points improves the resolution and raises system's probability of detecting the objects closer to 1. SeeMapper adjusts its direction so as to display the sea floor, regardless of the sea state. SeeMapper is also capable of detecting automatically differences between images taken at different times, which are carried out at the analysis centre inland.



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The USET Centre was established based on an agreement signed by the Undersecretariat for Defence Industries (SSM) with Telespazio and Thales Alenia Space within the frame of the GÖKTÜRK-1 project. The nearly €100 million investment budget required for the centre was provided by the SSM and TÜRSAT Inc., an organization affiliated to the Ministry of Transportation, Maritime Affairs and Communications. The land and the infrastructure of the facility, for which the foundations were laid on October 29, 2011, were all provided by TAI, which will maintain operating rights for the facility. The centre comprises 9,800 square meters of enclosed space and 3,800 square meters of class 100,000 clean room. The centre can recreate all of the mechanical, thermal, acoustic and electromagnetic environments to which satellites are exposed during launch, and can be used for all the necessary qualification tests. The centre will thus allow systems designed and produced to operate in space to be subject to a comprehensive evaluation and verification process prior to launch. For which the following infrastructure and capabilities have been provided:

- A Thermal Vacuum Chamber (TVAC)
- A Compact Antenna Test Room (CATR)
- An Acoustic Chamber
- A Chamber for testing Electromagnetic Interference (EMI) and Compatibility (EMC)
- Mass and Mass Centre Measurement Devices (MPI/MCI)
- Vibrational Test System
- Infrastructures for Opening Solar Panels
- Chambers for Producing Blankets (MLI) used for Satellite Protection

The centre can be used to carry out simultaneously the assembly, integration and testing activities of satellites up to 5 tons in weight, all of which will be performed by TAI's own technical teams. Having completed testing procedures, satellites will then be taken from the airport operated jointly by TAI and 4th Main Jet Base Command to their launch area. The connection between the centre and the airport will remove the need to transport the satellites by land, which presents a great advantage in terms of safety, cost and risk alleviation. The USET Centre will commence performing the first tests of the GÖKTÜRK-1 satellite that arrived at the centre on May 7.

TAI Opens Turkey's Doors to Space

TAI'S Space Systems Integration and Test (USET) Centre at Kazan, Ankara, was opened with a ceremony on May 21 with the participation of Recep Tayyip Erdoğan, President of the Turkish Republic. Turkey – which has conducted important activities and initiated large projects in the area of satellite design and production in recent years – now owns a fully-equipped facility where it can carry out the integration and testing of its satellites.

Vehbi TUNCA / v.tunca@milscint.com

USET to Provide a Variety of Services

In addition to President Erdoğan, the opening ceremony was attended also by General Hulusi Akar, the Commander of the Turkish Land Forces, on behalf of the Commander of the Turkish Armed Forces; Dr. İsmet Yılmaz, the Minister of National Defence; Feridun Bilgin, the Minister of Transportation, Maritime Affairs and Communications; Sebahattin Öztürk, the Minister of Interior; Dr. Mehmet Müezzinoğlu, the Minister of Health; General Akın Öztürk, the Commander of the Turkish Air Forces; General Abdullah Atay, the Commander of the Turkish Gendarmerie General Command; General Abidin Ünal,



Dr. Celal Sami Tüfekçi, Director of Space Programs, SSM



Mr. Feridun Bilgin, Transportation, Maritime Affairs and Communications Minister



Dr. İsmet Yılmaz, National Defence Minister



Mr. Recep Tayyip Erdoğan, the President of Republic of Turkey

the Commander of the Combatant Air Force and Air Missile Defence Command; Prof. Dr. İsmail Demir, the Undersecretary for Defence Industries; and Prof. Dr. Ensar Gül, the General Director of TÜRKSAT; as well as military attachés, company officials and many other important invitees.

The first speech of the ceremony was given by Dr. Celal Sami Tüfekçi, the Head of the Space Department at the SSM, who provided information on the GÖKTÜRK-1 project: "The GÖKTÜRK-1 satellite will be capable of taking high resolution images around the world, without limitations, and will have a mission lifespan of seven years. With this satellite it will be possible to take over 800 images a day. The satellite systems include a satellite equipped with a half meter resolution camera, a fixed ground station, and a mobile ground station.

The GÖKTÜRK-1 satellite was produced at Thales Alenia Space company's facilities in France, and TAI has also contributed to the production of GÖKTÜRK-1, producing the panels of the satellite. In addition to this, ASELSAN is the sub-contractor for the ground station, while TÜBİTAK BİLGEM is constructing the crypto unit."

Speaking about the USET Centre, Dr. Tüfekçi said: "I hope that in the future the USET Centre will become a centre that, based on our objective of full independence in space technologies, will allow us to carry out the integration and testing of our own satellites, to engage in cooperation-based activities at an international level, and to perform the sale of satellites to foreign parties. In the Satellite Launch System project, which we are conducting together with the SSM, our aim is to send satellites into space using exclusively our own national capabilities. We have already completed the first stage of the project, and hope that we will be able to make even more progress soon. As you

may well be aware, preparations have also been initiated, through the joint activities of our Ministry and other Ministries, for the establishment of a Turkish Space Agency. This agency will coordinate activities in the area of space technologies, as will ensure the effective and efficient use of resources. Activities for the establishment of this space agency will soon be initiated.

Turkey to Become one of the World's 10 Satellite-Producing Countries

Taking the floor after Dr. Tüfekçi, Feridun Bilgin, the Minister of Transportation, Maritime Affairs and Communications provided a summary of Turkey's satellite activities to date: "We have already reached the final stage in the preparations concerning the establishment of a Turkish Space Agency, which will coordinate all activities in the area of space. We have recently identified a significant shortage of qualified workers in the area of satellite and space technologies, and have thus taken the necessary steps to create a qualified human resource in this area. During the production stages of the satellites launched by TÜRKSAT we have sent our engineers to other countries, and especially to France and Japan, so that they gained more knowledge and experience in the subject by taking part in satellite design and production activities, and other ministries have also taken steps to increase their capabilities in this regard. In accordance with the agreement signed in the presence of your excellency on December 15, 2014, the production of TÜRKSAT 6A, Turkey's first nationally-produced communication satellite, will be carried out in this centre through the work of these engineers and companies, and with the contribution of institutions such as TÜBİTAK, ASELSAN and



TAI. Hopefully, once we complete this project in 2019, Turkey will become one of only 10 countries in the world capable of producing its own satellites."

An Important Turning Point

Dr. İsmet Yılmaz, the Minister of National Defence, speaking during the ceremony, said: "Previously, we sent the GÖKTÜRK-2 satellite to France to test whether it would be able to endure the



harsh and difficult conditions of space, as at the time, we did not have such facilities or capabilities in Turkey. As of today, we will no longer be obliged to send our domestically-produced satellites abroad for testing. The USET Centre – the investment costs of which were covered by the SSM and TÜRKSAT and which will be operated by TAI – represents an important turning point for our sector. At this centre we are opening today, we will carry out the first tests of our GÖKTÜRK-1 satellite. This satellite will then enter the inventory of the Turkish Air Forces (TurAF) Command, and become Turkey's first reconnaissance and surveillance satellite with a resolution below one meter. Today, our country has more capabilities than it had in the past, and is also in a stronger position than ever before."

Facility is a First Step to Space

The final speech of the ceremony was given by the President Recep Tayyip Erdoğan, who described his objectives for the defence and aviation sector: "Similar to our other defence industry organizations, TAI has made great progress in the past 12 years. TAI was established initially in 1984 for the manufacture of F-16s. In 2005, both the structure and management of this organization was nationalized, which represented the launch of a new period. Today, TAI has become one of the world's most important organizations in the area of aviation. Having entered

the list of the world's 100 largest defence companies, TAI is also known to have entered the league of giants and has become a source of pride for our country. Our objective is to enter this list with at least 20 more companies. As you may well be aware, 42 of the world's 250 largest contractor companies are Turkish companies, and I believe that we can achieve similar success in the defence sector. TAI has assumed a pioneering role in this regard by entering this list; it is now time for other companies to follow suit."

Describing his assessments of the sector, President Erdoğan shared his thoughts concerning the attitudes of foreign companies towards Turkey, based on his observations of the ATAK project: "When I took the first steps for the ATAK project, holding our first meetings with officials in Italy, I had many questions in my mind. As you may well be aware, global investors until then had always avoided engaging in joint production with Turkey. No investors considered the option of carrying out joint production in our country. However, AgustaWestland and Finmeccanica were willing to work together with us on this project; and thanks to them, we were able to take the first step."

Noting the progress made by the defence and aerospace sector in recent years, President Erdoğan said: "The story of TAI is similar to Turkey's own story. In 2000, with a \$90 million turnover and 2000 employees, this company was on the verge of closing. When we first formed our government, we assessed the situation with Mr. Vecdi Gönül, the Minister of National Defence at the time, and decided to take a number of resolute and determined steps to resolve this issue. Today, with a turnover of more than \$1 billion and 5000 employees, TAI has become the world's 80th largest company. We must not think of TAI as just a collection of facilities in Kazan; this is the place that gives dynamism to OSTİM. Similarly, we see that the activities of the companies in Ankara's organized industrial zone have grown remarkably, with the volume of business at OSTİM increasing 10-fold over the past 12 years. Today, the volume of business transferred by TAI to its subsidiary industries is greater than the total company turnover in 2005. This large business volume has paved the way for the establishment of the Organized Industrial Zone Specializing in Aviation at Kazan, which is truly an example of success. By 2023, we hope to see TAI grow even further, taking part in even larger projects. Recently, the Defence Industry Executive Committee (SSIK) has taken a decision regarding the national fighter aircraft; we want to see this aircraft make its first flights by 2023, and be added to the inventory of the TurAF by 2030."

President Erdoğan concluded with his thoughts on the USET Centre, "For us, this facility is truly Turkey's first step into space."

Following the speeches, the President and his delegation toured the USET building, and obtained information from the officials about its capabilities. The official delegation and members of the press then donned special clean-room suits and entered the clean room area where the GÖKTÜRK-1 satellite is located, and made the official opening of the USET Centre.



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TOBB Turkish Defence Industry Council Convenes under the Slogan “Let’s Find Solutions to our Problems”

The 28th Ordinary Meeting of the Turkish Defence Industry Council of the Union of Chambers and Commodity Exchanges of Turkey (TOBB) was held on May 22 at the TOBB Social Facilities Conference Hall. Following the traditional moment of silence and the singing of the national anthem, the council, which this year convened under the slogan “Let’s Find Solutions to our Problems”, served as a platform for discussions of the current problems in the sector. In addition to the members of the council, the meeting was also attended by SASAD Executive Board members and by officials from the Ministry of National Defence (MSB), the Ministry of Science, Industry and Technology, the Ministry of Economy, the Ministry of Customs and Trade, the Undersecretariat of the MSB, the Undersecretariat for Defence Industries (SSM), the Turkish Armed Forces Foundation (TAFF), the Public Procurement Authority and Turkish Eximbank.

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The opening speech of the meeting was given by Yılmaz Küçükseyhan, the President of the Council, who began his speech by saying: “We are touching on a very interesting subject today: ‘Let’s Find Solutions to our Problems.’ Although we do not have monumental problems, there are still certain issues that need to be addressed and resolved at the highest level.” Following his brief comments, Küçükseyhan introduced the civil servants participating at the meeting. His referring them by their first names, was perceived as an indication of his close communication and contact with them. Following the introduction, the report entitled the “2014 Defence and Aerospace Performance” prepared by the Defence and Aerospace Industry Manufacturers Association (SASAD) – as the first item on the agenda – was presented to the Council. The council continued with the agenda, holding comprehensive discussions on each issue, raising questions and obtaining the views of officials from the relevant authorities on possible solutions. The agenda items of the meeting were listed as follows:

1. Medium- and High-Level Technology Industrial Products (Relevant Authority: Directorate General for Industry of the Ministry of Science, Industry and Technology).
2. Law number 5746 Concerning the Support of Research and Development (Relevant Authority: Directorate General for science and Technology of the Ministry of Science, Industry and Technology).
3. Increasing the Efficiency of Clusters (Relevant Authority: General Directorate of Exports of the Ministry of Economy).
4. Inter-State Sales and Credit System (Relevant Authorities: Ministry of Economy, SSM).
5. Internal Processing Regime – Internal Processing Licenses (Relevant Authorities: Ministry of Customs and Trade, Ministry of Economy).
6. Regulations Concerning Laws Numbered 5201 and 5202 (Relevant Authority: Deputy Undersecretariat for Technology and Coordination of MSB).
7. Views and Recommendations Concerning the Approval of Projects and Batches (Relevant Authority: SSM).
8. The high sums of recoverable VAT that are transferred due to Article 13, paragraph (f) of VAT Law Numbered 3056 (Relevant Authority: Ministry of Finance).

Concerning the 15 percent price advantage provided to domestic producers of Medium- and High-Level Technology Products, which constituted the first item on the agenda, Küçükseyhan said: “The Procurement Law contains vague expressions, with many ‘cans,’ ‘mights’ and ‘mays’ that everyone tends to interpret differently to suit their own purposes. With the efforts of our council and of civil servants, we have made significant advances in this issue ... There is now a list of all the technologies in question. In November, we will provide our views and feedback related to this list.” Speaking on the second item on the agenda, Küçükseyhan said that

they had previously published a four-page report describing their views on Law Number 5746 concerning support for R&D activities, and that certain improvements were necessary in this law that include:

- Including thesis and research activities carried out for feasibility assessment purposes within the scope of the SAN-TEZ programme.
- Excluding the incentives provided to R&D Centres from the distribution of profit.
- Providing support for investments carried out in innovative areas in Turkey.
- Including project-related trainings and seminars received by R&D personnel in Turkey and abroad within the scope of general expenses.
- Preparing financial reports taking into account the three-month period nearest to the time the R&D activities were initiated.
- Carrying out inspections of R&D centres that satisfy certain criteria over longer periods of time (e.g. once every five years).

Küçükseyhan informed the participants that they were currently preparing an official communiqué on the exclusion of incentives to R&D centres from the distribution of profit, "From now on, all exemptions and expenditures related to R&D centres will be used exclusively for the development of the R&D Centre, which will be monitored by the Ministry of Finance." Noting that the investments into innovative areas in Turkey should also be considered within the frame of R&D support, Küçükseyhan said: "Our council has prepared a detailed report on this subject. What I have been saying is clearly explained and elaborated in that report," replying to a request for more details from a ministry official.

Küçükseyhan also informed the participants that the omnibus bill currently being prepared and discussed in the Turkish parliament contained articles allowing institutions and organizations with 10 or more designers to benefit from the rights normally granted to R&D centres related to personnel and facilities.

Emphasis was on Clustering

Item three on the agenda, related to the subject of clustering, highlighted the broader definition of the concept in the Ministry of Economy, and it was understood that the notion and perception of clustering varies somewhat between different organizations in the defence and aerospace sector.

Referring to the fourth item on the agenda during his speech, Fatih Sarıtaş, the Head of the Middle East and Africa Office in the International Cooperation Department of the SSM, described the various studies and preparations that are underway on the subject of interstate sales, and stated that his department would continue to work on the regulatory changes required related to this issue in the new legislative year. Concerning the mechanisms of defence export credits, Sarıtaş stated that they are currently in talks with the Undersecretariat of the Treasury and Turkish Eximbank to determine the details of such a mechanism.

The fifth item on the agenda concerned the fact that minor amendments to the Internal Processing Regime (DİR) Communiqué and other relevant regulations could contribute significantly to the competitive strength of aviation and space companies. According to Official Statement numbered Export: 2006/12 DİR, companies operating in the space and aviation sectors are required to obtain an Internal Processing License (DİİB) if they are to import or export structural parts of planes and helicopters, as well as materials used in plane landing gear and engine parts. The application and approval processes for the export of such materials can take up to eight

weeks; and the sector wishes to see this time period decreased to a maximum of four weeks. The representatives from the Ministry of Economy and the Ministry of Customs and Trade said that they were aware of the sector's demands in this regard, and that they were conducting the necessary studies to resolve this matter.

Talks related to the sixth item on the agenda discussed the need to ensure that individuals visiting facilities subject to security certificates are controlled by security units through their identity card number and personal data, as is the case during booking in and registration in hotels. The following view was expressed during the discussions on this issue: "In certain cases, members of foreign intelligence agencies may enter companies and gather intelligence under the guise of conducting business activities. The MSB requires visiting companies to obtain special permission before visiting companies; however the bureaucratic processes involved mean that obtaining permission for spontaneous visits is often problematic". The council decided that this subject should be addressed by way of a coordinated approach by the MSB, SSM and SASAD.

Coming to the seventh agenda item, the participants of the meeting discussed the fact that the official approval processes of projects can often take years, and that companies and sub-contractors – especially those which have completed their activities in a timely manner – find themselves in the difficult position of not being able to receive their payment for long periods of time. The participants from the sector stressed in particular that public institutions should assume responsibility for the delays they cause, and Küçükseyhan said that they had already included this topic on the agenda of an upcoming meeting with the SSM.

The eighth agenda item related to a subject that has been raised in many meetings in the sector in recent years, namely the "high sums of recoverable VAT that accumulate due to Article 13, paragraph (f) of VAT Law numbered 3056". To reduce the sum of recoverable VAT, it has been suggested that the last lines of Article 13, paragraph (f) of the Value Added Tax Law numbered 3056 should be amended as follows: "The value added taxes related to the provided products and services shall not be paid by the relevant institutions. This tax, which is not collected from the taxpayer, shall be deferred, abated or returned, as required. The methods and procedures regarding the implementation of the above clause shall be determined by the Ministry of Finance". Küçükseyhan said that the total sum of recoverable VAT in the sector has reached \$300 million.



At the end of the meeting, Ferhat Yenibertz, the Head of the Quality and Strategic Management at the SSM, shared his general assessment of the proceedings, emphasizing the importance of exports. "We will only be able to achieve our export goals by successfully exporting the large platforms that our companies have worked on extensively, but for which we have not yet initiated export activities ... For this reason, exports is a subject for which we have to take action at the highest levels ... We often participate in meetings abroad and take part in exhibitions ... Now, if we want to be part of this market, we must abandon completely, both in mind and in our processes, the old and stolid bureaucratic mentality in favour of a more aggressive approach; and this approach must materialize both in our performance numbers and our employees."

Following the completion of discussions on all agenda items, Yılmaz Küçükseyhan, the President of the Council, concluded the meeting by thanking all the participants for their contributions.

SASAD Takes a General Picture of the Sector

The report prepared by SASAD entitled "2014 Defence and Aerospace" contains a broad spectrum of statistical information related to the sector, with the main performance indicators listed as follows:

- Turnover : \$5.101 billion
- Foreign Sales Revenues : \$1.855 billion
- Current Orders : \$11 billion
- Imports : \$1.351 billion
- R&D Investments : \$0.887 billion
- Employment : 31,242 employees
- Turnover per Person : \$163,273

The report also included two notes concerning this performance data. The first of these notes pointed out that the foreign sales revenue figure had been determined by adding the \$1.650 billion figure provided by the Defence and Aerospace Industry Exporters' Association (SSI) to the \$205 million coming from other foreign currency earning activities, which are not normally considered as exports according to regulations. The second note concerned the employment data related to the sector, stating that in this year's report, sub-contracted workers in shipyards had not been included in the total employment figure. Civil aviation and space activities accounted for \$650 million of the sector's turnover, with the turnover of the individual sub-sectors presented in Figure 1, and the changes in the sector's total year-on-year turnover presented in Table 1.

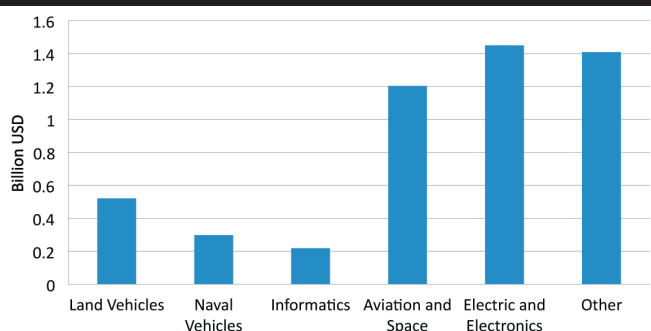


Figure 1. The breakdown of sector turnover by sub-sectors

Table 1. Change in sector turnover between 2010 and 2014

Year	Total Turnover (Billion dollar)	% Change (Compared to 2010)	% Change (Annual)
2010	4.174	-	-
2011	4.400	5.41	5.41
2012	4.800	15	9.09
2013	5.076	21.6	5.75
2014	5.101	22.2	0.5

The sector's foreign sales revenues by region and country were as follows: \$581 million in the United States, \$418 million in Europe and \$856 million in other regions and countries. The changes in these foreign revenues over the past five years are presented in Table 2. The breakdown of orders by sub-sectors is presented in Figure 2.

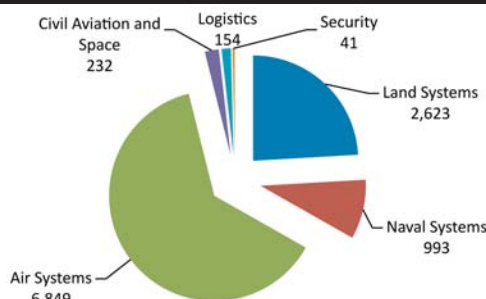


Figure 2. Breakdown of orders according to sub-sectors

Table 2. Change in foreign sales revenues between 2010 and 2014

Year	Total Turnover (Million dollar)	% Change (Compared to 2010)	% Change (Annual)
2010	853	-	-
2011	1.100	28	28.96
2012	1.262	47.95	14.73
2013	1.570	84.02	24.38
2014	1.855	117.47	18.75

Some import figures for the past three years are presented in Figure 3, while some import numbers related to the sector are presented in Figure 4.

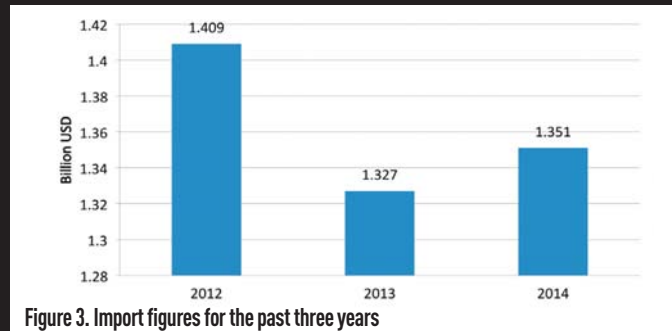


Figure 3. Import figures for the past three years

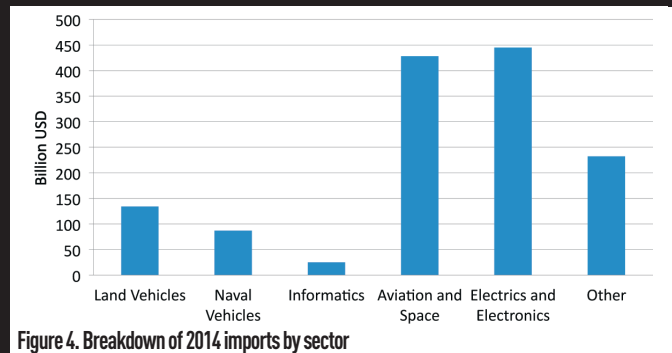


Figure 4. Breakdown of 2014 imports by sector

One aspect of the report that differs from its previous versions is that R&D expenses are now reported in two different categories, which are "Research and Technology" and "Research and Development". Within the total \$887 million expenditure, \$733 million (\$513 million from project incentives, and \$220 million from company resources) has been spent on research and development, while \$ 154 million (\$24 million from project incentives, and \$130 million from company resources) has been spent on research and technology.

The change in R&D investments over the past five years is shown in Table 3.

Table 3. Changes in R&D expenses over the past five year period

Year	Expenses from own Resources (million dollar)	Project Incentives (million dollar)	Total Expenses (million dollar)
2010	143	523	666
2011	221	451	672
2012	200	572	772
2013	237	690	927
2014	350	537	887

Table 4 shows the employment and the turnover per person in the different sub-sectors.

Table 4. Employment and turnover per person in different sub-sectors

Sub-Sector	Employees (number)	Turnover per Person (USD)
Land Vehicles	2,537	205,312
Naval Vehicles	768	387,621
Informatics	1,761	124,188
Aviation and Space	6,801	177,104
Electric and Electronics	6,949	208,754
Other	12,426	61,102

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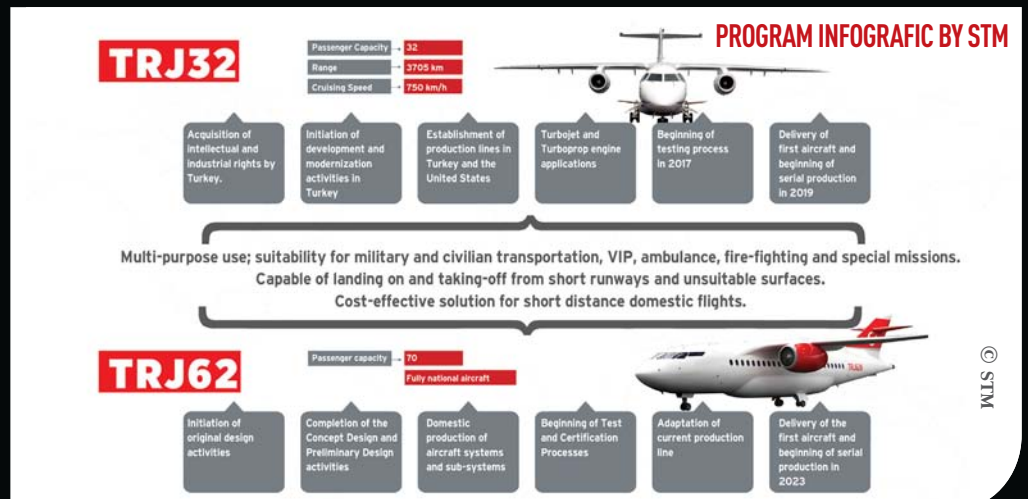
April 27. The project is expected to be carried out in two stages: The first will involve the modernization of the Dornier 328 model aircraft with 30 to 33 passenger capacity that are in active use in various countries, so as to accelerate the project-related processes. This will then be followed by the production of the modernized models in a facility in Turkey under the names TRJ-328 (jet) and T-328 (turboprop). The aircraft will be produced through a technology transfer model, with all intellectual and industrial rights pertaining to the aircraft belonging to Turkey. In February, SNC purchased the 328 Support Services GmbH company, which was the owner of the intellectual property rights and a type certificate for Dornier 328 aircraft. The production of the aircraft sub-systems is expected to be carried out by Turkish aviation companies under the lead of STM. The TRJ-328 will have a range of 3,720 km and a flying speed of 750 km/hour, and will require a runway of only 1400 m for take-off. The T-328, being the turboprop of the same aircraft, will have a speed of 620 km/h and a range of 1,850 km. The second stage of the Regional Aircraft Project will involve the design and development of an entirely original passenger plane, with a passenger capacity of 56 to 64. The aircraft will also be produced in two different engine configurations, with the jet engine version being named TRJ-628 and the turboprop engine version named TR-628. This aircraft is expected to fly by 2023, with the

speed, range and other technical details of the aircraft to be determined during the design and development stage. All intellectual and industrial property rights pertaining to the TRJ-628 and TR-628 aircrafts will belong to Turkey. The companies 328 Support Services GmbH, 3S Certification LLC and 3S Engineering LLC – all of which are subsidiaries of SNC – will also support the establishment of a 21G aircraft production facility certified by European Aviation Safety Agency (EASA). The introductory film shown during the ceremony suggested that activities related to the TRJ-328 and T-328 aircraft will serve to decrease the period of time required for the development of an entirely original aircraft from 14 years to six. The TRJ-328 and T-328 aircraft, as well as the TRJ-628 and TR-628 aircraft, will, in addition to being used as passenger carriers, also be employed in ambulance, maritime patrol, VIP, military transport and intelligence gathering roles, depending on the requirements of the public and private sector.

A Preferred Product will be Developed

The Regional Aircraft Presentation Ceremony began with a speech by Feridun Bilgin, the Ministry of Transportation, Maritime Affairs and Communications. Emphasizing the importance of the aviation sector, Minister Bilgin said: “We have gathered here today to initiate an important project that will allow Turkey to become a self-sufficient and a leading country in the area of aviation. Developed countries prioritise scientific and technical studies especially in the areas of aviation and space technologies. Looking at the most economically developed countries in the world, we can see that the aviation sector occupies an important place in their economic strength, and this is because aviation products – which offer very high added value – not only contribute significantly to national economies, but also support the development of other sectors through a multiplier effect, while at the same time promoting new scientific and technological advances.” Minister Bilgin said that the Turkish aviation sector has

reached a level at which it can develop the regional aircraft on its own, saying: “Our aviation sector companies are now capable of producing and designing at an international level, having become suppliers of critical technologies to large players in the global market ... the Regional Aircraft Project was brought to life based on such developments; and it is now time for us to bring all our capacities and capabilities together under the coordination of a Turkish company, and to produce our own indigenous aircraft through a common synergy. Within the frame of this project, conducted by the Ministry of National Defence (MoND), the Undersecretariat for Defence Industries (SSM) and other Ministries, we will focus on combining all our capacities and capabilities in the areas of aviation and space – including both military and civil capabilities – in order to create a sustainable ecosystem for the aviation sector.” Minister Bilgin concluded his speech, saying: “Our activities will focus on ensuring that the produced aircraft will not only be able to compete on the in-



ternational market in terms of capacity, quality and price, but will also become preferred products on the market.”

Our Objective is to Elevate our National Industry to its Highest Level

Also speaking during the ceremony was Dr. İsmet Yılmaz, the Minister of National Defence, who stated: “This project will begin with the production of an aircraft model based on a currently used and highly reliable plane that has no certification-related issues, and which will

Demirağ, stated that: “Seventy one years and a day ago on May 26, 1944, the late Nuri Demirağ and his friends set off on their journey to initiate, despite all obstacles, an important project that would greatly honour the then new and young Republic. On May 26, 1944, the NuD38 aircraft they had developed made its first test flight between Istanbul and Ankara. That said, having great vision, as well as the dedication to implement this vision, is often not sufficient by itself. Those who were in charge of governing the coun-

Describing the model of the project, the Prime Minister Davutoğlu noted that project-related activities have gained momentum in recent months, and that work is currently being conducted to shorten the transition period, such that activities can focus, as soon as possible, on a certified and reliable model from which further studies can be carried out. Prime Minister Davutoğlu emphasized the importance of the project by saying: “Every part of Anatolia will be integrated with one another. This is a national unity project that will

would serve to increase Turkey’s technical capacity and technological knowledge. In this regard, we are now entering a new period in which both military and civilian requirements will all be met through a broad-based, comprehensive approach.”

Following the speeches, cooperation agreements between STM and SNC were signed by Prof. Dr. Arif Ergin, the Chairman of the Board at STM; Davut Yılmaz, the General Manager of STM; Eren Özmen, the Chairman of the Board at SNC; and Fatih Özmen, the Chief Executive Officer of SNC. In attendance were Prime Minister Prof. Dr. Ahmet Davutoğlu; Feridun Bilgin, the Minister of Transportation, Maritime Affairs and Communications; Dr. İsmet Yılmaz, the Minister of National Defence; Fikri Işık, the Minister of Science, Industry and Technology; Prof. Dr. İsmail Demir, the Undersecretary for Defence Industry; and M. Hamdi Yıldırım, the Deputy Undersecretary of the Ministry of Transportation, Maritime Affairs and Communications.

After the ceremony, the Prime Minister was given a symbolic boarding pass for the first flight of the regional aircraft, which is planned to take place on October 29, 2019, between Konya and Yüksekova. Drawing attention to the date of the boarding pass, Prime Minister Davutoğlu stated: “I consider this date to be a promise by the officials who have given me this boarding pass. I will be following whether this promise is eventually kept.”



serve to accelerate the development to the original regional aircraft. Following this initial stage, we will initiate the design and development of an entirely original national passenger plane, in parallel to the project for the development of a national fighter aircraft. We expect both of these aircraft to be in the skies by 2023 ... Our goal in this project is to elevate our national industry to its highest level through the contribution of every company in our country.”

A National Unity Project

The final speech of the ceremony was given by Prof. Dr. Ahmet Davutoğlu, Prime Minister of the Republic of Turkey, who, commemorating Nuri

try at the time were unable to understand his vision, failing to appreciate his brave and bold steps to achieve this great ideal. This is the reason why 71 years later – and with a 71-year delay – we are discussing once again a project for the development of a 100 percent national aircraft. In this regard, I would like to respectfully commemorate Nuri Demirağ.”

Reminding of the opening of numerous airports in Turkey in recent years, Prime Minister Davutoğlu stated that they were working to ensure that there will not be “a single citizen in Turkey who cannot find an airport within a 100 km radius of where he/she lives”.

bring together every segment of society. Everyone will be able to fly anywhere, thus ensuring social integration at the highest level.”

At the end of his speech, Prime Minister Davutoğlu said that the project would contribute to both the civil and military sectors: “This project, which represents one step towards a large and integrated approach in civil aviation, will also contribute to the development of our national defence sector. For this reason, a decision was taken in the last Defence Industry Executive Committee (SSIK) to support this project, on the grounds that the experienced gained in these areas



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**Brigadier General Jozef Viktorin,
Defence Attache of Slovakia to Turkey:**

**“Modernization of
Our Armed Forces will be
Open to the Cooperation
of both Countries”**

General Necdet Özel, Commander of the Turkish Armed Forces paid an official visit to Slovakia between 15-17 April. During Gen. Özel’s visit, Lieutenant General (LTG) Ing. Milan Maxim, Chief of the Defence Staff (CHOD) of the Armed Forces of the Slovak Republic, welcomed him and his delegation with an official ceremony at Headquarters of Defence Staff of the Armed Forces. After personal and bilateral meetings, Gen. Özel also visited Martin Glvac, Minister of Defence of the Slovak Republic in Ministry of Defence (MoD).

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We had an opportunity to interview LTG Maxim during his visit to Turkey in the beginning of March and after reciprocally official visits of Chiefs of Armed Forces of two countries in a short period of time, assuming to get some concrete outputs from these visits, we, as MSI Turkish Defence Review, met Brigadier General (BG) Jozef Viktorin, Defence Attache of Slovakia to Turkey in Sheraton Hotel so as to learn the details about these visits.

Birol TEKİNCE: After bilateral cooperation launched with Turkey in 1993, bilateral visits between the armed forces of the two countries on the highest level were carried out almost in one month period. What are the concrete outcomes of the two visits?

BG Jozef VIKTORIN: Bilateral military relations between Turkey and Slovakia started officially in 1997 and almost all documents on military cooperation were signed during that period. From this time on, we have only positive experiences in our military relations with Turkey like your support in the process of Slovakia becoming member to NATO.

Mutual understanding is very important for good relations. The visits of Chief of General Staffs of both countries held one after each other in March and April 2015, have been very important not only for being the first official visit of the Slovak CHOD to Turkey, but also for developing the mutual understanding of the two countries as NATO allies and improving military cooperation.

The reflections of the visits will be in many areas.

Cooperation is planned to be started between the special forces of the two countries, of which extend will be mainly exchange of military exercise areas and facilities. This project will be started at the beginning of 2016 and continue for two years long period, including two or three activities from both sides.

Another outcome of the visits is the decision for cooperation in military education. Student exchanges will be realized for the military courses organized by the military academies of both countries for periods from 3 weeks to 5 months. Slovakia has interest in the Armed Forces Staff College and War Academy as well. The decision about



Lieutenant General Ing. Milan Maxim, Chief of the Defence Staff of the Republic of Slovakia and General Necdet Özel, Commander of the Turkish Armed Forces

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General Necdet Özel, Commander of the Turkish Armed Forces and Martin Gľvac, Minister of Defence of the Republic of Slovakia

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sending students will be made within a very short time.

Another topic of discussions between the two CHODs has been on sending observers to military exercises conducted by the armed forces of both countries. In 2015, Turkey decided to send observers to military exercise "Shield 2015" conducted in Slovakia.

I think that the most important outcome of the two visits is that both countries are ready to cooperate in different military areas up to the current requirements and needs. The mutual understanding between Slovakia and Turkey as NATO allies will lead them to improve their bilateral cooperation and relations every day.

Birol TEKİNCE: What do you expect from the results of the visits for future from the armed forces and defence points of view?

BG Jozef VIKTORIN: I can say that the most important result will be the development of a common understanding between the two countries in NATO level military operations. Exchange of military views on military

techniques in operational level and readiness for cooperation as allies for regional stability and security are very important issues for ally and friendly countries. Bilateral visits are very important for the future cooperation of armed forces. Visits are open gates for cooperation and we have to use these positive moments and try to know each other better from the military point of view. These are unique opportunities for both countries to start to practice military agreements back from 1997.

Birol TEKİNCE: LTG Milan Maxim said that despite the defence spending constraints of the Slovak Republic, she is ready to fulfil the modernization priorities through equipment barter deals, joint procurements, pooling and sharing or exchanges of experience and lessons learned. Was there any improvement on these offers?

BG Jozef VIKTORIN: It is not a secret that our armed forces are experiencing an extensive modernization process. We are ready to negotiate and cooperate with all partner and allies including Turkey. From

my perspective, the modernization process is a political issue under the responsibility of politicians and mainly of the MoD of Slovakia.

It is true that we have interested in the Turkish experience in modernization. We have also some practical experience with Turkish defence industry companies like ROKETSAN and ASELSAN from the past. The modernization process of our armed forces will be in the very close future opened to the cooperation of the defence industry companies of both countries.

I would like to mention here that the agreement signed two weeks ago between the MoD of the Slovak Republic and the USA on the procurement of 9 Blackhawk multifunctional helicopters to replace the old Soviet MI 17's proves that Slovakia is a truthful and active ally of NATO in the process of modernizing its army.

On behalf of our readers, we would like to thank Brigadier General Jozef Viktorin, Defence Attache of Slovakia to Turkey, for taking the time to answer our questions and for providing us with such valuable information.



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Birol Tekince, Coordinator
of Editorial Board, MSI TDR and
H.E. Alireza Bıkdeli, Ambassador
of the Islamic Republic of Iran

Iran - Turkey Cooperation Should Develop through Defence Industries

As the two most ancient and deeply rooted countries in the region, whose mutual border changed very little over the past centuries, Turkey and Iran have seen significant developments in the areas of bilateral cooperation and mutual security, particularly over the last 10 years. We had the opportunity to discuss these developments with His Excellency Alireza Bıkdeli, the Islamic Republic of Iran's Ambassador to Turkey.

Birol TEKİNCE: Can you provide us with a summary of the historic relationship between Iran and Turkey in the area of defence, particularly over the last 10 years? The last decade has seen significant developments between the two countries in economic areas; for example, the trade volume between Turkey and Iran has risen from \$1 billion in 2000 to \$10 billion in 2010, although there has been little development in the area of defence. Could this be, as some people claim, due to Turkey's NATO membership, or are there other factors involved?

Alireza BIKDELI: I believe that this is mainly an issue of mentality, which is shaped by various factors. Compared to various other periods, the relationship between the Islamic Republic of Iran and the Republic of Turkey are at a desirable level, especially in political and economic areas. Consultations between the institutions and authorities of the two countries are currently at a higher level than we have seen in the past. The President of the Turkish Republic Recep Tayyip Erdoğan's visit to

Tehran on April 7, as well as the 2nd High Level Cooperation Council Meeting organized between the two countries, are good examples of this.

With regards to the defence sector, both the Islamic Republic of Iran and the Republic of Turkey maintain a strong position in South Western Asia. Recent years have seen the most significant development between these two countries. The Turkish defence sector is unrivalled in the region in terms of production and product exports, while the defence industry of the Islamic Republic of Iran is unrivalled in the region in terms of innovation, creativity and its ability to meet the requirements of its armed forces.

This situation indicates that there is considerable room for cooperation in the area of defence. Military products constitute an important share of present-day global trade. If we overlook this capacity in the regional economy, it may not be possible to develop objectives and perspectives towards the future.

Just as the economic relations between the two countries have seen a previously un-

paralleled growth over the past 10 years, a similar capacity exists for the area of defence. Interactions and cooperation in the defence sector may provide both countries with the opportunity to take advantage of their particular strengths. Turkey and Iran have the two largest armies in the region, which means a large market potential, and interactions and cooperation may contribute to the realization of our long-term objectives.

It would be an unrealistic approach to try to explain the somewhat limited level of relations between the two countries in the area of defence based on Turkey's membership of NATO. In fact, Turkey has signed nearly 50 memorandums of understanding with other countries in the area of defence, and nearly 15 others in the area of training, the majority of which are not NATO members. In addition to this, NATO's legislation does not generally impose any restrictions on the relationships of member countries with other countries. Those determining defence policies can, with the aim of contributing to the national economy, take

advantage of this great potential within the frame of international rules. In addition, for each NATO member country, national interests have precedence over the country's NATO membership. The geographic and regional realities that these countries must deal with are also important considerations. The truth is that today, all NATO members are taking steps based primarily on their own national goals and interests. The attitudes and behaviours of leading powers in NATO, as well as their relations with other countries, clearly illustrate this.

Birol TEKİNCE: Turkey and Iran have the two oldest, largest and strongest armed forces in the region. How would you assess the current state of the relationship between these two armed forces? What type of cooperation is there between them? How can it be further developed?

Alireza BİKDELI: Despite the capacity of these two countries, and their good relations as neighbours, we can say that there has been almost no cooperation between the armed forces. The prevailing situation in South Western Asia has rendered integration between the Islamic Republic of Iran and the Republic of Turkey in military and defence areas an absolute necessity, and common objectives and threats are the most important dynamics in this area. Over the past 10 years, the potential for close cooperation has indeed emerged in this area between the two countries, and the cooperation between Iran and Turkey is of considerable importance for dealing with regional security problems, especially terrorism and border security.

At a time when our two countries are cooperating on this subject, we see those countries who present themselves as the leaders of the combat against terrorism have not only failed to cooperate in this issue, but have not even determined a consistent policy to address the issue.

The current state of relations between the two country's militaries are not at a desirable level. Considering the political and economic integration that is increasingly dominating the relations between the two countries, we can see that cooperation in the area of defence will also result in important gains. The situation in the region – especially in Syria and Iraq, but also in other countries of the region – requires us to increase our cooperation, review the existing potential in our defence relations, and develop our military relations in parallel to the development of economic and political re-

lations in order to ensure and institutionalize security. This is because security forms the basis of the multi-faceted relations between countries, and preserving security requires management. Today, military cooperation is one of the strongest indicators of security management.

Birol TEKİNCE: The agreement determining the borders between the two countries was signed on January 23, 1932, in Tehran, although the border had in fact been determined by the Battle of Chaldiran in 1514, and has changed very little since then. How are these two countries protecting this mutual boarder against illegal activities, and how can they increase their cooperation in this area?

Alireza BİKDELI: Turkey has 2,856 km of land borders with its neighbours, nearly 510 km of which are with the Islamic Republic of Iran. This border is considered to be one of the most stable borders in the region, and even the world, which is a significant indication of the value and importance attributed the relations between the two countries.

Although Iran and Turkey occupy militarily and economically strategic points in the region, they must seek peace through cultural dynamics and friendship. Well-known Iranian Professor Hüseyin Hatemi, who is a faculty member at Istanbul University, says that the relations between Iran and Turkey existed even before Islam, citing "Shah-name" of Firdevs is the evidence of this.

In addition, Islam has created very strong bonds between the two countries, and this has further reinforced their friendship and brotherhood.

The religious fellowship and the ethnic closeness between our nations, the common cultural aspects between Iran and Turkey, the two countries' proximity to the region's hotspots, as well as the absence of any contradiction in the two countries' defence policies contribute to form the basis of the current friendly and peaceful ties between Iran and Turkey. That said, authorities in both countries need to make greater efforts to further benefit from this friendly and peaceful atmosphere, and to make better use of these two very important elements that have been shaped over the course of centuries. Many countries utilize even the slightest beneficial environment and moment with other countries to promote their security and acquire economic gains. It is impossible to separate economy from security, and if we wish to ensure stability and develop further our economic and

political relations, we must also change the level of defence relations. It is important to develop relations in a balanced manner on all fronts. The Islamic Republic of Iran is ready to develop peaceful defence relations, and to sign memorandums of understanding in the areas of mutual defence cooperation and training. We believe that such steps may contribute to regional security.

Birol TEKİNCE: As the Ambassador of Iran, a country that is both a neighbour and friend to Turkey, how do you see the Turkish defence sector?

Alireza BİKDELI: Developments and indicators show that Turkey has achieved considerable growth in the area of security and defence, especially in recent years. The Turkish defence sector has grown significantly, and we believe that there is even more potential in this area. Regional cooperation will allow countries to increase their self-sufficiency, and make significant leaps in the area of defence, but what we need now is the creativity, innovation and new technologies in the area of unmanned vehicles, which offer the advantage of reducing human losses. The defence market is an important dynamic for the conducting of creative and innovative activities. It is good to see that, in our region, such dynamics are particularly strong for the Islamic Republic of Iran and the Republic of Turkey.

Birol TEKİNCE: Is there anything else you would like to add or share with our readers?

Alireza BİKDELI: Global experience has shown that lasting development is shaped by domestic potential. In our competitive world, it is vital to take advantage of all opportunities and existing potentials. We see in the cooperation model of Western countries that they carry out the majority of their economic, political, security, military and scientific cooperation with each other. We must similarly take advantage of the cooperation between neighbouring countries, in addition to our international relations. Today, in our relations, we see a lack of cooperation in the area of defence – and especially in defence technologies and the defence sector. This represents a weak link in the brotherly relations between Iran and Turkey.

On behalf of our readers, we would like to thank his Excellency Alireza Bikdeli, the Ambassador of the Islamic Republic of Iran to Turkey, for taking the time to answer our questions, and for providing us with such valuable information.



Prof. Dr. İsmail Demir, Undersecretary for Defence Industries participated in National Day Reception of the Republic of Poland.

Polish Constitution Day Celebrated in Ankara

The Polish Constitution Day was celebrated in Ankara on May 11 with a reception at the Polish Embassy. At the reception, the guests were greeted by his Excellency Mieczysław Cieniuch, the Polish Ambassador to Turkey; Piotr Krawczyk, the Deputy Ambassador/Deputy Head of Mission, and his spouse; and Colonel Andrzej Gorzynski, the Polish Defence, Military, Naval and Air Attaché to Turkey, and his spouse. The Turkish government was represented by Feridun Bil-

gin, the Minister of Transportation, Maritime Affairs and Communications.

In a speech to open the reception, Ambassador Cieniuch reminded that 3 May is the anniversary of the declaration of the Polish Constitution, and that this constitution, signed in 1791, is Europe's oldest, and the second oldest in the world.

Giving a brief speech during the reception, Minister Bilgin said: "Relations between Turkey and Poland, which are continuing and progressing harmoniously, are based on mutual political, commercial, cultural and social grounds. I am fully confident that through our mutual efforts we will be able to carry these good relations even further in all possible areas."

Right to Left: H.E. Mieczysław Cieniuch, Ambassador of the Republic of Poland, Piotr Krawczyk, Deputy Ambassador/Deputy Head of Mission of the Republic of Poland and his spouse, Colonel Andrzej Gorzynski, Defence, Military, Naval & Air Attaché of the Republic of Poland and his spouse



H.E. Mieczysław Cieniuch, Ambassador of the Republic of Poland, Feridun Bilgin, Minister of Transportation, Maritime Affairs and Communication





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