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## IDEX Provides a Fillip to Defence Industry in MENA Region



As Abu Dhabi gets ready to launch the latest edition of International Defence Exhibition and Conference (IDEX), which is the biggest defence event in the Middle East and North Africa (MENA) region, the companies across the globe eye up to seize an opportunity for getting their business back in line in the COVID era.

IDEX attracts a huge number of international decision makers in the defence industry, armed forces and senior military personnel around the world. Strong representation from GCC and the wider international community make IDEX the prime platform to showcase their products and technologies.

India aims big at the expo to highlight the country's weapon systems and platforms and explore new spheres in defence exports. The exhibitors, including leading DPSUs and private players, will participate in the event in a big way to brand India as a potential exporter of defence products for tri-services. The delegation aims to project India as a potential player in the defence industry in Asia and forge a new business alliance in the Middle East region.

With the vision of Atma Nirbhar Bharat (self-reliance) in defence manufacture and promoting the arms and spare exports in the sector, Indian delegation aims to bolster Prime Minister Narendra Modi's vision of making India a defence manufacturing hub. Moreover, the expo happens in the background of the Indian cabinet having approved delegation of powers under Make-1 of Defence Acquisition Procedure 2020. This will greatly ease design and prototype development by Indian industry for defence equipment.

In the wake of the recent Israel-UAE normalization deal, Israeli companies will participate and exhibit at IDEX for the first time in history and the Israel Defence Exhibition (ISDEF) will be the exclusive promoter of IDEX for the Israeli pavilion.

As Media Partners, Aeromag and Sailors & Warriors wish success to all the exhibitors and business visitors of the show.

**Sunny Jerome**  
Managing Editor



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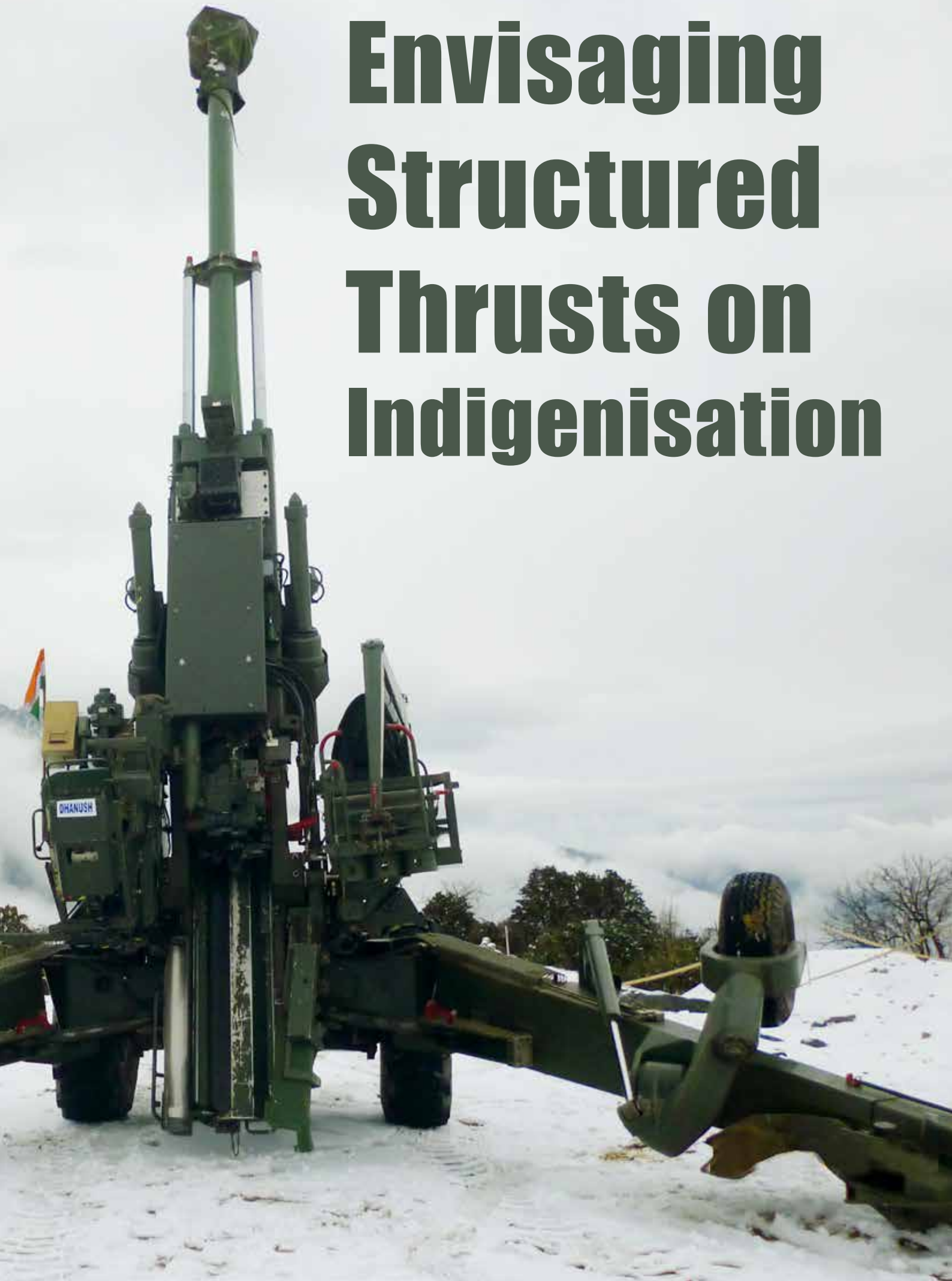
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# Envisaging Structured Thrusts on Indigenisation







**Raj Kumar**  
Secretary, Defence Production  
Ministry of Defence

**The Department of Defence Production envisions expanding the defence manufacturing base of the country with equal participation of both Public and Private sector including MSMEs and startups. To achieve this goal, broadly three focus areas have been identified: Investment promotion, export promotion and innovation, says Raj Kumar, secretary, Department of Defence Production, Ministry of Defence, Government of India. Excerpts from the interview:**

**What are the latest activities and policy initiatives by the Government to promote indigenous defence manufacturer in India?**

The size of the Indian Defence Industry, including Aerospace and Naval Shipbuilding Industry, is currently estimated to be about Rs 80,000 Crore (2019-20). The Government targets a turnover of Rs 1,75,000 Cr (US\$ 25Bn) in Aerospace and Defence goods and services by 2025, for which a number of policy initiatives have been taken:

Defence Procurement Procedure 2016 has been revised as Defence Acquisition Procedure (DAP) - 2020, which is driven by the tenets of Defence Reforms announced as part of 'Aatmanirbhar Bharat Abhiyan'.

In order to promote indigenous design and development of defence equipment 'Buy Indian - IDDM (Indigenously Designed, Developed and Manufactured)' category was introduced in 2016 and was accorded top most priority for procurement of capital equipment.

Ministry of Defence has notified a 'Negative list' of 101 items for which there would be an embargo on the import beyond the timeline indicated against them. This is a big step towards self-reliance in defence. This would offer a great opportunity to the Indian defence industry to manufacture these items using their own design and development capabilities to meet the requirements of the Armed Forces in the coming years. This list includes some high technology weapon systems like artillery

guns, assault rifles, corvettes, sonar systems, transport aircrafts, light combat helicopters (LCHs), radars and many other items to fulfil the needs of our Defence Services.

"Offset portal" has been created in May 2019 to ensure Greater transparency, efficiency and accountability in the process. Reforms in Offset policy have been included in DAP 2020, with thrust on attracting investment and Technology for Defence manufacturing.

Government has notified the 'Strategic Partnership (SP)' Model in May 2017, which envisages establishment of long-term strategic partnerships with Indian entities through a transparent and competitive process, wherein they would tie up with global Original Equipment Manufacturers (OEMs) to seek technology transfers to set up domestic manufacturing infrastructure and supply chains.

## Export Promotion cell under DDP, MoD has been formed to co-ordinate and follow-up on export related action including enquiries received from various countries and facilitate private sector and public sector companies for export promotion.

Department of Defence Production has notified 46 items under the latest Public Procurement Order 2017 notified by Department for Promotion of Industry and Internal Trade (DPIIT), for which there is sufficient local capacity and competition and procurement of these items shall be done from local suppliers only irrespective of the purchase value.

Government has notified a 'Policy for indigenisation of components and spares used in Defence Platforms' in March 2019 with the objective to create an industry ecosystem which is able to indigenize the imported components (including alloys and special materials) and sub-assemblies for defence equipment and platform manufactured in India.

An Inter-Governmental Agreement (IGA) on "Mutual Cooperation in Joint Manufacturing of Spares, Components, Aggregates and other material related to Russian/Soviet Origin Arms and Defence Equipment" was signed in September 2019. The objective of the IGA is to enhance the After Sales Support and operational availability of Russian origin equipment currently in service in Indian Armed Forces by organizing production of spares and components in the territory of India by Indian Industry by way of creation of Joint Ventures/Partnership with Russian Original Equipment Manufacturers (OEMs) under the framework of the "Make in India" initiative.

**The Government eagerly looks forward to boost defence exports. How strong is India's defence export business and what are major export promotion policies taken?**

The Government targets defence export of Rs 35,000 Cr (US\$ 5 Bn) by 2025 from about Rs. 9,100 Cr in 2019-20, for which a number of export promotion initiatives have been taken:

Export Promotion cell under DDP, MoD has been formed to co-ordinate and follow-up on export related action including enquiries received from various countries and facilitate private sector

and public sector companies for export promotion.

A High Level Committee (HLC) has been constituted under the Chairmanship of Raksha Mantri to facilitate faster clearances to export of major indigenous defence platforms to Friendly Foreign Countries.

A scheme for Export promotion of Indian Defence Equipment Manufactured in India by Indian Defence Attache has been rolled out wherein Defence Attachés are provided financial support to promote export of indigenous defence equipment abroad.

Webinars and expo are being organized with 25 countries with stakeholders/decision makers/Defence industries for export promotion of Indian Defence equipment. Out of 25 countries, webinar with 9 countries, including UAE have been organized.

An online system has been created by which Export leads received from various sources can be sent directly to Indian defence exporters registered on the defence exim portal on their email address. This facility helps the Indian defence exporters to quickly respond to export opportunities arising in other countries.

DPSUs/OFB have been allocated geographical regions/countries to take up focused promotional activities.

Standard Operating Procedure (SOP) for the export of munitions list items have been simplified to promote Ease of Doing Business.

The existing online application system of export authorisation has been made more user-friendly to provide end to end solution.

The Department of Defence Production has brought in two OGEL's (Open General Export License) - one for the select parts and components, and the other for intra-company transfer of technology. OGEL is a one-time export license, which permits the industry to export specified items to specified destinations, enumerated in the OGEL, without seeking export authorisation during the validity of the OGEL.

**How does the Department plan to tap the potential of private industry in defence sector to support indigenization?**

The private sector has received focused attention during the last six years by way of policy initiatives and interventions by the Government to promote their participation in defence, as mentioned below:

A number of provisions have been added or amended in DAP 2020 to provide level-playing field for Indian Private Industry.

Notification of 'Negative list' of 101 items would offer a great opportunity to the Indian defence industry, including private sector, to manufacture these items using their own design and development capabilities.

The 'Make' Procedure of capital procurement has been simplified. There is a provision for funding of 90% of development cost by the Government to Indian industry under Make-I category. In addition, there are specific reservations for MSMEs under the 'Make' procedure.

Separate procedure for 'Make-II' category (Industry funded) has been notified under Defence Procurement Procedure 2016 to encourage indigenous development and manufacture of defence equipment. Number of industry friendly provisions such as relaxation of eligibility criterion, minimal documentation, provision for considering proposals suggested by industry/individual etc. have been introduced in this procedure. So far, 55 projects relating to Army, Navy and Air Force, have been accorded 'Approval in Principle', valuing about Rs. 30,000 Crores.

The Government of India has enhanced FDI in Defence Sector up to 74% through the Automatic Route for companies seeking new defence industrial license and up to 100% by Government Route wherever it is likely to result in access to modern technology or for other reasons to be recorded.

In February 2018, the Government decided to establish two defence industrial corridors to serve as an engine of economic

development and growth of defence industrial base in the country. They span across Chennai, Hosur, Coimbatore, Salem and Tiruchirappalli in Tamil Nadu and across Aligarh, Agra, Jhansi, Kanpur, Chitrakoot and Lucknow in Uttar Pradesh. A number of private industries have either already invested or have plans to invest in these defence industrial corridors.

An innovation ecosystem for Defence titled Innovations for Defence

Excellence (iDEX) has been launched in April 2018. iDEX is aimed at creation of an ecosystem to foster innovation and technology development in Defence and Aerospace by engaging Industries including MSMEs, Start-ups, Individual Innovators, R&D institutes and Academia and provide them grants/funding and other support to carry out R&D which has potential for future adoption for

Indian defence and aerospace needs.

Offset guidelines have been made flexible by allowing change of Indian Offset Partners (IOPs) and offset components, even in signed contracts. Foreign Original Equipment Manufacturers (OEMs) are now allowed to provide the details of IOPs and products after signing of contracts. In





inspection Services with involvement of third parties and promote Ease of Doing Business for MSMEs and private sector.

**Raksha Mantri recently suggested increasing the finance available to Innovation for Defence Excellence (IDEX) start-ups. What are the booster packages and policies to nurture start-up ecosystem?**

Various initiatives have been taken to promote the start-up ecosystem in the defence sector:

An innovation ecosystem for Defence titled Innovations for Defence Excellence (iDEX) has been launched by Hon'ble PM in April 2018. iDEX is aimed at creation of an ecosystem to foster innovation and technology development in Defence and Aerospace by engaging Industries including MSMEs, Start-ups, Individual Innovators, R&D institutes and Academia and provide them grants/funding and other support to carry out R&D which has potential for future adoption for Indian defence and aerospace needs. Under iDEX, Defence India Startup Challenges and open

A new online portal has been developed

for facilitating filing of online applications for Industrial License under Industries (Development and Regulation) – IDR Act 1951/Arms Act 1959.

Based on the initiative taken by Department of Defence Production to review Defence Product List for the liberalization in defence manufacturing sector, the Defence Product List has now got rationalized and trimmed.

Defence Investor Cell has been created in Feb-2018 the Ministry to provide all necessary information including addressing queries related to investment opportunities, procedures and regulatory requirements for investment in the sector.

Several Test facilities available with Government entities have been made available to private sector.

A Policy on "Utilisation of Third Party Inspection Services has been notified in May 2018 for effective administration of

order to bring more transparency and efficiency into the Offset discharge process, "Offset portal" has been created in May 2019. Under the new Offset Policy, further Offset reforms have been included in DAP 2020, with thrust on attracting investment and Technology for Defence manufacturing.

Defence Products list requiring Industrial Licences has been rationalised and manufacture of most of parts or components now does not require Industrial License. The initial validity of the Industrial Licence granted under the IDR Act has been increased from three years to 15 years with a provision to further extend it by three years on a case-to-case basis. About 500 Industrial Licenses have been issued so far, about 300 such licenses after the year 2014.



Could you share with us your vision and plans for the department during your tenure? What are the major goals to be achieved?

The Department of Defence Production envisions to expand the defense manufacturing base of the country with equal participation of both Public and Private sector including MSMEs and startups. To achieve this goal, broadly three focus areas have been identified: Investment promotion, export promotion and innovation.

The Department has drafted a Defence Production and Export Promotion Policy, which would be positioned as Ministry of Defence's overarching guiding document to provide a focused, structured and significant thrust to defence production capabilities of the country for self-reliance and exports. Restructuring of Ordnance Factory Board is on the anvil. Reforms in DPSUs and inspecting Agencies are also being undertaken.

The investments of Rs 20,000 Cr are planned in Defence corridors of Uttar Pradesh and Tamil Nadu by year 2024. The progress is reviewed regularly at apex level. So far, investment of approx. Rs 3000 Cr have been made in both the corridors by public as well private sector companies.

There is a special focus to promote defence aerospace industry particularly in MROs and indigenous development of aeroengines.

The department has also taken up with concerned Ministries to align their PLI (Productivity Linked scheme) of the Government to include defence products in their schemes.

iDEX4Fauji initiative has been launched under the iDEX programme, to facilitate flow of ideas from field level and rapid development of new, indigenized and innovative technologies for the Indian Defence and Aerospace sector. iDEX4Fauji stands out as a unique and strategic initiative for grass root level innovation and shall pan out to be one of the most well-executed initiatives providing opportunities to the members of the Indian Armed Forces benefiting from their knowledge and the first-hand experience and intention towards improving existing platforms and equipment in Defence. The Startup Manthan event during Aero India 2021 in February 2021 witnessed the felicitation of the first batch of eleven iDEX4Fauji winners from the Services.

ecosystem.

As part of the AtmaNirbhar Bharat Abhiyan initiative, the government has organized a number of start-up competitions to encourage Indian entrepreneurs to ideate, incubate, build, nurture and sustain tech solutions for the Indian and the global market.

**What are your visions to increase the production in DPSUs? How does DPSUs support the modernization of Armed Forces?**

DPSUs are being positioned as system integrators and mandated to maximize outsourcing from indigenous sources and create a multi-tier domestic supply chain.

Strategic / partial Disinvestment of DPSUs will be pursued to bring more accountability, efficiency and greater autonomy.

Focus is on modernization and technological upgradation in coordination with Services/DRDO.

DPSUs/OFB have been allocated geographical regions/countries to take up focused promotional activities with an objective to enhance their exports.

An indigenization portal namely SRIJAN has been launched on August 14, 2020 for DPSUs/OFB/Services with an industry interface to provide development support to MSMEs/Startups/Industry for import substitution

challenges are initiatives to tap startups for finding futuristic indigenous solutions catering to critical needs of the Indian Armed Forces.

An indigenization portal namely SRIJAN has been launched in August 2020 for Defence Public Sector Units (DPSUs)/ Ordnance Factory Board (OFB)/Services with an industry interface to provide development support to MSMEs/Startups/ Industry for import substitution.

The 'Start-ups' recognized by the Department for Promotion of Industry and Internal Trade (DPIIT) from time to time, are eligible to participate under 'Make-II' procedure.

Atal Innovation Mission (AIM) has recently launched the Aatmanirbhar Bharat ARISE ANIC challenges in partnership with Ministries/ Departments (MOHUA, MOFPI, Defence, ISRO and MOHFW) wherein, AIM and ministry experts shortlisted challenge statements very close to sectoral pain points. AIM has also been partnering with various Global Ministries (Singapore, Australia, Russia, Denmark, Sweden, Saudi Arabia etc.) and multilateral agencies like UNDP, BMGF, World Bank etc. to provide the needed acceleration for the growth of the Indian startup



# Invincible Tactical Advantage



**BRAHMOS, the deadliest supersonic cruise missile in the world that can be integrated on almost all platforms and capable of operating from across the spectrum of war, has great potential to become India's major weapon export in the coming decades, says Dr. Sudhir Kumar Mishra, Distinguished Scientist & Director General (BrahMos), DRDO, Ministry of Defence, CEO & MD BRAHMOS Aerospace, in an exclusive interview with Aeromag. Excerpts from the interview:**

**Dr. Sudhir Kumar Mishra**  
Distinguished Scientist & Director General  
(BrahMos), DRDO, Ministry of Defence  
CEO & MD, BRAHMOS Aerospace

*In the context of IDEX, in Abu Dhabi, shall we start off by seeking your perspectives on the scope and intent of BrahMos Aerospace garnering a big chunk of missile export market in the Arabian Gulf, Middle East and South East Asian countries? How do you respond to the reports about BrahMos being sought after by the Philippines and some other nations in the ASEAN region, as well as some South American, East European and African countries?*

BRAHMOS supersonic cruise missile is a weapon of strategic importance and Government of India would take appropriate decision to export this missile system to any country as dictated by its diplomatic and strategic policies. I don't want to divulge anything on the talks and discussions but would like to say

that we have the requisite production capability to handle any such export demands and requirements as and when they arise. As a high technology defence product, BRAHMOS has great potential of becoming India's major weapon export in the coming decades giving the country a share of the arms business.

*What makes BrahMos, the world's fastest and deadliest supersonic cruise missile, so unique and distinctly a winner in the global aerospace and defence market in terms of its velocity, flight range, seeker range, kinetic energy, stealth technology and guidance system, and strike capability?*

BRAHMOS is the deadliest cruise missile in the world today. The entire world is aware of the precision strike capability of this uniquely powerful weapon.

BRAHMOS is a stealthy weapon which cannot be intercepted by any modern air defence system, however powerful that may be. The high versatile weapon system has the capability to operate from across the spectrum of war and decisively influence its outcome. With the successful induction of BRAHMOS in its armed forces, India has gained an invincible tactical advantage over its potential adversaries.

*With its long range annihilating power, BrahMos is widely acclaimed for its seamless integration and configuration for multiple platforms – ship, fighter jet, submarine or a mobile land launcher. How do you propose to widen its deployability and operationality for various regiments and forces?*





All the frontline warships of Indian Navy are armed with BRAHMOS, providing a significant defence cover and safeguarding the international borders. The Indian Army too has deployed the mobile, land-attack BRAHMOS variant which can strike at designated enemy targets and installations with pin-point accuracy. BRAHMOS has also added teeth to India's air and maritime dominance in the Indian Ocean Region with the induction of Su-30MKI equipped with supersonic cruise missile by the IAF's No. 222 Squadron ('The Tigersharks') in Southern India. This will ensure that a major part of the world is covered by its "stand-off" attack capability. BRAHMOS can strike targets 300kms away with accuracy of less than five meter. With this, BRAHMOS is now integrated on almost all the platforms. On land, we intend to further widen the scope of deployability.

In just over two decades – 22 years to be exact – how BrahMos Aerospace, the Joint Venture between India's Defence Research and Development Organisation and the Russian Military Industrial Consortium NPO Mashinostroyeniya, has changed

the dynamics of warfare and the entire defence manufacturing ecosystem in India?

The BrahMos Joint Venture (JV) bears the finest testimony of India-Russia strategic partnership. In fact, it is this uninterrupted flow of energy and brilliant synergy between both the nations that has made BRAHMOS truly world-class. The JV, since its inception in 1998, has been "technology sharing" programme wherein both the partners have brought in their respective technological expertise and knowledge base to design, develop and field such a powerful weapon which is unparalleled in the world. This has definitely led to mutual learning and understanding and further widened the scope to work together on newer, more advanced BRAHMOS versions and achieve new technological breakthroughs.

The JV has also successfully set up a consortium of defence industries from India and Russia for producing various systems & sub-systems for the world-class BRAHMOS weapon complex. It has brought together number of competent defence industries both public and private

and various R&D laboratories from the partnering countries in developing and producing different sub-systems for the universal missile system which has rendered a unique strength to the Indian Armed Forces. The entire team of BrahMos, including the consortium of Indian and Russian industries, R&D labs and academic institutions of both the countries, have made significant contributions in design, development, manufacturing, integration, and product support of the missile system. More than 20,000 Specialists, Engineers & Technicians in over 200 large and medium industries are currently associated with BrahMos as a great strength and force multiplier.

Inducted first in 2005 in the Indian Navy as the Ship-based Weapon Complex System, then evolving as a land-based system comprising mobile autonomous launchers, a canisterised missile capable of being launched from a submerged platform underwater and finally making history as the heaviest weapon to be deployed on India's frontline fighter jet, Sukhoi-30 MK1 in a successful flight test in 2017. Looking







back, what do you think was the most crucial technological breakthrough in this incredible transformation? What is the current status of deployment in the Indian Armed Forces?

We have developed many variants of this formidable weapon system BRAHMOS which was initially conceived as an anti-ship missile. The first successful launch was conducted in June 2001 that is within three years of JV formation. The highly versatile BRAHMOS has been successfully tested in land-to-land, land-to-sea, sea-to-land, sea-to-sea, and most recently in air-to-sea and air-to-land configurations. The missile can be fired either from static, mobile platforms (land & sea) or fighter aircraft, in solo or salvo mode. Indian Army is the only Land Force in the world to have supersonic weapon with surgical strike potentiality. The mobile land-based configuration of BRAHMOS has achieved several advancements over the years in the form of Block I, Block II and Block III variants. The naval version of the missile has been modified and flight-tested in different configurations, proving its mettle in each scenario successfully. The missile system has been inducted in top Indian Navy warships. The missile was also successfully flight-tested from the Indian Air Force's (IAF) frontline fighter aircraft Su-30MKI against a sea based target.

BRAHMOS has now been successfully inducted with the IAF's Su-30MKI.

More than a Transfer of Technology collaboration, BrahMos missile stands out as a unique outcome from a joint design, development, production, integration and product support. The indigenous Booster and Airframe Section recently flight tested successfully, is a striking testimony on the vital enhancement drive for indigenous content. Where do you go from here?

With BRAHMOS missile, the indigenous content in the formidable weapon has reached a high value, thus bolstering India's defence indigenisation and the flagship "Make in India" programme of Government of India. Today, the Ground support system of BRAHMOS which includes the Mobile Autonomous Launcher, Command Post, Ancillary Vehicles and Communications Systems are all made in India. We have successfully indigenised major sub-systems such as booster, nose cap, canister, fuel management system, Air Frame and other major non-metallic airframe components taking the Indian contribution to more than seventy percent. All launcher systems for the weapon are also being manufactured domestically by Indian industries. This achievement has given boost to BrahMos's "Atmanirbhar Bharat" pledge. What we

are now focussing on along with Russian partners is to manufacture and produce more in India using technology that is available in Russia in order to upgrade our equipment, to manufacture new equipment and to build upon the success of the past.

Now that you are venturing into Hypersonic world, what are the great challenges that you encounter working on a new engineering paradigm, new aerodynamics, new materials and new configuration? In the niche, elite technological exclusivity of Hypersonics, how do you fare internationally?

The hypersonic BRAHMOS-II (K) is envisioned to become the fastest cruise missile system in the world by flying at a top speed of 7-8 Mach (seven to eight times the speed of sound). The hypersonic missile will definitely provide an advantage to the Indian armed forces in future warfare. The challenges are many in developing such a breakthrough technology. NPOM has already started ground work for the hypersonic variant and hope to hit the sky by 2028. DRDO, from its end has already test-fired Hypersonic Technology Demonstrator Vehicle (HSTDV), precursor for the development of a hypersonic cruise missile system.

# GRSE's Exports to Reach New Pinnacle

Garden Reach Shipbuilders & Engineers Ltd. (GRSE), India's premier public sector shipbuilding company since 1960, began the New Year on a grand note as the company bagged two back-to-back exports orders from the governments of Guyana and Seychelles for an Ocean-Going Cargo-cum-Passenger Vessel and a Fast Patrol Vessel (FPV) respectively. "With the successful delivery of these two vessels, our export initiatives will touch a new pinnacle. We are well on our way to become a global maritime security player as these export contracts would help open new avenues in value creation," said Rear Admiral Vipin Kumar Saxena, IN (Retd.), Chairman and Managing Director, GRSE. In an interview with Aeromag, he shares the insights into the company's prowess as a world class shipbuilder capable of delivering state of the art maritime platforms across the globe.

**Rear Admiral Vipin Kumar Saxena, IN (Retd.),**  
Chairman and Managing Director, GRSE

**Could you talk about the twin export orders that GRSE has bagged this year?**

For GRSE, the year began on a grand note as the company bagged two back-to-back exports orders from the governments of Guyana and Seychelles. The first export contract of the year worth 12.7 million USD was signed on 13 January for building an Ocean-Going Cargo-cum-Passenger Vessel for the Government of Guyana. The 1700 tons (appx) vessel is to be used on the coastal and riverine areas of Guyana.

Within a month of signing the contract with Government of Guyana, we were successful in signing another export contract with the Government of Seychelles for one Fast Patrol Vessel (FPV) on 3 February. The SCG Ship 'Zoroaster', will be delivered to Coast Guard of Seychelles, the archipelagic island country. The ship will be a powerful, fuel-efficient platform designed to perform multipurpose operations, such as patrolling, anti-smuggling, anti-poaching,

and search and rescue (SAR) while flaunting improved habitability features with fully air-conditioned modular accommodation for 35 personnel.

Our in-house design team has developed the overall design of the FPV. The FPVs are very versatile and cost effective platforms that can be put to excellent use by the small maritime nations especially in the IOR and MENA regions.

**What significance do these export contracts hold for GRSE?**

GRSE is already endowed with the confidence of Govt. of India, the Indian Navy and the Indian Coast Guard having successfully built and delivered more than 100 Warships ranging from Patrol boats to Corvettes & Frigates. We immensely value the trust that they have bestowed upon us and now we are well on our way to become a global maritime security player as these export contracts would help open new avenues in value creation. GRSE has happily embraced infrastructure



modernisation with technology induction and I am proud to share that our indigenous and state-of-the-art ship-design and ship-building capacity are the key behind the monumental success of brand GRSE.

We have the capability to construct 20 ships concurrently, using our modernized infrastructure and 'Modular Integrated Construction Philosophy'. Further, our dedicated, multi-disciplinary, strong Design Team is continuously working towards developing various concept designs for ships that can cater to the current and future requirements of India as well as foreign nations. As you may be aware GRSE was the first shipyard of India to have exported a warship when we delivered a Multi Role Offshore Patrol Vessel to Mauritius, the CGS Barracuda. With the successful delivery of these two vessels, our export initiatives will reach a new pinnacle.

Moreover, the contracts, while strengthening diplomatic ties of Government of India with Governments of Guyana and Seychelles, celebrates the partnership with these nations, and is a grand achievement, not only for GRSE, but also for the entire nation.

#### What according to you helped GRSE bag these contracts?

I dedicate the contracts to the remarkable performance of the shipyard over the last few decades that were made possible by farsighted planning, meticulous execution, courageous decisions and conviction and dedication of the Team GRSE. Special credit goes to our in-house design team who has over the years developed capability of building world-class warships deftly armed with high-tech infrastructure. Over the last six decades, we have built 787 platforms, including 106 warships for Indian Navy, Indian Coast Guard and Mauritius Coast Guard. This has helped GRSE attain the delightful epithet of 'only organization to build and deliver a century of warships in India'. From building 5 tonne boats to 24600 tonne Fleet Tanker, GRSE has done it all and has proved its mettle as a pioneer warship builder of India.

#### What is the way forward for GRSE and what are the expansion plans?

Today, GRSE has crafted a niche in the field of in-house design and shipbuilding and has made significant contributions to the indigenous warship construction program in India. Indigenization has always been the watchword at GRSE and it has established its capabilities for in-house ship design and shipbuilding, across its three distinct shipbuilding units in Kolkata. This perfectly aligns with the Government of India's 'Atmanirbhar Bharat Abhiyaan'. The 100+ strong, dedicated and multi-disciplinary design team of the company relentlessly works towards

developing innovative concept and designs for ships that impeccably cater to the current and future requirement of Indian Navy and Indian Coast Guard. The company is now well on track to construct state-of-the-art warships harnessing advanced modular shipbuilding technology which is delightfully at par with the best in the world

One another significant step towards Self-reliance, Modernisation and capacity augmentation at the Rajabaghan Dockyard unit dedicated for medium and small ships construction will facilitate concurrent construction of 24 ships from the existing capacity of 20.

At GRSE we are constantly striving to shift to smart manufacturing (Industry 4.0), with sparked innovations in automation, robotics and the industrial internet of things. I am confident that by introducing Artificial Intelligence, Machine Learning, Interoperability and secured connectivity enabling real time monitoring, control and optimization of processes, resources and systems will lead to significant workload consolidation across all spheres of operation.



We are also focusing on making the GRSE built versatile maritime platforms available to our friendly foreign Navies and Coast Guards. We look forward to collaboration with local shipbuilders and design houses in friendly nations towards building collective Maritime competence in the region. ■

# Channelling towards Shipyard 4.0



**Abel Mendez**  
International Commercial Director  
Navantia

Navantia is a worldwide reference for design and construction of high technology military and civilian vessels. They offer global solutions in design, ToT, construction, development and integration of systems, repair and life cycle support, working closely with partners in strategic markets. Abel Mendez, International Commercial Director, Navantia, speaks about their operations, collaborations and services in the maritime sector. Excerpts from the interview:

The Systems division of Navantia has extensive experience in the design, development, production and integration of various systems in the maritime sector. Could you share more details about the operations?

The Systems division of Navantia has extensive experience in the design, development, production and integration of: Combat Systems, Fire Control Systems, Integrated Communications Systems, Integrated Navigation and Bridge Systems and Integrated Platform Management Systems for any type of ship: patrol vessels, frigates, submarines, aircraft carriers, amphibious vessels, minehunters, survey vessels and support ships. Additionally, Navantia has a long tradition in manufacturing and refurbishing artillery going back to the 18th century.

Navantia also provides solutions for the Army including: Battlefield Management Systems, Fire Control Systems, Forward Observer Systems, and surveillance systems providing security for both military and civilian strategic infrastructures, such as: military bases, coastlines, ports, harbours, and offshore platforms.

Navantia's openness to activities that contribute to the creation of new industries, develop capacities, and the progressive acquisition of industrial skills is well known, and has taken different forms depending on the Client requirements and local capacity. A good example of Navantia's flexibility are the ToT and localization programs developed for three very different scenarios within the last 12 months; Saudi Arabia, United Kingdom and Australia. In Saudi Arabia, Navantia created a Joint Venture with SAMI (Saudi Military Industries) to develop, integrate and commercialize the first Saudi Combat System, known as HAZEM, a derivative of Navantia's CATIZ combat system. The newly created Company, called SAMINavantia, received from Navantia in September 2019 a relevant contract for the supply and integration of the combat system of five corvettes for the Royal Saudi Naval Force.

The Navantia Technology Center groups

and coordinates the areas of R&D and digital technologies, channeling them towards the Shipyard 4.0. Could you shed more light onto it?

4.0 technologies are applied to four areas branded as 'Smart' by Navantia: Smart Shipyard, Smart Ships, Smart Sustainment and Smart Naval Base. Such services are developed based on 14 enabling technologies: artificial intelligence, robotics, autonomous vehicles, drones, 3D manufacturing, new materials, big data analytics, Internet of Things, Blockchain, modeling and simulation, cloud storage, Robotic Process Automation (RPA), augmented reality and 5G.

Under the category of Smart Shipyard, Navantia implements robotic welding, use of drones and autonomous vehicles, robotic process automation and the use of virtual reality tools in workshops.

Smart Ship services include Digital Twins and Integrated Services Systems (ISS), leveraging information from Integrated Platform Management Systems (IPMS).

The Smart Naval Base services include Through Life Support Facilities (TLSF) and Land Based Test Sites (LBTS), consisting in supporting testing of software and hardware of any platform system connected to Navantia's IPMS for upkeep, upgrades and updates, the Navantia training system and the EOLO through life support tools.

Smart Sustainment includes a Data Center, a shore-based laboratory for smart sustainment, Navantia Playback center, and data repository designed to provide playback capability to the IPMS and Predictive Maintenance. ARGOS 21 is an automated tasks & analysis system to optimize the maintenance analysis tools and machine learning. Additionally, Predictive Maintenance software is used based on thermography, vibration and lube oil analysis.

The Spanish frigate F110 project incorporates many of the above smart functionalities, and will be the first to implement a Digital Twin of the vessels, which will provide a real ship "avatar", that allows to visualize the ship's state and condition from a shore base, even

thousands of miles away, using digital communication resources. Also, this project is developed under a new platform Siemens NX, ensuring processes end-to-end, and data integrity.

All the above solutions and the lessons learnt by Navantia in the implementation of digital technologies are offered to the Strategic Partner and to the Indian Navy for consideration and gradual adoption through the P75(I) project.

**The company has been associating with India for a long time especially in submarine sector. What are Navantia's operations in India?**

India is a strategic market for Navantia and has a delegation in Delhi. Navantia has participated in several naval programs in India. Among them the Scorpene Submarines, partnering with Naval Group and still under construction by Mazagon Docks Limited Mumbai. At present Navantia is associated with Larsen & Toubro for the future LPD Program.

We are at the moment working quite intensively in the preparation of the Navantia design or Indian submarine P75(I), as we have been selected as one of the potential strategic partners.

During 2020, Navantia has made a great push on indigenization activities. Having a ready-made design for a very similar unit to P75(I) is a great advantage, as all equipment's and materials are defined to the last detail, permitting very immediate consultation with the local Indian industry.

At present, we continue to work very

**Navantia has almost 100 years of experience designing, building and maintaining submarines for the Spanish Navy, and exporting submarines in the last decade through the Scorpene consortium with DCNS. Navantia has exported submarines to Chile, Malaysia and India, being in charge of the functional and detail engineering of the aft body**

close to Indian suppliers regarding indigenization opportunities for P75(I). In the last 10 months we have submitted more than 1,000 RFIs to Indian suppliers, covering approximately 98% per cent of the cost items for the submarine.

We remain very enthusiastic about this opportunity, and truly believe that the S-80P is an outstanding product which makes the selection of Navantia as designer for P75(I) a sensible low-risk choice.

**Navantia has been immersed, for more than 90 years, in a process of evolution and improvement of the design, production and life cycle of submarines. How strong is the submarine arm of Navantia? Who are the major customers?**

Navantia has almost 100 years of experience designing, building and maintaining submarines for the Spanish Navy, being as well very successful in exporting submarines in the last decade through the Scorpene consortium with DCNS. Under this alliance, Navantia exported submarines to Chile, Malaysia and India, being in charge of the functional and detail engineering of the aft body. Four aft submarine bodies were built

in Navantia Cartagena in Spain, with two submarines (one for Chilean Navy and another one for Malaysian Navy) integrated and delivered by Navantia. The scope of work for the India project was the same, with the construction of the six units taking place in India. The cooperation with India still continues, though in 2008 Navantia suspended the agreement with DCNS for Scorpene to concentrate into a new submarine concept designed to meet the requirements of the future Spanish Navy submarines. This was the beginning of the S-80P project, the first design developed 100 per cent inhouse by Navantia in a few decades, which is now in the final construction stage, and ready for the export market.

The S-80P is a 3,000-tonne submarine, almost double size than Scorpene, incorporating several innovative features, including a last-generation Air Independent Propulsion (AIP) system and powerful attack capabilities including heavy weight torpedoes, mines and submarine launched anti-ship and cruise missiles, etc. This is quite an exceptional performance, in fact, the capacity to launch submarine cruise missiles (SLCM) is unique for nonnuclear NATO submarines.





**Narendra Modi**  
Prime Minister of India

# Defence exp India on an



रक्षा उत्पादन विभाग  
**DEPARTMENT OF  
DEFENCE PRODUCTION**

सत्यमेव जयते



**Rajnath Singh**  
Defence Minister of India

Over the years, India's defence exports have been modest owing to several restrictions and limitations. However, after Prime Minister Narendra Modi's government introduced liberal policies since 2014, defence exports have gone up substantially. According to official data, the figures have, in fact, gone up by 700 per cent in just two years. While the export authorisation was US Dollars 213 million in 2016-17, it rose to US Dollars 1.5 billion in 2018-19.

Moreover, the government has set a defence export target of US Dollars 5 billion by 2025. In order to achieve this figure, the Department of Defence Production recently released a list of 152 items that friendly nations could purchase. As many as 85 kinds of equipment and 47 sub-systems are included in the list and they are expected to be of interest to countries in the Indian Ocean Region (IOR) and Africa.

Among the top items which India intends to export are the Light Combat Aircraft (LCA) Tejas; BrahMos supersonic cruise missiles;



# ports: overdrive

The Indian government has set a defence export target of US Dollars 5 billion by 2025 and several initiatives are being launched to reach this figure. Among the top items intended for exports are the Light Combat Aircraft Tejas; BrahMos missiles; Advanced Towed Artillery Gun System, Pinaka rocket launchers and Combat Management System, among which Tejas has attracted the maximum attention

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Advanced Towed Artillery Gun System (ATAGS), Pinaka multi-barrel rocket launchers and Combat Management System. Meanwhile, Arjun tanks and Astra air-to-air missiles are included in a separate list put out by the Defence Research and Development Organisation (DRDO). The latest list, released during the Aero India show in Bengaluru, also comprises products from private sector industries that are yet to be acquired by India's armed forces.

LCA, built by Hindustan Aeronautics Limited (HAL), has already attracted interest from South East Asia and West Asia. The HAL Chairman said that each LCA MK1A jet would be priced at Rs 306 crore for exports. Meanwhile, the trainer would cost Rs 280 crore.

As part of boosting exports, India's defence attaches posted in IOR and African countries have been directed to explore requirements in those nations for Indian systems. Currently, Tejas, helicopters and missile systems have attracted the biggest interest. Alongside, a number of Indian private companies are searching for markets for their products abroad.

Among the 30 land systems mentioned in the list for exports, the major ones are Akash and BrahMos missiles and artillery guns. Countries such as the Philippines and Vietnam are reportedly interested in procuring BrahMos. The ATAGS; the in-service K-9 Vajra howitzer; 155mm/52 Caliber towed gun and Garuda 105 lightweight field gun are among the artillery guns that have found a place on the export list. The last two are built in the private sector by Bharat Forge. Military

vehicles produced by Ashok Leyland, mine protected vehicles, combat helmets and vests manufactured by private company MKU, multi-mode hand grenades and many types of ballistic protection are also meant for export.

The anti-submarine warfare corvettes made by the public sector Garden Reach Shipbuilders & Engineers, various kinds of patrol and interceptor boats and Landing Craft Utility are the major naval items which are offered to friendly countries. Lightweight and heavyweight torpedoes, naval 30 mm guns, rocket launchers, coastal surveillance systems and communication and combat management systems for ships too are planned to be exported.

Regarding air systems, India has included the Light Combat Helicopter (LCH) along with the LCA in the export list. Incidentally, neither the Indian Air Force nor the Indian Army has ordered the LCH so far.

India's defence exports were Rs 4,682 crore (US Dollars 0.66 billion) in 2017-18 and Rs 10,500 crore (US Dollars 1.47 billion) in 2018-19. Eight Defence public sector undertakings and 41 ordnance factories are engaged in exports, apart from private firms. Though there were export restrictions on organisations like OFB (Ordnance Factory Board) earlier, OFB currently exports arms and ammunition, weapon spares, chemicals & explosives, parachutes, leather and clothing items to more than 30 countries, including Thailand, Malaysia, Indonesia, Sri Lanka, Bangladesh, Germany, Belgium, Turkey, Egypt, Oman, Israel, Kenya, Nigeria, Botswana, Chile, Suriname and the USA. ■







## Prime Minister Hands over Arjun Main Battle Tank (MK-1A) to the Army

The Prime Minister, Narendra Modi handed over the Arjun Main Battle Tank (MK-1A) to the Army.

Prime Minister has said India has undertaken a massive effort to become self-reliant in the defence sector. This is inspired by what Mahakavi Subramaniya Bharathi writing in the oldest language in the world, Tamil, said Let us make weapons; let us make paper. Let us make factories; let us make schools. Let us make vehicles that can move and fly. Let us make ships that can shake the world. One of the two defence corridors is in Tamil Nadu. The corridor has already received investment commitments over Rupees Eight thousand

one hundred crores.

He said that Tamil Nadu is already the leading automobile manufacturing hub of India. Now, Tamil Nadu evolving as the Tank manufacturing hub of India. On MBT Arjun Mark 1A, the Prime Minister declared "I am proud to handover the indigenously designed and manufactured "Main Battle Tank Arjun Mark 1A". It also uses indigenous ammunition. A tank made in Tamil Nadu will be used in our northern borders to keep the nation safe. This showcases India's united spirit – Bharat's Ekta Darshan"

The Prime Minister said that the focus on making India Aatmanirbhar in the defence

sector will keep moving with full speed.

Our armed forces signify India's ethos of courage. They have shown time and again that they are fully capable of protecting our Motherland. Time and again they have also shown India believes in peace. However, India will protect our sovereignty at all costs, the Prime Minister said.

The Prime Minister paid homage to the Pulwama attack martyrs on the anniversary of the attack today. He said "We pay homage to all the martyrs we lost in that attack. We are proud of our security forces. Their bravery will continue to inspire generations."

## 'Make in India' in Defence sector: Inching towards Self-Reliance

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# ADNEC PARTICIPATES IN THE FUTURE IS SPACE WEBINAR



- Webinar held in collaboration with IDEX and NAVDEX 2021, highlighting the important and interwoven nature of the space and defence sectors
- Discussions featured Maryam Yousuf from the Mohammed bin Rashid Space Centre, who is an Emirati engineer who worked on the Hope Probe Mission, and Dr So-yeon Ki, the first Korean astronaut in space
- Webinar participation comes in line with ADNEC's wider commitments to knowledge transfer in the UAE and inspiring future generations of the possibilities of space and defence research



**A**bu Dhabi National Exhibitions Company (ADNEC) participated in 'The Future is Space' webinar, in collaboration with the Abu Dhabi Department of Education and Knowledge (ADEK), as part of the International Defence Exhibition (IDEX), Naval Defence Exhibition (NAVDEX), and the International Defence Conference 2021. The webinar provided young students targeting careers in the space sector with training and insight into the industry, inspiring future generations of UAE talent.

ADNEC's participation in the webinar came during IDEX and NAVDEX 2021, the global defence exhibitions which were the first live in-person events to take place in the COVID-19 recovery phase. Given the close, intricate, and interwoven nature of the defence and space sectors, the webinar aimed to spark interest and inspiration in the possibilities for research and development collaboration between the two industries. Through this event, ADNEC sought to transfer knowledge into the UAE, promoting a knowledge-based economy that can continue to support the nation's success and excellence over the next fifty years.

IDEX and NAVDEX are pivotal events in Abu Dhabi, and the Higher Organising Committee of the event were profoundly enthusiastic to support younger generations through this webinar. The virtual session enabled the vital transfer and exchange of knowledge. The webinar shared engineering insights with future generations, providing them with a greater appreciation into aerospace engineering and science data analysis. IDEX and NAVDEX have been key in creating opportunities through collaboration with the Mohammed Bin Rashid Space Centre and the defence manufacturing sectors, along with international space agencies, through organising such a session to enable student learning.

Saeed Al Shamsi, Chief Human Capital Officer at the Abu Dhabi National Exhibitions Company attended the webinar, alongside Dr. So-yeon Yi, the first Korean astronaut and a prominent scientist and researcher, as well as Emiratis at the forefront of the UAE's space sector, including female engineers Maryam Yousuf, Researcher in Earth & Planetary Section at the Mohammed bin Rashid Space Centre, and Manar Al Zaabi, GNC Engineer in Aerospace and

Defence Applications from the Tawazan Economic Council.

The session included a talk from Maryam Yousuf, who led an unparalleled and exclusive insight into the technical processes of bringing the Hope Probe mission, including preparing for the spacecraft's 209 million kilometre, seven month long journey, alongside the critical period of ensuring the satellite entered Martian orbit.

Saeed Al Shamsi, Chief Human Capital Officer at Abu Dhabi National Exhibitions Company commented: "As the organisers of IDEX and NAVDEX, we are committed to providing young people today with the opportunity to learn and be inspired by global leaders in the defence and the space sector. The webinar was in line with the goal of knowledge transfer, and continues to enable the growth of the UAE's competitive knowledge-based economy, in line with the nation's ambitious and thorough developmental plans.

"Space and defence are intricately interwoven, with research from the security sector being used to fuel humanity's exploration of the stars. Following the momentous and historic arrival of the Hope Probe into Martian orbit, both young Emiratis and young Arabs look to the cosmos with possibility. At ADNEC, we are proud to support making their dreams become a reality through hosting events such as IDEX and NAVDEX 2021."

Khuloud Al Dhaheri, Executive Director Education Partnerships Sector at Abu Dhabi Department of Education and Knowledge (ADEK) said: "As part of our mission to enable Abu Dhabi students to explore STEM educational pathways and future career opportunities via the Rize University Preparation and Career Guidance (Rize UPCG) program, ADEK has collaborated with ADNEC, IDEX, NAVDEX and the International Defense Conference (IDC) to spark student's curiosity in the space and engineering sectors as future career options. Following the success of the UAE's historic Hope Probe mission, Abu Dhabi students are looking to the stars for space sector opportunities and more than 1,500 students heard the webinar panelists' inspirational stories, with the enriching engagement set to propel their own space and STEM career exploration journeys."

# Trailblazing Niche Paths



**Adam Dorazil**  
Project Manager  
Tatra Trucks

Tatra Trucks, the oldest automotive factory in Central Europe, is a pioneer in making heavy-duty military, firefighting and rescue vehicles, and civilian vehicles, unrivalled in payload capacity and mobility and designed for off-road or mountain operation. Adam Dorazil, Project Manager, Tatra Trucks, speaks about their exclusive business terrains and prospects of expansion in the Middle East Asian market. Excerpts from an interview.

Being the oldest automotive factory in Central Europe, Tatra has been a pioneer in making heavy-duty off-road vehicles and trucks for combined on/off road transport, which are constantly improved to meet increasing customer requirements. Where does the company stand globally and what are the major achievements?

At present, we focus exclusively on a niche market, which are heavy trucks capable of operating under any conditions. Military, firefighting and rescue vehicles, and civilian vehicles designed for off-road or mountain operation, able to meet clients' needs without the use of complex electronic assistance systems. The contract for the supply of military vehicles to Western Europe and the Middle East or delivery of firefighting trucks to Western Europe belong to the most interesting new orders.

Could you share with us Tatra's participation highlights at the IDEX 2021 to be held in Abu Dhabi? How do you look at the Middle East Asia as a market for Tatra's business expansion?

Tatra, together with its partner companies, will show a wide range of trucks and chassis. You will see 4x4 TATRA FORCE chassis and 8x8 truck with an armored cabin and crane at our stand. Other vehicles, such as self-propelled howitzer, recovery vehicle, and other trucks will be shown at our partners stands representing a wide range of our portfolio.

The Middle East is already for 30 years the second home for TATRA. Tatra has very strong partners in the Middle East area with a long-term relationship. More

than 2 500 military vehicles have been sold. TATRA is very proud to achieve with their Middle East partners a high local content. There is no better place to apply our historical experience from the Dakar and TATRA's offroad capabilities.

The unique chassis concept of Tatra has been continuously improved since 1923 – and to this day successfully imitated by no one. Could you shed more light onto this?

The TATRA-concept was firstly used at TATRA T 11 car in 1923. The flat boxer air-cooled two-cylinder engine was firmly connected with the transmission which was connected to the rear axle via a large diameter pipe. The rear axle was of a swinging half axle type without universal joints. The pipe substituted chassis frame and covered drive shaft with differential. This unusual and progressive design of vehicles started a long tradition of unique automotive chassis design as "TATRA concept". Such vehicles were very simple, easy to operate, simple to maintain, and giving good fuel economy. An entirely new line of cars and trucks of various load-carrying capacities was based on this philosophy. In the production of more than 95 years, this concept is a true testament to the soundness of the original design.

Today TATRA truck chassis consisted of a torsionally rigid 3-D frame formed by connecting the backbone tube with a conventional ladder frame via cross-members and of independent swing half-axles, swinging around the backbone tube centerline. The central backbone tube covering all parts of the driveline. This design improving vehicle mobility in



difficult terrain, while increasing stability during cornering and at high road speeds.

The vehicles have very high commonality, and many brands of engines and drive trains can be installed in them. Tatra's air-cooled engines and purchased water-cooled engines from various manufacturers can be used and the engine outputs can be matched with mechanical or automatic transmissions of various brands.

For different loads, a different type of suspension is used.

In addition to standard soft cabins, armored cabins with different levels of protection can be installed in the FORCE family.

The standard chassis is available in a variety of wheelbase configurations and with up to eight axles, including rear-axle steering.

The special and military production of the company is represented by TATRA FORCE and TATRA TACTIC. What are the main products by the division and who all are the major clients?

TATRA Force is a High Mobility Heavy Duty chassis build as a platform for various kinds of special vehicles that need superior driveability in difficult terrain, transport troops or sensitive material over difficult terrain, and with low life cycle costs. The all-wheel-drive chassis

**TATRA TRUCKS offers standard 2, 3, and 4-axle vehicles – frame chassis suitable for a montage of different commercial superstructures or with dump truck bodies. They are especially suitable for commercial vehicles operated in difficult off-road conditions**

employs independent suspension with the backbone tube frame, that allows each wheel to move independently. Thanks to a modular design TATRA can produce from 4x4 chassis up to 12x12 versions. There are more than 1200 vehicles used in the UAE army and hundreds of vehicles in KSA.

TATRA Tactic is a medium-class all-wheel drive off-road logistic truck with an excellent clearance that is based on standard chassis concept with rigid axles and ladder frame. The latest version was first introduced in 2019 on the IDEX show. More than 800 vehicles are under service in KSA.

What are the company's products in civilian and commercial sectors? What are the customization options you offer to the customers?

Besides the special military vehicles, TATRA TRUCKS company offers standard 2, 3, and 4-axle vehicles – frame chassis suitable for a montage of different commercial superstructures or with dump truck bodies. Due to the unique design

of the TATRA chassis that is used also on these vehicles, they are especially suitable for commercial vehicles operated in difficult off-road conditions.

Apart from the above said standard vehicles, TATRA TRUCKS offers customers also special customized solutions. For example 5 or more-axle customized vehicles – which are suitable especially for large mobile cranes and/or other exceptional commercial superstructures.

How did the company survive the disruption caused by the Covid-19 pandemic? What are the goals to be achieved in the post-pandemic days?

The Covid-19 pandemic had no major impact on the company's operations or results in 2020. Production ran without stopping, we only had to adjust the production plans according to the possibilities of our suppliers. As for this year's targets, we are ready for both alternatives, lower market demand, as well as its rapid recovery. Of course, we are working intensively to make this year even more successful than the previous one. ■





# Otokar introduces its Electric Armored Vehicle "AKREP IIe" at IDEX

One of the regular IDEX participants Otokar, participated in IDEX - 2021, in Abu Dhabi, the capital of United Arab Emirates to meet with its more than 55 End Users from all over the world.

Introducing its electric armored vehicle, AKREP IIe for

first time for its international markets, Otokar also displayed its well-known and globally desired wheeled armored vehicles ARMA 6x6 and COBRA II 4x4 as well as the new generation COBRA II MRAP. In addition to the wheeled vehicles, the tracked Infantry Fighting Vehicle, SAFA has also taken its place in

Otokar stand.

Serdar Görgüç, General Manager, Otokar, stated that being a regular vendor to both NATO and the United Nations, Otokar is continuously expanding its customer portfolio and serving wider range of customers over the world every year, due to its well appreciated user-oriented approach. "Currently, around 33 thousand Otokar vehicles are actively in service in more than 36 countries in the toughest climates and risky regions. We believe that the performance of our vehicles serving worldwide are the most important reference for our potential customers. We are at the forefront of the global defense industry with our know-how in land systems, engineering, and R&D capabilities as well as our wide product range. As our main goal is to continuously strengthen our presence in the region, IDEX offers a great opportunity to meet





our existing users as well as potential customers. We will leverage our know-how and experience to respond to the specific requirements of the region in the best possible way."

Emphasizing Otokar's strong presence in Gulf region, Görgüç said "GCC countries are particularly important for Otokar. Many different vehicle types of wide Otokar military range are already serving successfully to the requirements of the region in different forces since early 2000s. Through our local company Otokar Land Systems, which was established in 2016, we became much closer to our valued customers. Through our recent activities, in addition to our supplier and contractor role, Otokar highly enjoys being locally present in GCC."

"In parallel to the successful activities of our joint venture company with EDGE of Abu Dhabi Government, Al Jasoor,

RABDAN 8x8 Infantry Fighting Vehicles are already in service of the UAE Armed Forces and despite the pandemic, production and deliveries continue as initially planned."

Otokar again offers a wide product range to the international markets at IDEX 2021, highlighting its new

generation electric powered 4x4 weapon carrier AKREP IIe attributing its legendary AKREP, used in 1990s. The vehicles exhibited at Otokar stand at IDEX are as follows:

#### **AKREP II**

In addition to full electric powered engine, AKREP II also





appears in diesel and hybrid powerpack options. AKREP II combines latest automotive technologies, high firepower and protection in a low silhouette. Having an effective firepower under amour and high payload capacity, AKREP II comfortably carries turrets up to 90mm cannon.

Being smaller in size and lesser in weight highly contribute to the agility of low silhouette AKREP II. Steering capability on all-axles significantly increases the maneuverability of four-wheel drive AKREP II. Thanks to the independent suspension system and swift torque control, AKREP II can operate with equal ease on all challenging terrain conditions, no matter soft sand, deep mud, and snow. AKREP II can carry total of 3 crew, driver, commander and gunner at a maximum speed of 110 km per hour.

Apart from being a perfect weapon carrier for all small, medium, and high calibers, AKREP II is an ideal solution for reconnaissance, scouting, surveillance, and base / air defense missions with quick reaction and silent mobility capabilities.

Like all other OTOKAR vehicles, the electronic system of AKREP II is also designed with an open system architecture where the electronic and human interface can be configured according to customer requirements.

**AKREP IIe - Electric powered Armored Vehicle:**

Electrical drive version of AKREP II, AKREP IIe, is a low silhouette and low acoustic platform with low thermal signature.

The electric-based power and propulsion results in quicker start with instantaneous high torque for increased mobility. Due to the "Drive-by-Wire" system of electrically controlled steering, acceleration, and braking functions, AKREP



IIe appears in the market as technically feasible platform for being remotely controlled or driving assistance system applications including autonomous capabilities.

**MINE RESISTANT AMBUSH PROTECTED VEHICLE: COBRA II MRAP**

Otokar displays its new mine resistant ambush protected vehicle "COBRA II MRAP" at IDEX 2021. COBRA II MRAP combines high level of survivability and mobility in a modular package.

The vehicle provides superior protection for the crew against ballistic, mine and IED threats while maintaining high cross-country mobility in battlefield conditions with its independent suspension system. It is specifically designed to provide high reliability, ease of maintenance and quick removal / installation of power pack.

With its modular design, COBRA II MRAP provides high payload and spacious internal space for integration of weapon systems and mission equipment. The vehicle can be configured with alternative seating layouts for up to 11 personnel with 3 or 5 door configurations as per specific user requirements.

**COBRA II: HIGH**

**PROTECTION AND MOBILITY CAPABILITIES**

COBRA II offers high level of protection, payload capacity, and large internal volume. In addition to superior mobility, COBRA II also comes with the capacity to accommodate 9 personnel including the driver and commander, offering high protection against ballistic, mine and IED threats. Delivering high performance in the toughest terrain and climate conditions with high power to weight ratio, COBRA II is







tested rigorously in different parts of the world, on toughest terrain and climate conditions, and made thousands of miles. Preferred especially for offering a wide range of weapons integration and mission equipment options, COBRA II is successfully used for border protection as well as internal security and peacekeeping missions. The modular structure of COBRA II also makes the vehicle a flexible platform to be used as

a personnel carrier, weapons platform, ground surveillance radar, CBRN reconnaissance vehicle, command control vehicle, and ambulance.

**ARMA 6x6: MODULAR ARMORED VEHICLE**

Otokar's multi-wheeled modular armored vehicle ARMA 6x6 offers superior mobility, high mine and ballistic protection, as well as medium and high-caliber weapon system

integration options. Offering high tactical and technical features, ARMA comes with an optional amphibious variant for peacekeeping and humanitarian aid operations in the most demanding terrain and climate conditions.

ARMA 6x6 stands out especially with its high payload capacity and large interior volume. ARMA can be equipped with different weapons and turrets according to the needs. The ARMA 6x6 can be used for various missions as an armored personnel carrier, armored combat vehicle, command control, reconnaissance, and CBRN reconnaissance vehicle while different weapon systems can be integrated into the vehicle.

**SAFA INFANTRY FIGHTING VEHICLE**

Otokar's SAFA IFV is exhibited with Otokar design MIZRAK-30 medium turret. The vehicle stands out with mobility, firepower and survivability features. Due to its modular design, SAFA can be fitted with manned or unmanned weapon systems ranging from 7,62 mm to 120 mm as well as air defense and mortar systems. With superior mobility, SAFA can serve in all

kinds of combat environments from urban, built-up areas and light bridges to woodlands and all terrains, especially on soft surfaces where main battle tanks are unable to operate due to their heavy weights. Reliable and robust torsion bar suspension system consists of seven dual rubber-tire road wheels on each side. SAFA has an Automatic Track Tensioning system which can adjust track tension for different road conditions to achieve outstanding mobility.

SAFA has a power pack in the front of the hull combined with turbo charged diesel engine and an automatic transmission provides which power ranging from 700 hp to 1100 hp.

The multi-role, modular SAFA series is designed as a platform to meet the users' needs for a single platform to use in different missions. Tested in the toughest climates and on rough terrain, SAFA boasts best-in-class ballistic and mine protection with modular armor structure that can be configured and tailored as per specific user requirements. SAFA, which can be integrated with active protection systems, has the capacity of carrying up to 9 infantry in addition to its crew of three (commander, gunner and driver).





# Rafael marks milestone in I-Derby ER Air-to-Air Missile development

In a test series held earlier this week, Rafael completed the development of the ground-based Air Defense version of the missile



Rafael Advanced Defense Systems Ltd. has completed the development of the ground-based Air Defense version of the I-Derby ER (Extended Range) air-to-air missile. During the test series concluded earlier this week in southern Israel, Rafael performed a ground launch to test the missile's command and control, navigation, and flight trajectory capabilities.

These tests serve as a significant milestone in I-Derby ER's development, which is the newest and most advanced of Rafael's electromagnetic air-to-air missiles, and it marks the completion of the missile's ground-version development.

Brig. Gen. (Res.) Pini Yungman, EVP, Rafael's head of air and missile defense systems division: "Rafael has been Israel's national home of air-to-air missiles since the country's founding, when we developed Israel's very first air-to-air missile – Shafir. Ever since, Rafael has excelled in the development of various air-to-air missiles, many of which are in operational use today by the IDF and air forces worldwide. This week, we completed a series of tests in the development of the I-Derby missile in its latest version – ER – which allows for Beyond Visual Range (BVR) launches over 100 km. This is a key milestone in the development of a missile with some of the most advanced capabilities, giving it significant interception advantages in air-to-air battles, as well as ground-to-air air defense applications. These achievements provide significant air superiority to the fighter pilot or the air defense

commander."

Rafael's I-Derby ER missile is an over 100 km long-range air-to-air missile with a dual-pulse rocket motor and an active radar seeker, providing combat aircraft with exceptional performance advantages both at short ranges or beyond visual range. The missile has fire-and-forget capabilities, allowing the operator to tackle multiple targets simultaneously. The missile's light weight allows it to be adapted to a variety of modern fighter jets, including the F-16, F-15, F-18, Gripen, LCA, Typhoon and more.

The I-Derby ER Missile is identical in shape and size to the Derby missile currently in service worldwide. The ground-based Air Defense version of the missile can be integrated almost immediately onto air defense batteries such as Rafael's SPYDER system, which provides air defense for ranges between 20 to 60 km. Launched from the ground, the I-Derby ER missile doubles the existing missile range, and allows target interception within a range of up to 40 km without a booster, and 80 km with a booster.

#### Improved-Derby ER (Extended Range)

Long-Range BVR Air-to-Air Missile with Active Radar seeker

I-Derby ER is a long range derivative of the Derby missile in operational use among several air forces worldwide. It is part of Rafael's several generations of air-to-air missile families which it has developed over the past 65 years, with

more than 150 combat interceptions in Israel and around the world. This includes the Python missile family with its most advanced missile in this series - Python-5 - operational with the Israeli air force and a number of other global air forces.

I-Derby ER incorporates Rafael's innovative software-controlled radar seeker, which allows full operational flexibility by controlling all operational parameters through software. This capability enables upgraded missile performance against new threats and enemy tactics such as electronic warfare and new aerial targets. The software update process is quick and simple, and can be performed in a timely manner relevant for during a combat round.

I-Derby ER contains electronic counter-countermeasures (ECCM) designed to deal with the challenges of aerial combat in a hostile environment with exceptional operational flexibility, adaptable to the customer's operational requirements. The missile has a dual-pulse rocket motor, which enables optimal thrust management in accordance with mission requirements, providing the significantly-extended flight range. The missile's brain contains sophisticated algorithms to optimize trajectory according to launch conditions and target behavior.

I-Derby ER features two-way communication, based on Rafael's proven operational SDR, supplying a complete information set on the chosen target and on those in close vicinity.

#### I-Derby ER Operational Benefits:

- Launch range over 100 km
- Air-to-Air missile with short, medium, and long range capabilities
- Detection and Interception capabilities from the ground
- All-weather operability
- Lock On Before Launch/Lock on After Launch operational models
- Strong, efficient ECCM
- Simple integration for current Derby users
- Dual-use air-to-air and air defense

# IDEX & NAVDEX 2021; Successful event with over 62,000 visitors



The 15th edition of the International Defence Exhibition (IDEX) and the Naval Defence Exhibition (NAVDEX), which is considered as a successful event during the time of pandemic, has concluded by the Higher Organising Committee for the exhibitions. The five-day events have seen extensive local and international participation.

The central success of the 15th edition lies in that it was the first global defence event in Middle East to take place in the post pandemic recovery stage, with 62,445 attendees at the venue across five days. 900 exhibitors, 59 countries, and 35 international pavilions participated in IDEX and NAVDEX 2021, alongside five countries participating in the exhibitions for the first time: Israel, North Macedonia, Luxembourg, Portugal, and Azerbaijan.

AED 20.957 billion (USD 5.7 billion) worth of deals were signed by the UAE Armed Forces during IDEX and NAVDEX 2021. Five deals with international companies and 15 with local companies were inked on the final day of the exhibitions, at a value of AED 904.2 million (USD 246.2 million).

The committee announced the conclusion of the two exhibitions, in the presence of Major General Pilot Faris Khalaf Al Mazrouei, Commander-in-Chief of Abu Dhabi Police, Chairman of the Higher Organizing Committee for "IDEX" and "NAVDEX" exhibitions, and Major General Staff Pilot Ishaq Saleh Muhammad Al Balushi, Assistant Undersecretary for Industries and Development of Defense Capabilities at the Ministry of Defense, Vice Chairman of the Supreme Committee, and Humaid Matar Al Dhaheri, Managing

Director and CEO of Abu Dhabi National Exhibitions Company "ADNEC" and its group of companies.

Commenting on the conclusion of the exhibitions, Major General Staff Pilot Faris Khalaf Al Mazrouei, said: "The 15th edition of the IDEX and NAVDEX exhibitions has been nothing short of exceptional. These events continue to strengthen their global position, providing exhibitors and participants from around the world with an integrated global platform, in spite of the challenges imposed by the COVID-19 pandemic. IDEX and NAVDEX drive and enable innovation, in line with the rapid development of the fourth industrial revolution.

"The success of these exhibitions has been rooted in the stalwart and visionary support of our wise leadership. Their confidence in our ability to host the world, here in Abu Dhabi, has been critical to the wider realisation of this edition.

"Today marks a new chapter in pre-eminence. 2021 is the Golden Jubilee Year of the foundation of the United Arab Emirates. That union has enabled our nation to cultivate and expand our defence infrastructure and technological systems, using them to ensure security and peace across the Middle East.

"The foremost achievement of this edition of the exhibitions was the stringent and rigorous implementation of all precautionary measures across ADNEC, preserving the health and safety of all participants, exhibitors, and visitors. IDEX and NAVDEX 2021 enabled the return of the national business tourism sector, alongside continuing to support the UAE's defence industry. These exhibitions

ensure that UAE products are globally competitively, both meeting the needs of the nation alongside reaching new markets."

Staff Pilot Ishaq Saleh Al Balushi, commented: "The UAE has once again demonstrated its global leadership in hosting and organising international and strategic events. These events indicate renewed confidence and optimism as the UAE charts a new course for post-pandemic recovery.

"2021 has seen the UAE Armed Forces sign the highest value of deals during the exhibitions' histories. The brokerage of such agreements plays a pivotal role in devising and implementing long-term security and defence strategies, and ensuring the adoption of optimal solutions to face future challenges, given the fourth industrial revolution."

Humaid Matar Al Dhaheri, commented: "Today brings an end to an edition which was described as one of the most successful global events organised in the post pandemic phase by participants, exhibitors, and visitors alike. In organising these two exhibitions, we have met and exceeded the aspirations of all attending this edition.

"96% of visitors and exhibitors to IDEX and NAVDEX were satisfied with the exhibition, which is considered one of the highest rates in the global exhibition and conference sector. The wide range of precautionary protocols which ADNEC rigorously implemented across its infrastructure also met the approval of those visiting IDEX and NAVDEX, as well as specialists in the exhibition and conference sector.

# Reinforced Might



**Abraham du Plessis**  
CEO, NIMR

*Abraham du Plessis is the Chief Executive Officer (CEO) of NIMR, an EDGE entity within the Platforms & Systems cluster, that is a leading manufacturer of mission-ready, high-performance light- and medium-weight wheeled military vehicles. In this role, he is responsible for the business growth of NIMR, regionally and international through their competitive products and services.*

NIMR, an EDGE entity in the Platforms & Systems cluster and a leading manufacturer of mission-ready, high-performance, combat-proven light- and medium-weight wheeled military vehicles is currently preparing to roll out the second-generation of its product portfolio. Abraham du Plessis, CEO, NIMR, speaks about its evolution as the largest military vehicle manufacturer in the region competing with the largest international producers. Excerpts from the interview:

**NIMR has two decades of experience in producing high-performance light- and medium-weight wheeled military vehicles whilst adhering to the most demanding international standards. What are the major milestones in this journey of success?**

NIMR celebrated its 20th anniversary in 2020. The company has come a long way since commencing operations with our first vehicle, called NIMR1, in 2000. Since then, the company has grown from strength to strength, with our vehicles building a reputation for their agility, mobility and versatility.

Today, NIMR has an extensive portfolio of mission-proven military vehicles capable of addressing the most demanding duty-cycle requirements, and is currently preparing to roll out the second-generation of its product portfolio that will reinforce its position as leading manufacturer of combat-proven military vehicles.

To meet increasing demand from Armed Forces in nine nations, NIMR opened a 37,500m<sup>2</sup> production facility in Abu Dhabi, which is the largest military vehicle manufacturer in the region and competes with the largest international producers.

The company has pioneered many firsts in the region in an eventful two decades. We now have our sights set firmly on the next 20 years of growth.

**Through its joint ventures with defence operators in other countries, NIMR transfers knowledge and technology, and builds skills**

**in different regions of the world. In which countries does NIMR have presence, and who are its major clients?**

We have a joint venture with the Algerian Ministry of Defence to produce the NIMR vehicle range in Algeria and are also working to expand our footprint in Eastern Europe. As part of these efforts, we initiated collaboration with VOP CZ, a state-owned enterprise established by the Ministry of Defence of the Czech Republic to address the national market demand, along with those of other Visegrad countries. In 2017, NIMR and VOP CZ facilitated the debut of the AJBAN 440A configured to European specifications.

**NIMR offers three main product ranges – AJBAN, HAFEET, and JAIS. Could you shed some light on the vehicles in these series?**

The AJBAN Multi-Role Armoured Vehicles, NIMR's best-selling vehicles, are designed for use in a wide range of specialist military roles. They offer high levels of survivability, mobility, and firepower. The seven-seater 447A features a highly configurable armoured cabin, designed for functions such as tactical response, border patrol, reconnaissance, counterinsurgency, and special forces. The range comprises AJBAN 420, AJBAN 440, AJBAN 450 and AJBAN Internal Security Vehicle.

The NIMR AJBAN Long-Range Special Operations Vehicle (LRSOV) is an open-top 4x4 reconnaissance vehicle designed for use by Special Forces. Light and powerful,



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capable of accessing all terrains, in addition to being helicopter-transportable, the vehicle can be customised to accommodate a range of user-specified equipment.

Meanwhile, the NIMR HAFEET 630A is a highly mobile 6x6 protected vehicle that offers an optimal combination of payload, mobility, and protection in the harshest environments. The vehicle can be integrated with a variety of mission and weapon systems.

The HAFEET class provides a multi-purpose platform for all military requirements, from utility vehicles to fully protected patrol vehicles. A universal 6x6 chassis is utilised for a common logistic footprint to minimise the burden of training, maintenance, and spare parts management for the user.

Finally, the JAIS class is the next generation of mine-resistant ambush protected (MRAP) vehicles that strikes the right balance between firepower, survivability, and mobility for modern, conventional, and asymmetric operations. A battle-proven 'crew citadel' protects against mine, improvised explosive device (IED), and ballistic threats.

Offering cost-effective solutions for reconnaissance, patrol, utility, and specialist roles, such as ambulance, the highly modular family of vehicles features modern suspension and powertrain, high power-to-weight ratio, and excellent situational awareness.

**NIMR has a 37,500m<sup>2</sup> state-of-the-art production facility that consistently produces to a high quality and in large volumes. Could you elaborate on your production facilities and quality standards?**

The facility has the capacity to produce up to

1,500 vehicles per year, and the capability to supply every component at each stage of the assembly process. Total production flexibility has been incorporated into the process layout. This allows for multiple model types to be built simultaneously, maximising product output and efficiency, and enables NIMR to quickly reorganise resources to respond to the changing requirements of its customers.

All NIMR vehicles undergo a rigorous testing process during the quality control phase before they leave the factory. Visual management systems are in place to allow for real-time production monitoring, provide an active interface for requests and support to identify and rectify problems, and facilitate seamless communication.

**The in-house design, engineering, and R&D capabilities of the company encompass all aspects of military vehicle technology – from driveline to protection systems. How strong is the engineering arm of NIMR?**

Our military engineers are drawn from across the globe. Their combined experience allows us to understand and forecast field data, combat situations, and the evolving operational requirements of our customers. Meanwhile, our onsite capabilities enable us to integrate best-in-class technology into our vehicles to give our clients a competitive edge, and to use the latest simulation tools and techniques to rapidly mature our designs, shorten the design cycle, and enhance production capacity. Lastly, we have been growing a world-class test capability to verify, validate and improve all aspects of our designs.

**NIMR has a joint venture with the Algerian Ministry of Defence to produce the NIMR vehicle range in Algeria and it is working to expand its footprint in Eastern Europe. It has initiated collaboration with VOP CZ, a state-owned enterprise established by the Ministry of Defence of the Czech Republic to address the national market demand, along with those of other Visegrad countries**



# GAL: Ultimate Sustainment Solutions



**Mohammed Saeed Al Khemairi**  
CEO, GAL

*Mohammed Saeed Al Khemairi is Chief Executive Officer of GAL, and in this role, he is responsible for leading the overall strategy and strategic objectives of the company, including the implementation of its functional objectives and overseeing critical management aspects of the business, operations, support and people management. Prior to joining GAL, Al Khemairi was Director of Inter Aviation within the UAE Armed Forces. Al Khemairi brings to his role 24 years of experience as an aviation professional, exposed to high-level strategic and operational initiatives, including infrastructure design, process reengineering, turnaround management, and reorganisation of complex business challenges.*

While committed to providing fleet readiness to the UAE Armed Forces, GAL is widening its ambit into the commercial realm and working towards expanding its global footprint, seeking business opportunities outside the UAE, says Mohammed Saeed Al Khemairi, Chief Executive Officer, GAL, in this interview. Excerpts:

**GAL has been providing integrated aviation readiness solutions for both military and civilian customers for more than 13 years. How challenging has been the road to success, and what is the company's position now in the industry globally?**

GAL is a 100 per cent UAE-owned company and was founded in 2007. GAL has over 5,000 employees and supports more than 500 aircraft. Over the years, GAL has built numerous strong relationships with the major OEMs and formed strategic alignment with complementary MRO partners.

GAL maintains a rigorous operations and compliance system that has earned approval from the U.S. Government for the official licencing of our defence services. We have also obtained international certifications including the ISO 9001 for quality management and ISO 27001 for Information Security Management. Our aim is to become the Middle East's leading provider of aviation MRO services, which I'm proud to say we are getting closer now that we are growing successfully even beyond the UAE.

**Could you give a detailed picture of GAL's range of maintenance, repair, overhaul, and support services which are offered to military and civilian operations for fleet readiness?**

We provide integrated aircraft sustainment solutions through specialised manpower and technical assistance, and we have agreements with major original equipment manufacturers, suppliers and MRO centres for delivering maintenance,

repair and overhaul services that cannot be performed in the UAE. GAL's core services include aircraft maintenance, technical and engineering support, logistic and supply chain management, command level advisory support, manpower outsourcing, augmentation solutions, simulator maintenance and specialised training. As an EDGE company, we have the unique ability to work with other companies within the Mission Support cluster, like AMMROC and HORIZON to provide complete solutions to our customers including aircraft modifications or upgrades, tip to tail management and supply chain support.

**How important has been the partnership or collaborations with industry leaders and engineers' innovative approach in addressing the customer needs? Could you also shed some light on the engineering minds you work with?**

We have collaborated and partnered with major OEMs and MRO providers such as AAR, Airbus, Boeing, Lockheed Martin, GE, Dassault, among others. Locally, we work very closely with SANAD Aero, Abu Dhabi Aviation, and our sister entity AMMROC. From routine inspections to customised repair and overhaul, we ensure that every maintenance action performed – whether simple or complex; corrective or preventive, is executed to the highest quality and safety standards. GAL has over 4000 subject matter experts on board as employees - fully certified and trained to undertake maintenance, in-routine inspections, and in-depth repair operations on all relevant platforms and aircraft. We only employ the



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most talented technicians and engineers, both locally and internationally, to work on rotary-wing platforms — making them subject matter experts in the process.

**GAL has expanded its client base and now holds several maintenance and integrated logistics services contracts across the UAE. How does the company look at the South Asian and African markets for expanding business?**

We have signed agreements with the Kenyan Ministry of Defence to provide them MRO services, specialised maintenance engineers, spare parts and repair management. We have also collaborated with China National Aero-Technology Import & Export Corporation (CATIC), which will allow GAL to establish a warehouse in Abu Dhabi and be the hub for all the spare parts distribution of CATIC in the Middle East. We have several ongoing contracts with the UAE Airforce to provide comprehensive maintenance and logistics support for its fleet, to provide specialised manpower and technical and consultancy support services. And currently we are working towards expanding our global footprint and are seeking business opportunities outside the UAE.

**What are the other challenges you face in meeting the requirements of a rapidly changing world as a professional aerospace services provider?**

We have noticed that there is an increased requirement for aircraft modifications and upgrades because of the aging of the aircraft and to keep up with the latest technology. Therefore, today we are providing additional resources to increase our focus on aircraft modifications and upgrades. We've also increased our partnerships with specialised engineering companies and increased our activity with AMMROC, leveraging their state of the art facilities and their experienced engineering capability. With these initiatives, we believe that we are in a well-placed position for the changing aerospace market.

**What is the roadmap ahead for GAL? What are the goals and objectives you have set for the company?**

We are committed to providing fleet readiness to the UAE Armed Forces. That will always remain our main objective. Furthermore, we are looking forward to taking GAL to the commercial and other regional markets through our strategic relationship including working with AMMROC, SANAD Aero, Abu Dhabi Aviation and other local companies. We believe this will provide promising strategic opportunities to elevate GAL globally. At present, most of our business is from the military sector. Today, we are working on expanding to the commercial sector, which we believe will make up an ideal business mix.

**GAL, which provides UAE Air Force comprehensive maintenance and logistics support for its fleet, offers complete solutions to its customers including aircraft modifications or upgrades, tip to tail management and supply chain support**



# Leading Edge of Autonomous Tomorrow



**Ali Al Yafei**  
Chief Executive Officer, ADASI

*Since joining in 2008, Ali has spearheaded significant growth and development of ADASI to enhance the UAE's national security infrastructure, and to address the nation's technological aspirations. Ali Al Yafei provides strategic oversight and business direction for the company, to ensure operational and productive efficiency in delivering complex programs for the UAE Armed Forces.*

Committed to bringing the latest in cutting-edge drone technology and unmanned systems to the region and beyond, ADASI is at the forefront of innovation in autonomous capabilities and augmenting its product portfolio. They are open to expanding into South Asia and Africa when the right opportunity arises, says Ali Al Yafei, Chief Executive Officer, ADASI, in an interview. Excerpts:

**Countries all over the world are pushing for unmanned systems as the most important part of their defence strategy. How challenging is the unmanned systems industry today, and what makes ADASI a distinct player in the global arena?**

UAVs are rapidly advancing in terms of capability and are growing in popularity, with an increasing number of uses across the military, commercial, scientific, recreational, agricultural, and other sectors. Drones have become critical to organisations and industries, increasing efficiencies, improving accuracy, and resolving security issues across borders. Their ability to reach the most remote areas with little manpower required saves time, energy, and cost.

The UAE drone market is expected to grow, driven by the rising demand for military and commercial drones, coupled with the proactive involvement of regulatory bodies, such as General Civil Aviation Authority (GCAA) and Dubai Civil Aviation Authority (DCAA), in devising policies to support the use of drones in different applications.

When it comes to UAVs and autonomous capabilities, ADASI is at the forefront of innovation and the upcoming launches at IDEX testifies this. With the future increasingly relying on unmanned systems that provide a higher degree of tactical flexibility, we have invested extensively to fast-track R&D investments in these domains, bringing related products to market with speed.

Incorporating the latest technologies, we focus on the acquisition, development, test, operation, and full-service support of UAV systems. We also modify and reconfigure performance to suit our partner's strategic

and tactical demands or to integrate alternative payloads.

There are currently no platform systems like our Garmoocha drone in the UAE, which enables us to position ourselves on the leading edge of tomorrow. Our main competitors are based in China, USA, and Europe.

**Could you give us an overview of the products and services offered by ADASI? Who are its major clients globally?**

We have designed and manufactured the RW-24 system, a fully automated and highly effective high-speed UAV with significant offensive capabilities that operates from shallow to near-vertical angles and boasts a long mission endurance.

We also have more than 10 years of experience in operating and providing after-sales support for the Al SabrS-100 vertical take-off and landing (VTOL) systems— developing skills, training pilots, and deploying the UAVs in day-to-day operations, from systems and payload integration to maintenance and logistics. Today, our support is critical to keeping the Al Sabr UAVs in the air for over 5,000 hours a year.

Our Aerostat UAV is an advanced high-endurance airborne monitoring system that can carry an electro-optical/infrared (EO/IR) sensor, such as the FLIR U8500 or the WESCAM MX-10, to heights of up to 3,000 feet, and can stay deployed for over a week at a time, subject to local weather conditions.

Our GCS 300 shelter is the ideal base for transporting, storing, operating, and maintaining UAVs in the field. Robust,



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resilient, and designed to operate in extreme temperatures, it can be transported by road, rail, sea, and air – including by C-130 and C-17 aircraft. On the ground, it expands into a full 6.1m x 5.8m technical and control hub with all the infrastructure and equipment needed for frontline drone operations.

Launched in February 2020, the Garmoosha drone is the first fully UAE-made high-performance vertical take-off and landing (VTOL) drone that is used to detect gas pipeline leaks, survey infrastructure, and conduct search and rescue operations.

The newest feather in our cap will finally be announced at IDEX. We are extremely proud to be expanding our product portfolio and remain committed to bringing the latest in cutting-edge drone technology and unmanned systems to the region and beyond.

While our primary customer is the General Headquarters (GHQ) of the UAE Armed Forces, we are working towards offering our products and services in other markets.

**Tell us more about the Garmoosha drone. What makes the UAV an important asset?**

The Garmoosha is a next-generation light unmanned aircraft system (UAS) designed to carry payloads up to 100kg. The platform has an endurance of six hours – equivalent to a range of 150km – and can perform across a diverse range of missions to meet defence and security force requirements, including intelligence, surveillance, and reconnaissance (ISR). It is deployable in all weather and light conditions, and at altitudes ranging from sea level to 10,000 feet. The aircraft's payload capacity and performance specifications give it wide functionality, making it an ideal platform for electronic warfare missions,

radio link range extension and retransmission, maritime surveillance, monitoring, as well as search and rescue operations.

The Garmoosha meets market needs by enhancing air operations, and supporting various applications such as law enforcement, search and rescue, surveying, and securing borders. Its advanced capabilities, including an integrated high-definition camera and electro-optical sensor for day and night ISR collection, provide operational flexibility that allows militaries to save manned helicopters from critical missions.

**Is ADASI considering expansion into the South Asian and African markets?**

One of the main focuses of our parent company, EDGE Group, is to develop the country's export potential in response to international demands. With an operating model that focuses on building collaborative opportunities, we work with our partners to serve our shared interests wherever it makes business sense to do so, therefore we are open to expanding into South Asia and Africa when the right opportunity arises.

**What are your visions and priorities for the company over the next decade? What is the roadmap ahead?**

We have several product launches in the pipeline that are set to bolster ADASI's position as a regional leader in autonomous systems. In the long term, we aim to focus on the development of our core activities and strengthening the technological capabilities of our customers. We will continue to innovate, integrate, evolve, and develop our own unique intellectual property (IP) as we prepare for an increasingly autonomous tomorrow.

**The first fully UAE-made high-performance vertical take-off and landing drone Garmoosha is a next-generation light unmanned aircraft system designed to perform across a diverse range of missions to meet defence and security force requirements, including intelligence, surveillance, and reconnaissance. It is used to detect gas pipeline leaks, survey infrastructure, and conduct search and rescue operations as well.**



# Sailing on Maritime Glory



**David Massey**  
CEO, ADSB

*David Massey is CEO of ADSB, an EDGE entity that specialises in designing, building, and servicing of naval and commercial vessels. In this role, he is responsible for managing the overall operations of the company to maintain its position as strategic asset for the UAE and a commercially successful builder of warships and other vessels for the GCC region and beyond.*

With top-of-the-line shipbuilding and maintenance facilities, ADSB is a strategic national asset for the UAE, partnering with naval and maritime authorities in implementing vital security and defence missions, excelling in vessel new build, repair, maintenance, refit, conversion, sustainment, and refurbishment, as well as engineering consultancy and technology deployment. David Massey, CEO of ADSB, speaks about the wide range of their vessel design portfolio and maritime operations.

Over the last two and a half decades, ADSB has become one of the most experienced shipyards in the region specialising in the build and maintenance of naval and commercial vessels. Where does ADSB stand globally?

With a strong track record of operational excellence in naval capabilities, ADSB is the UAE's trusted naval defence partner and a strategic national asset for the UAE. It supplies quality vessels and provides ongoing through-life support to the UAE Navy and the Critical Infrastructure and Coastal Protection Authority (CICPA).

The company has also made a name for itself internationally as a provider of world-class shipbuilding and maintenance services, as its inclusion in several regional and global awards testifies. We have been finalists of the Seatrade Ship Repair Innovation Award, The Maritime Standard Innovation Award, The Maritime Standard Shipyard of the Year Award, and the Lloyd's List Shipyard of the Year Award.

However, we should be realistic that while ADSB is a significant player in the GCC region, it is not yet a global player. However, the company has over the last year both enhanced its in-house design capabilities and has also acquired design IP, and now has a portfolio of internationally competitive designs in the 11 metre to 44 metre range, of which some of the prototypes can be seen at NAVDEX.

ADSB uses the latest technologies to maximise fleet readiness, extend ship

lifetimes, and lower overall lifecycle costs. Could you shed more light on its capabilities and state-of-the-art facilities?

We support naval and maritime authorities in implementing vital security and defence missions through vessel new build, repair, maintenance, refit, conversion, sustainment, and refurbishment, as well as engineering consultancy and technology deployment.

Our shipbuilding capabilities comprise the construction of highly complex vessels for navy and commercial customers. From fast interceptor boats to corvettes, our team has the know-how and technical background to build and service a wide range of vessels of all sizes.

In terms of facilities, we have a top-of-the-line main yard in Mussafah that spans more than 300,000m<sup>2</sup>. We also have a 2,000 tonne ship lift and can build up to 80 metres in length.

ADSB has built a series of special mission vessels for the Navy. Could you elaborate on your products and services in military shipbuilding?

ADSB builds and operates three main naval programmes – corvettes, offshore patrol vessels, and fast patrol boats/ interceptors – including the region's largest naval shipbuilding programme for UAE Navy's six Baynunah-class corvettes and the Arialah offshore patrol vessels. We also build landing craft, special mission vessels, as well as other vessels for the luxury and VIP market.



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Leveraging its shipbuilding and ship repair expertise, ADSB offers design, engineering, manufacturing, and implementation of all types of ship conversion projects. Could you share more details?

Working in close partnership with our clients, we can undertake everything from major repairs and conversions to the construction of modular units. In addition to mechanical and electrical refits work, and painting and blasting, ADSB is the leader in the region in complex combat systems integration. Combat systems now account for over half the whole life cost of a modern warship.

What are ADSB's commercial shipbuilding activities? Also, what are the latest updates on your Small Boat Construction division?

ADSB offers extensive commercial repair and maintenance services to the non-military market, primarily but not exclusively, to the oil services industry. As aforementioned, ADSB has in the past undertaken several luxury and VIP build and maintenance projects.

Our Small Boat Construction division manufactures landing craft, high-speed interceptors, patrol boats, RHIBS (rigid hulled inflatable boats) and other specialist vessels for customers from the GCC region and beyond. The division operates a 9,000m<sup>2</sup> state-of-the-art composite boat-building facility that can build and repair composite vessels up to 40m in length.

Did the COVID-19 pandemic affect ADSB's business? How did you overcome the challenges?

The pandemic interrupted land-based material supply chains due to border closures, and deliveries of combat systems parts from

European suppliers during the lockdown.

However, a more serious challenge was the threat of rapid transmission of the virus among the 500+ members of our workforce who live onsite, in many cases sharing rooms. ADSB was one of the first companies in the UAE to implement a weekly mass testing regime for all its onsite staff, and severely restricted access to the site from outside, while the administrative staff worked remotely.

Measures to contain the virus involved designating multiple buildings as isolation facilities for those who tested positive, quarantine for those exposed, and separate facilities for those who tested negative or recovered. Staff members were moved, sometimes every few days, where necessary. With a healthy workforce largely in their 20s to 40s, only a very small number of those who tested positive required hospital treatment. Despite the impact on workforce availability, ADSB never closed down, and maintained support to its customers throughout the pandemic, working with staff members who tested negative.

As commercial customers tried to mitigate the effect of vessels being off-charter or not being used in oil service operations, they brought forward some maintenance activities. Owing to this unexpected outcome, ADSB's commercial repair and maintenance revenues for 2020 are significantly ahead of targets.

Although international movement restrictions impacted business development, we used this time to strengthen our design team and work on new projects. At IDEX, we are exhibiting the prototypes of several new vessels that have been completely designed and built by ADSB for the first time.

**ADSB builds and operates three main naval programmes – corvettes, offshore patrol vessels, and fast patrol boats/interceptors – including the region's largest naval shipbuilding programme for UAE Navy's six Baynunah-class corvettes and the Arialah offshore patrol vessels. They also build landing craft, special mission vessels, as well as other vessels for the luxury and VIP market**

# Armoured Thrust



**Fahad Al Absi**  
CEO, AL JASOOR

*Fahad Al Absi is the Chief Executive Officer at AL JASOOR, an EDGE entity and the UAE's national specialist in armoured vehicles. In this role, he is responsible for developing and expanding national defense industry capabilities within medium to heavy armoured vehicles industry. Al Absi brings to his role 27 years of experience in national and multinational industries.*

AL JASOOR's armoured vehicles are on the forefront of innovation and design, ensuring a distinct competitive advantage with their immense potential as a flexible fighting vehicle devised for future multi-terrain combat. Fahad Al Absi, Chief Executive Officer, AL JASOOR, speaks about a new generation of faster, more mobile, and more versatile vehicles with advanced offensive and defensive capabilities in this interview. Excerpts:

**Armoured vehicles play a crucial role in ensuring the safety of those on the frontline, and new models with the latest defensive and offensive tech are emerging. Where does AL JASOOR stand globally in armoured vehicle manufacturing, and what are its major achievements?**

AL JASOOR is the UAE's armoured vehicles specialist, the exclusive supplier of the Rabdan 8x8 infantry fighting vehicle (IFV), and a proud partner of the UAE Armed Forces. The company leverages advanced technologies and innovations to build highly mobile and versatile vehicles that provide guaranteed protection to those on the frontlines through enhanced ground force capability and tactical flexibility.

**Could you tell us more about your Rabdan 8x8 vehicle and its capabilities?**

The Rabdan is a next-generation amphibious armoured vehicle that offers unique operational, tactical, and technical advantages on land and water. The advanced, mission-ready vehicle, built for a range of objectives and terrain styles, is available in several configurations with a maximum capacity of 11 troops and a top speed of 100km/h. Providing Level 4 ballistic and mine protection, it can be equipped with different types of exterior armour and a high-calibre turret-based weapon system.

Rabdan 8X8 has been developed and tested to the most rigorous military standards, the Rabdancers to the operational requirements of Armed Forces

around the world. Supplied as a complete built unit, the vehicle features a modular multi-wheeled structure, and comes with a dedicated long-term package of military-grade integrated logistics support services.

In addition, it has a significant technology and systems development potential in the years to come.

**What are the key aspects of this package of services?**

The package includes on site client acceptance support, repair, refurbishment, preventive maintenance, 20-year supply of spare parts, special tools, technical support, local retrofitting, customisation to meet a range of mission objectives, as well as operational and maintenance training and know-how.

**Is AL JASOOR considering South Asia and Africa as target markets for expanding its business?**

With defence modernisation programmes accelerating globally, including the replacement of ageing vehicle fleets, the demand for 8x8 vehicles is growing rapidly. AL JASOOR is very keen to use this opportunity to enter the wider Middle East and Asia markets.

**The Indian army is proceeding with the modernisation of its armoured vehicle fleet. What could AL JASOOR offer the country in this context?**

The battlefield of the future presents a diverse and complex environment with



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increasingly challenging combat scenarios. This demands a new generation of land vehicles that can provide swift insights and intelligence, flexible planning, and responsive tactics.

The safety and survivability of soldiers is a top priority for any military, and AL JASOOR ensures that those on the front lines are protected by a new generation of faster, more mobile, and more versatile vehicles with advanced offensive and defensive capabilities. AL JASOOR's military vehicles are on the forefront of innovation and design, and offers customers a distinct competitive advantage. With its powerful combination of performance and value, the Rabdan has an immense potential as a flexible fighting vehicle designed for future multi-terrain combat.

In addition, the Indian army could benefit from our R&D capabilities that play an important role in ensuring frontline survivability. We leverage modern testing techniques, battlefield intelligence, and cutting-edge technology tools to develop platforms that support mission success and occupant protection while anticipating existing and future threats.

Our R&D involves direct interaction with our customers so that we can better understand their requirements for armoured vehicles and the potential needs of their occupants.

**Could you shed some light on your production facilities with a focus on design, use of advanced technologies, quality assurance, etc.?**

We have a dedicated team of engineers and technicians specialising in the heavy vehicles industry (HVI). All Rabdan vehicles are inspected to the highest international standards through our onsite testing and acceptance processes.

We incorporate the latest technological innovations, including artificial intelligence (AI) and survivability equipment, into engineering disciplines that are crucial to the armoured vehicle manufacturing process, such as electrical and mechanical engineering. AI offers significant benefits to the armoured vehicles segment. The speed with which AI-enabled sensors, computers, and targeting systems process and analyse information is growing at an unprecedented pace, supporting ever-increasing degrees of autonomy.



**Rabdan 8X8 is a next-generation amphibious armoured vehicle that offers unique operational, tactical, and technical advantages on land and water. It caters to the operational requirements of Armed Forces around the world. Supplied as a complete built unit, the vehicle features a modular multi-wheeled structure, and comes with a dedicated long-term package of military-grade integrated logistics support services**

# Boosting Lifecycle Solutions



**Abdelqadir Aqeel Al Ali**  
CEO, AL TAIF

*Abdelqadir Aqeel Al Ali is Chief Executive Officer of AL TAIF, a subsidiary of EDGE that specialises in the maintenance, repair, and overhaul (MRO) of military armoured vehicles and ground support machinery. Al Ali is playing a dynamic role in shaping and steering the strategic direction of AL TAIF Company and implementing the company's vision and mission.*

AL TAIF, a strategic partner of the UAE Armed Forces responsible for the maintenance, support and technical readiness of all its tracked and wheeled vehicles, provides comprehensive lifecycle support, engineering solutions, upgrades, modernisation, and technology integration across a wide range of defence platforms and systems. Abdelqadir Ali Al Ali, Chief Executive Officer, AL TAIF, speaks about their vision, to be the premier Centre of Excellence for comprehensive lifecycle support for defence systems in the MENA region and beyond. Excerpts from the interview:

**MRO services are crucial for extending the lifecycle of land platforms, heavy utility vehicles, and ground support equipment. How successful has AL TAIF been in achieving its mission of supporting the operational readiness of land platforms?**

AL TAIF has more than 14 years of experience in comprehensive lifecycle support and precision training solutions in Land MRO. The company combines local and international expertise, sector-specific knowledge and an ability to offer multi-platform support to deliver end-to-end solutions. We provide complex, extensive, and premium-quality maintenance services across a comprehensive portfolio, delivered against rigorous timelines in order to maximise asset availability.

Our customers and industry OEM partners trust us to optimise performance on all products and provide critical lifecycle services, enabling the Armed Forces to focus on their mission priorities.

Our technical training capabilities complement our offering by equipping operators with an in-depth understanding of legacy and new technologies. We have highly skilled and experienced technical training staff that use innovative teaching methods, such as augmented reality, to help our clients to achieve mission readiness.

In addition, our supply chain management team provides a range of services, including warehousing, inventory management and procurement. We leverage big data and analytics to develop the most effective

maintenance forecasts and schedules.

**Could you share with us some of the major milestones in AL TAIF's success journey over the last one and half decade?**

Our most significant milestone has been becoming a strategic partner of the UAE Armed Forces responsible for the maintenance, support, and technical readiness of all its tracked and wheeled vehicles.

We are also proud of our growing list of international technical certifications that govern our MRO processes and help us maintain the highest quality levels. These include ISO 9001, ISO 14001, ISO 1725, and 45001.

**What are the services and facilities offered by the MRO division of AL TAIF for the military sector? Could you elaborate on the advanced technologies and platforms used?**

Through our nine state-of-the-art facilities, strategically located for agility and flexibility, we can address all types of lifecycle support requirements quickly and efficiently.

Our MRO services includes, repair, rebuild and overhauling to be executed on a variety of wheeled and tracked vehicle platforms for the UAE Armed Forces. Capabilities include: machining of engines; electronics and electrical repair of vehicles and components; rebuild of components, such as engine transmission and differentials; vehicle and component upgrade; component refurbishment; and



interior and exterior bodywork, painting, and welding. We specialise in heavy and light vehicles, equipment, and small arms.

This life cycle is managed through an integrated ERP system to manage and control the company's daily routines that include work orders and demand management, supply chain and procurement, human capital and more. The system is utilised for business intelligence, optimum resource management, efficiencies, MRP and financial control to ensure the continuity of best-in-class services and development.

**AL TAIF provides engineering solutions, upgrades, modernisation, and technology integration across a wide range of defence platforms and systems. Could you tell us more about your engineering division?**

Our engineering division comprises a materials testing laboratory, a calibration laboratory, and a fabrication workshop.

Operated according to global best practices, our materials testing laboratory conducts critical assessment of parts and components in areas such as material composition and structure against specified criteria and intended

application. Its services include failure analysis, spectroscopy, metallographic examination, non-destructive testing (NDT), oil analysis, polymer identification and thermal analysis, and corrosion tests.

Meanwhile, our state-of-the-art calibration laboratory provides a superior level of assurance in the quality of our work.

We also run a dedicated workshop to fabricate customised products and parts using materials such as mild steel, aluminium, stainless steel, and brass. The facility has five main areas: machining, sheet metal work, welding, vehicle modification, and foundry.

**What are your visions and priorities for the company over the next one decade? What is the roadmap ahead?**

We have big plans for AL TAIF in the coming years. Our vision is to be the premier Centre of Excellence for comprehensive lifecycle support for defence systems in the MENA region and beyond.

Ultimately, our aim is to accelerate our technological development, become a one-stop-shop for business integration, and remain at the forefront of advanced technology solutions. ■

**AL TAIF aims to accelerate technological development, become a one-stop-shop for business integration, and remain at the forefront of advanced technology solutions in Land MRO**



# Setting Benchmark for Pilot Training



**Hareb Thani Hareb Al Dhaheri**  
CEO, HORIZON

With state-of-the-art facilities and a multinational team of experienced instructors, HORIZON, the premier flight academy in the Middle East, offers international-standard and bespoke rotary wing training to commercial and military aviators. Hareb Thani Hareb Al Dhaheri, Chief Executive Officer, HORIZON International Flight Academy, speaks about their futuristic goals and expansion plans. Excerpts from the interview:

**HORIZON is now the region's largest helicopter flight training academy. Could you shed some light on HORIZON's journey since its establishment in 2003, the run-up to establishing this company for training pilots locally and regionally?**

For over 18 years, the company has trained and upskilled rotary wing pilots locally and regionally, playing a fundamental role in the development of aviation capability, while setting the benchmark for quality across the MENA region. Since our launch in 2003, we have grown to become the premier flight academy in the Middle East. We offer international-standard and bespoke rotary wing training to leading commercial and military operators. With state-of-the-art facilities and a multinational team of experienced instructors, HORIZON's basic and advanced training programmes are taught and delivered to the highest standards of safety, quality, and efficiency, in the industry.

**What are HORIZON's state-of-the-art facilities and capabilities, for delivering training programmes? Could you also shed some light on various training courses the academy offers?**

At HORIZON, we have a 10,000 sq. metre training facility located at Al Ain. Our classrooms are equipped with latest multimedia as we are now fully depending on multimedia training. We have four hangers equipped within our facilities, which can hold all our aircrafts for maintenance work and parking. We offer basic and advanced training courses for single and twin-engine helicopters for civilian and military

purposes, including Qualified Military Pilot Bridge Course (QMP), Instrument Rating IR (H), Flight Instructor FI(H), and Commercial Pilot License CPL (H), Private Pilot License (PPL), among others. In addition to the standard courses, Horizon offers specialised Night Vision Goggle (NVG), Multi-Crew Cooperation (MCC) courses and Air Transportation Pilot License (ATPL). Our comprehensive selection of international standard flight training courses is designed to cater for a range of students and skill levels. In addition to single and twin-engine helicopter training, we also provide a diverse array of aviation courses, which all offer a mix of practical and theoretical experience in flight safety, ground safety, aircraft accident investigation and management, aviation management, crew resource management, and management of flight safety and accident investigation.

**More than 1500 pilots have already graduated from HORIZON. Could you give a detailed picture of the team and the international standards which are being followed?**

Our multi-lingual trainers deliver theoretical and practical training, including flight and ground safety and accident investigation. Our advanced, industry-standard programmes train over 100 pilots every year and we are proud to help add to the UAE's pool of talent and boost the maturity of the local and international aviation industry, enabling them to earn nationally and internationally recognised qualifications. We have received a number of internationally recognised approvals and

*Hareb Thani Hareb Al Dhaheri has been the Chief Executive Officer (CEO) at HORIZON International Flight Academy since 2011. As a retired Brigadier and Pilot with the UAE Armed Forces, he has amassed more than 30 years of experience in aviation and education. He started his career as a helicopter pilot in the UAE Armed Forces and went on to hold multiple senior positions in the military.*





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certifications for our work, including ISO 9001: 2015. Our training courses comply with the European Union Aviation Safety Agency (EASA) standards and we are also officially approved by the UAE General Civil Aviation Authority (GCAA).

**Are you developing more advanced courses for upskilling today's experienced pilots?**

We ensure that we operate our training courses on the most modern of fleets, with the Bell 505, 407 and 429 all in service at our training academy in Al Ain, as well as four different state-of-the-art simulators. Bell helicopters are equipped with modern equipment such as the glass cockpit and Garmin function which enhances safety. The Garmin G1000H NXi avionics and dual channel FADEC (Full Authority Digital Engine Control) provide enhanced situational awareness. We also leverage the latest advanced technologies to ensure our training is cutting-edge, with computer-based training, multimedia classrooms, iPad technology, glass cockpit helicopters. We recently added two twin-engine helicopters for the advanced courses such as flying over water, over mountain and for search and rescue missions. In addition, we provide Night Vision Goggles (NVG) flying, which enables the pilot to fly at night. This allows students to complete single engine training and then without a break do advanced training on twin-engine helicopter.

We are continuing to set the benchmark for pilot training worldwide by guiding tomorrow's aviators and upskilling today's experienced pilots. We are developing more advanced courses, expanding our single and twin-engine helicopter training programmes, and bringing in the latest high-tech simulators to meet the growing demands of our industry.

**What are the expansion plans and priorities in the near future?**

We started our expansion plans three years ago. We introduced a new fleet, the Bell 505. We have also expanded by adding helipads to our tarmac to accommodate up to 18 helicopters at a time. Our immediate goal is to obtain a full Approved Training Organisation (ATO) certification from GCC countries and to shape Horizon Academy into a one-stop-shop for all aviation training needs.

**What are the measures initiated by HORIZON to overcome the pandemic effect and to continue train a new generation of world-class pilots?**

Horizon is actively adapting despite the current challenges. Our Distance Learning System and other online learning tools have been upgraded to take in and continue the theoretical portion of our pilot education programs, thereby allowing our students to attend classes from home. ■



**HORIZON ACADEMY's immediate goal is to obtain a full Approved Training Organisation (ATO) certification from GCC countries and to shape the Academy into a one-stop-shop for all aviation training needs**

# Stunning Pyrotechnics



**Mohamad Al Falasi**  
CEO, APT

*Mohamad Al Falasi, the CEO of APT is responsible for providing strategic leadership for APT, and has over two decades of experience in business management, particularly in the fields of weapons, ammunition manufacturing, project management, training and R&D. He has held several senior positions throughout his career and has been successful in establishing effective working teams and systems. Prior to joining APT, Mohamad was the Head of the Licensing Division at the Ministry of Defence.*

APT produces high-performance non-lethal pyrotechnics and low-velocity ammunition for the defence and security sector. Mohamad Al Falasi, CEO of APT, highlights innovative solutions and tactical assets that are ideally suited to operations on the battlefield and in civilian settings. Excerpts from the interview:

With world class pyrotechnics manufacturing facilities, APT is now a leading manufacturer of high-performance non-lethal pyrotechnics and low-velocity ammunition for the defence and security sector. Could you take us through your success journey and major achievements?

A leading regional manufacturer established in 2016, APT produces high-performance pyrotechnics and low-velocity ammunition at its advanced manufacturing facility in the Tawazun Industrial Park (TIP) in Abu Dhabi. The military-grade testing and manufacturing process is driven by a deep understanding of the environments and scenarios where these tactical assets are needed the most.

APT's key customers include the UAE Armed Forces, Critical Infrastructure and Coastal Protection Authority, Abu Dhabi Police, Sharjah Police and Dubai Police. With an ultimate mission of supporting safety and security, APT delivers innovative solutions that are ideally suited to operations on the battlefield or in civilian settings.

APT makes use of high-grade pyrotechnic technologies to manufacture high-performing products. Could you give us a detailed picture about APT's products including smoke grenades and projectiles for signalling?

Flagship APT products include a range of hand grenades, thunderflash, signal cartridges and sound and flash grenades—designed for use by military, special forces, law enforcement and rescue teams – which feature either incapacitating sound and light capabilities, signalling and coloured smoke and irritants for a wide range of applications.

To go one step further in meeting customer requirements, APT has been developing

hybrid products comprised of several effects embodied within one product, such as sound & flash and CS smoke, sound & flash and CS powder dispersion, sound & flash and colour smoke products.

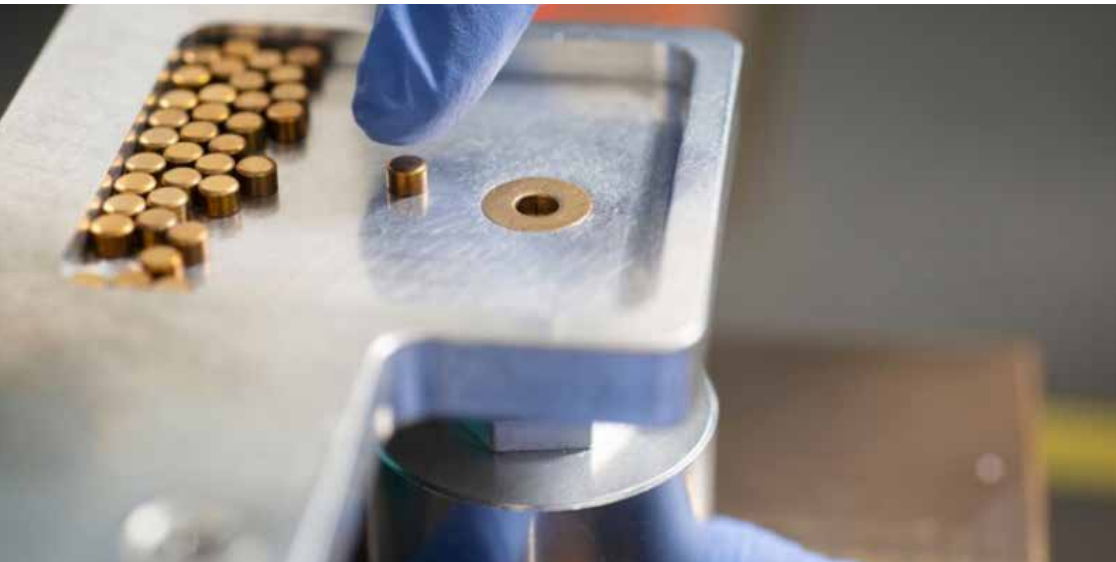
As with all APT's products, these are flexible and dependable – with the density, speed of deployment, and burning duration of the smoke cloud all fully adjustable. Furthermore, the smoke colours are comprised of organic dyes meaning the grenades are environmentally friendly, with protected aluminium packaging ensuring a long shelf life.

Over the years APT has developed technical and technological capabilities to produce advanced pyrotechnics for the region's armed forces and security agencies. How competitive is the sector and where does APT stand among the players?

Competition is a part of any business, and APT differentiates itself from the competition by focusing more on what the customer wants and their primary needs as we are more flexible and innovative in our approach. We strive to build on our current capabilities to extend our product offering and remain flexible enough to accommodate different requirements from various customers.

What are the standards APT has adopted to ensure the safety of operations and the sophistication of facilities?

APT's focus is on building positive, long-term and sustainable relationships with customers, with products fully customisable to meet the needs of specific operations. The company has adopted military standards and German technology specifications in accordance with international regulations



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and is registered with the NATO Codification Bureau.

APT has recently been certified with the Quality Management System ISO 9001: 2015. The company has approved Occupational Safety and Health Management System from Abu Dhabi Occupational Safety and Health Centre (OSHAD) as a mandatory statutory (legal) requirement. APT is also reporting to IDB (sector regulatory authority) HSE department directly.

There is an established industrial base to support more complicated systems and subsidiaries within the EDGE Group to which APT belongs, which are keen to collaborate in providing services such as testing facilities and laboratories.

**APT has support services designed to offer expertise to the whole industry, from training new recruits to partnering with other leading defence manufacturers. Could you elaborate on these support services?**

APT is a company within the Weapons and Missiles cluster of EDGE, an advanced UAE-based technology group for defence and beyond that ranks among the top 25 military suppliers in the world. APT products are reliable, easy to use and affords safe handling since clear operating instructions are provided with the products to customers. APT offers any additional training customers may need.

**As realistic training is required for operational readiness, you need to expose trainees to realistic but safe imitations of explosions. What type of support does APT provide in this area?**

APT supports training in terms of operational usage and technical information requirements. Operational training is simulated with a realistic approach by providing electric smoke grenades with sound simulation (one of the latest products used by law enforcement training in Germany).

**The COVID-19 pandemic has affected industries across the globe. How did APT brace for the impact of the pandemic? What are the post Covid-19 plans?**

The ongoing pandemic has created a challenging operating environment for most commercial companies around the world, and APT and its parent company, EDGE Group, are no different. We are fortunate to enjoy deep and trusted relationships with our customers and key suppliers and this lends itself to an attitude of confronting the challenges together. APT's executive leadership has also been proactive in foreseeing the potential effects of the economic slowdown prompted by the pandemic, and have acted accordingly. The safety of staff, partners and customers has been of the highest priority in APT's internal approach to mitigating the effects of the virus.

**APT has adopted military standards and German technology specifications in accordance with international regulations and is registered with the NATO Codification Bureau**



# Redefining Smarter Ammunitions



**Arafat Al Yafei**  
CEO, LAHAB

*Arafat Al Yafei is responsible for overseeing the manufacturing of all ranges of ammunition from small arm and infantry to artillery and aircraft. He is also responsible for leading the deployment of cutting-edge technologies and the enhancement of in-country manufacturing capabilities. Arafat possesses extensive experience in the deployment, development and distribution of ammunition to fulfil the demands of the UAE Armed Forces, along with regional partners.*

*Prior to joining LAHAB, formerly known as Barij Munitions, Arafat served as the CEO of Abu Dhabi Carbon Capture Company, a joint venture between ADNOC and Masdar, where he led the establishment of the first commercial carbon capture and utilisation project in the Middle East.*

LAHAB has the region's most advanced and diverse manufacturing, assembly and integration capabilities for a wide product range that includes small, medium and large calibre ammunition for infantry, artillery and aircraft, and it serves regional armed forces and law enforcement agencies, as well as industrial customers that require ammunition testing and technical support services. Arafat Al Yafei, CEO of LAHAB speaks about emerging technologies and smarter ammunition designs. Excerpts from the interview:

LAHAB began its operations in 1994 with small arms manufacturing and launched production of medium and large calibre weapons in 2008. Having more than 25 years of experience in defence and security sectors, could you give a detailed picture of the company's close association with militaries, law enforcement agencies and sports clients during these years?

LAHAB's portfolio features small-calibre arms ranging from the 5.56x45 mm to 12.7x99 NATO as well as shotgun ammunition for sporting, hunting and special applications, including law enforcement, right through to medium- and large-calibre weapons ranging from 40 mm grenades to 122 mm artillery rockets, and MK series GP serial bombs.

Our high-end manufacturing and assembly facility enables us to maintain agility and flexibility in responding to client needs, and quickly customise products for mission-specific requirements. Our advanced manufacturing capabilities are complemented by comprehensive testing and technical support services, providing continuous expert support throughout the munition's lifecycle – from assembly to decommissioning through our demilitarisation services for almost all types of explosives and pyrotechnics.

As leading munitions manufacturer meeting international quality and security standards, could you give us an overview of the products and services offered by LAHAB? Who all are the major clients

globally?

At LAHAB, our manufacturing, assembly and integration capabilities are among the region's most diverse and efficient. Our product range includes small, medium and large calibre ammunition (5.56 x 45mm, 7.62 x 51mm, 9 x 19mm, 12.7 x 99mm, .308 WIN and .223 REM, grenades, mortars, artillery ammunition, aircraft bombs) ammunition. LAHAB also has the capability to perform the Service Life Surveillance (SLS) programme for all munitions types to support the UAE military. We additionally offer complete explosive and ammunition end-of-life demilitarisation for almost all types of explosives and pyrotechnics, featuring disassembly, separation and incineration using on-site safe demilitarisation that is monitored by government authorities to ensure our compliance and fulfil our commitment to the environment. LAHAB also disposes of commercial mining, oil, and gas products.

Even while harnessing the latest technologies and advanced manufacturing capabilities, have you been able to develop your own intellectual property and technology to meet the customers' evolving requirements?

With our research and development capabilities we have developed and licensed our own intellectual properties. Our Continuous Improvement Programme is focused on adopting cutting-edge technology advances that include process



optimisation and high-precision tools.

requirements of our customers.

Being a supplier to regional armed forces and law enforcement agencies, what are the international standards and specifications followed by LAHAB to ensure quality and safety for the end user?

To ensure our products' compliance and adaptability in the international weapon systems we follow international standards such as the NATO standards and others. Also, we always ensure our products will work on our clients' weapons by providing proper certificates.

Could you elaborate on LAHAB's 'Continuous Improvement Programme', which is intended to adopt cutting-edge technologies including process optimisation and robotics production using high-precision tools?

Emerging technologies and smarter ammunition designs are part of the DNA of the LAHAB research & development team, which drives our Continuous Improvement Programme. Our state-of-the-art x-ray inspection lab provides advanced testing capabilities – making it one of the most effective non-destructive testing (NDT) facilities available in the region to assure product completeness and quality.

Given LAHAB's experience and expertise, its production lines continue to evolve to meet the quick advancement of technology. We adapt our strategy to ensure the safety and security of our employees and facilities.

We are also committed to adapting to market changes, particularly in integrating technologies. LAHAB acquires, adopts, and implements cutting-edge technologies – not only in terms of products, but also within the manufacturing process. We ensure that we meet the changing

With advanced manufacturing capabilities complemented by comprehensive testing and surveillance programmes, how does LAHAB look at South Asia and Africa as markets for expanding its business?

LAHAB currently serves both regional armed forces and law enforcement agencies, as well as industrial customers that require ammunition testing and technical support services. We are seeking to become the default supplier of ammunition for the UAE and region. We are currently looking to export our products internationally, considering them most suitable for markets in the GCC, South Asia and Africa. We are always open to explore potential areas for collaboration in significant markets around the world.

The defence industry across the world is bearing the brunt of Covid-19 pandemic. What are the measures taken by LAHAB to overcome the pandemic effect and what are the post Covid-19 plans?

The ongoing pandemic has created a challenging operating environment for most commercial companies around the world, and LAHAB and its parent company, EDGE Group, are no different. We are fortunate to enjoy deep and trusted relationships with our customers, so there is an attitude of confronting the challenges together. LAHAB's executive leadership has also been proactive in foreseeing the potential effects of the economic slowdown prompted by the pandemic, and have acted accordingly. The safety of staff, partners and customers has been of the highest priority to LAHAB's internal approach to mitigating the effects of the virus. ■

While seeking to become the default supplier of ammunition for the UAE and region, LAHAB is exploring potential areas for collaboration in significant markets around the world, especially in the GCC, South Asia and Africa



# Hitting the Bull's Eye



**Manuel Wipf**  
CEO REMAYA

*Manuel is a defence specialist and former member of the Swiss Army, with nearly three decades of international experience across the USA, Europe, Asia and the Middle East. His capabilities have played a key role in establishing REMAYA as a leading entity in the local shooting and defence training industry and have led to the successful foundation of multiple defence organisations across the world. In his role as the CEO, Manuel oversees several critical functions and departments across the company and is committed to developing its core competencies while maximising avenues for commercial success.*

A global leader in creating and delivering military-grade shooting ranges and imparting live fire training, REMAYA offers a variety of complete turnkey solutions and complex systems. Manuel Wipf, CEO of REMAYA, speaks about designing and developing bespoke, custom-built live fire training centres using the latest virtual reality technologies, cutting-edge live fire target systems, robotics and simulation systems. Excerpts from the interview:

**A key player in the Missiles & Weapons Cluster at EDGE since its inception in 2009, REMAYA has been creating and delivering military-grade shooting ranges and imparting live fire training for defence forces, corporations, NGOs, and nations worldwide. How challenging has been the road to success?**

Our belief in offering the best facilities available has been a positive guiding proposition. REMAYA's core capabilities comprise providing military training facility design and development, project management, shaping policy, building live-fire target systems, video simulation, range operations and maintenance. The company's programmes focus on providing facilities where armed personnel can train for the future battlefield given evolving threat profile.

**Could you give a detailed picture of REMAYA's products and services like range and training area design and construction and live fire target systems supply and installation?**

We create and deliver world-class military grade shooting ranges from the initial design and development stages right through to operations and management and impart live-fire training to organisations serving and enhancing the skills of defence forces.

Our REMAYA Training Centre (RTC) provides training in a realistic location and under appropriate climatic conditions, using the latest customisable targetry systems and range management software.

We provide a realistic environment for our

clients to train and certify their defence and security forces from around the world at our purpose-built live fire training facility, the REMAYA Training Centre in Al Ain. We also host numerous local and international certification programmes from the UAE's Military Qualification Authority, the US state department certified WPS (World Protection Services) program, US DOD SSS (Security Support services), Mission Support, Defensive Driving, Close Protection and Close Quarters Combat (CQC) training, and HEAT (Hostile Environment Awareness Training) and official certification for range personnel.

We also operate an unrivalled 3,000 square metre R&D workshop in the Tawazun Industrial Park in Abu Dhabi, from where we develop innovative solutions to continue improving the training experience at our facilities.

**How important is firearms training and live fire facilities in a volatile world? Could you shed some light on the latest advanced technologies that REMAYA has harnessed to provide security forces the training and facilities required to be more flexible and responsive?**

With the constantly changing spectrum of threats around the world, defence forces today need to be more flexible and responsive than ever. They must be ready for any challenge an operation might throw at them.

In addition to industry-leading facilities, at the heart of REMAYA's approach to facilitating training are more than 120 trained engineers and technicians working



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to create custom live-fire range environments. These experts collaborate with clients to analyse training methods and understand missions and goals before implementing 21st century technologies that incorporate cutting-edge approaches to support modern training within a safe environment.

**Strongly into building 21st century shooting ranges, who all are REMAYA's major clients? What are the business prospects in the South Asian and African markets for the business?**

REMAYA provides services and support to defence forces, corporations, NGOs, and nations worldwide with military-grade shooting ranges. Clients from South Asia and Africa remain important to us, and we are active in our desire to collaborate with vetted organisations from around the world.

**Could you share with us REMAYA's in-house capabilities and other strengths in providing solutions and complex systems for live fire ranges, besides the custom-designed procedures to manage, operate and maintain shooting ranges?**

We are a global leader in creating and delivering military-grade shooting ranges and imparting live fire training. Our success is based on the variety of complete turnkey solutions and complex systems for live fire ranges we offer, designed, and built specifically to meet the precise demands of our clients. Today, we design and develop bespoke, custom-built live fire training centres using the latest virtual reality (VR) technologies, alongside cutting-edge live fire target systems, robotics and simulation

systems. We also manage, operate, and maintain shooting ranges using state-of-the-art range management software, based on our custom-designed procedures.

Our significant differentiators include our provision of complete turnkey solutions for military-grade shooting ranges; our integrated range VR imaging with customisable range management software for designing, operating and maintaining shooting ranges; as well as our smart robotics to simulate soft targets. We also provide a fully customisable training centre, adaptable to meet our customers' needs, and an international network of certified, accredited instructors and partners.

**Did the Covid-19 pandemic affect REMAYA's business? How did you overcome the challenges?**

The ongoing pandemic has created a challenging operating environment for most commercial companies around the world, and REMAYA and its parent company, EDGE Group, are no different. However, we utilised this situation to develop new and important add-ons to our proposition, including the construction of residential facilities in our own training camp in Al Ain.

**What is the roadmap ahead for REMAYA? What are the goals and objective you have set for the company?**

We are focused on strengthening our capabilities and maintaining innovation, placing customer satisfaction at the heart of all our efforts to enhance our facilities, services, and products. ■

REMAYA Training Centre in Al Ain is a purpose-built live fire training facility where a realistic environment is provided to train and certify defence and security forces from around the world



# Mission Safety



**Talal Al Hashmi**  
Managing Director, ERS

*Talal Al Hashmi is the Managing Director of ERS. In his role, he provides expertise and knowledge transfer to clients in the Defence, Government, Health, and Education sectors. As Managing Director, he oversees strategic and technical initiatives to provide firefighting services, such as 24/7 aviation emergency response services, internationally recognised fire and rescue training services, facility fire safety, and maintenance services for specialised firefighting vehicles and equipment.*

As the exclusive provider of fire and rescue services to the UAE Air Force and Air Defence, ERS's services range from complete management and high-level consultancy, to the development and 24/7 operation of fire stations, vehicles and equipment, installation of fire detection systems, and emergency planning as well as firefighter recruitment and training. Talal Al Hashmi, Managing Director, ERS, tells us how it has evolved into a regional leader in fire and rescue. Excerpts from the interview:

Security services have become more sophisticated globally and emergency response has become increasingly critical. As a leading provider of integrated frontline fire and rescue services, how do you assess the present systems and technologies used in the industry? What are the challenges ahead?

As our cities become ever more integrated and advanced, and our security services more sophisticated, our region requires a world-class emergency response to keep pace. Training in fire inspections, pre-emergency planning, community risk assessment, and reporting on findings, is becoming increasingly critical to prevent loss of life, injuries, protect assets and maintain control over situations that could escalate in no time.

Because emergencies and disasters can strike at any moment the challenge for any emergency response provider in the future is to ensure more scientific methods of forecasting - in operational planning, as well as in engagement during emergencies and disasters. At ERS, we respond to that need through data gathering, analysis, pre-planning and regularly testing of the plans to provide reliable and effective fire and rescue services to the UAE Armed Forces.

Over the last one decade ERS has evolved as provider of comprehensive and turnkey solutions in fire and rescue services. What are some of your services and who are your clients?

Over the years, ERS has evolved into a regional leader in fire and rescue, working on behalf of major clients in the UAE's government, military and commercial sectors. Today, our substantial on ground presence and proven capabilities enable ERS to offer our clients in-depth strength and expertise through consistently applying industry best practices. As the exclusive provider of fire and rescue services to the UAE Air Force and Air Defence, ERS's services range from complete management and high-level consultancy, to the development and 24/7 operation of fire stations, vehicles and equipment, installation of fire detection systems, and emergency planning as well as firefighter recruitment and training. ERS presently provides services to the Joint Logistics Command which includes UAE Presidential Guard, UAE Air Force & Air Defence and UAE Joint Aviation Command.

What are the technical services offered by ERS to ensure the readiness of firefighting assets of the customers?

ERS offers comprehensive, integrated turnkey solutions, as well as specialist equipment and vehicles, facilities management, manpower, training and procurement – all conforming to the most stringent international standards. With a global reach that gives us access to a pool of multinational subject-matter experts, ERS consistently applies industry best practices to enable end-users to outsource





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the emergency response function confidently.

The effectiveness of firefighting and rescue services partially depends on the efficiency of the personnel involved and ERS has been delivering comprehensive training and professional development programmes. Could you elaborate more on this?

ERS works relentlessly to ensure frontline fire safety for our clients. In addition to advanced technologies and best practices to save lives, world-class emergency firefighting and rescue services also depend on the effectiveness of the firefighters deployed. To ensure this, we provide comprehensive training and development for new and existing operational firefighters, in compliance with the latest International Civil Aviation Organization (ICAO) and National Fire Protection Association (NFPA) standards, across a range of exacting scenarios, conducted by a team of senior trainers with regional and international firefighting experience. This training includes hazardous materials response, domestic firefighting and fire officer training and

development.

We also offer fire inspection and prevention training to help reduce the risk of fire. Our fire safety services are conducted in line with the UAE Fire and Life Safety Code of Practice and other internationally recognised benchmarks such as the NFPA. In addition, our fully qualified team of fire safety professionals can apply their direct experience of working with international organisations in ensuring compliance to these standards.

What goals and objectives have you set for the company in the coming years?

ERS is working to become an international centre of excellence for the provision of fire and rescue services in the short term. In the years to come, the company seeks to set benchmarks for emergency fire response in the UAE. One of our long-term development and engagement plans is to commit to enhance local expertise and meet Emiratisation targets, with the support of our regional and international talent.

ERS provides comprehensive training and development for operational firefighters, in compliance with the latest International Civil Aviation Organization (ICAO) and National Fire Protection Association (NFPA) standards, across a range of exacting scenarios.



# Precision Tooling Hi-tech Solutions



**Christian Ziehe**  
Acting CEO, EPI

*Christian Ziehe is the Acting Chief Executive Officer (CEO) of EPI, an EDGE entity and regional leader in manufacturing high-quality complex engineering components for the defence, aerospace, and oil and gas sectors. In his role, Christian is tasked with enhancing the company's competitiveness through transfer of work from Europe, cycle time reduction, raw material and manufacturing process optimisation, and developing manufacturing synergies. Ziehe brings to his role over three decades of technical and managerial experience in the aerospace and defence industries across diverse business functions, including sales and marketing, research and design, quality management, procurement, logistics and production.*

EPI, the engineering backbone of the UAE's aerospace and defence industry, manufactures high-quality complex metallic engineering components for the defence, aerospace, space, and oil and gas sectors at its advanced facilities in Abu Dhabi. Christian Ziehe, Acting CEO of EPI, speaks about their strategic partnerships with leading global players. Excerpts from the interview:

**Since its inception in 2007, EPI has evolved into one of the GCC's premier precision engineering facilities for the aerospace, defence and oil and gas industries. What are the major milestones over these years and where does EPI stand globally?**

We are proud to be known as the engineering backbone of the UAE's aerospace and defence industry. The company's core business is to provide design-specific metallic machined parts, surface treatment services and first level of assembly applications to customers within the aerospace, defence and oil and gas sectors. EPI's capabilities span engineering, production, surface and heat treatment, machining, coating, repairing and tooling. Over the years, we have been developing valuable strategic partnerships with established players across the globe-building our supply chain, our capabilities and expertise. In 2011, EPI became the first company in the Gulf region to achieve EN/AS9100 certification – the leading Quality Management System for the aerospace industry. Very recently, we formally announced that we are expanding our manufacturing capabilities to support the Boeing 787 Dreamliner. The serial assembly lines will be an extension to the current Abu Dhabi facility.

**How does EPI look at South Asia and Africa as markets for expanding its business? What are the existing operations in these areas?**

We are open to new partnerships from South Asia and Africa and remain focused on providing premium solutions to our partners. Most of our customer-base, 85%, is from the aerospace sector, with others

from the defence, space, and oil and gas sectors. Our strategic partnerships with leading global players give us an edge over other enterprises. Working in partnership, round the world, we provide state-of-the-art engineering services to some of the world's most foremost aviation and defence original equipment manufacturers (OEMs) – such as Airbus, BAE Systems, Boeing, Dassault Aviation, Leonardo, Raytheon, SAAB and Steila Aerospace.

**EPI recently announced its plans for expanding manufacturing capabilities for Boeing Dreamliner. What are the products and services offered by EPI in the aerospace industry? Who are the major clients?**

EPI manufactures high-quality complex metallic engineering components for the defence, aerospace, space, and oil and gas sectors at its advanced facilities in Abu Dhabi. Last year EPI announced that it is expanding its manufacturing capabilities to support the Boeing 787 Dreamliner. EPI will machine parts for use in the 787-commercial aircraft. The processed parts will additionally go through EPI's surface treatment plant. EPI predominantly does precision machining but this collaboration with Boeing will help us move beyond machining and into aircraft parts assembly for aerospace Original Equipment Manufacturers (OEMs). Today, we also offer design enhancements and modifications. We provide expertise in every aspect of the manufacturing process, from initial designs to finished components, including build to print. Our capabilities include manufacturing, engineering, machining, surface and heat treatment, PVD coating, repairing oil and gas equipment and



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components, cutting tools, assembly equipping and small assembly. As mentioned before, we work with world's foremost aviation and defence OEMs, including BAE Systems, Boeing, Dassault Aviation, Leonardo, Raytheon, SAAB and Steila Aerospace.

Providing round the clock engineering services to defence industry through state-of-the-art facilities has been a core objective of EPI. Could you shed more light onto the operations in the sector?

With advanced manufacturing facilities in Abu Dhabi, each of our solutions is calibrated to industry-specific standards and designed to meet international benchmarks. We provide expertise in every aspect of the manufacturing process and remain committed to incorporating advanced technologies into its engineering solutions. We have grown from an initial four machines to be able to offer an integrated suite of around 100 of the latest hi-tech machine tool systems.

Our Industrial Engineers and machine tools turn ideas into working prototypes, aided by a state-of-the-art measurement lab to guarantee accuracy. Approved prototypes are then made real with cutting-edge machinery: CNC milling, CNC turning, chemical processing, non-destructive testing, shot peening and blasting and heat treatments, PVD coating and plastic injection. Our highly skilled team of CAD/CAM designers, programmers, tool makers, application and manufacturing engineers apply next-generation technology to design and deliver 21st century engineering solutions.

We support product development from early-stage capacity studies and prototyping to final manufacturing and production process design. We also have capabilities in cutting tools, surface

treatment, heat treatment, coating, repair, and machining.

The inspection, testing and laboratory facilities of EPI are top notch with the aim to meet international standards and customer needs. Could you talk more about EPI's inspection and quality assurance operations?

We make sure that all our products and manufacturing processes are constantly monitored and controlled to meet our internal and customer needs. That's why we focus on training our employees for operator qualifications and reassessment programmes. This helps us promote self-inspection deployments across departments. Our Statistical Process Control framework goes a step further by helping us improve sampling methods and redefines key characteristics required to ensure alignment with our Quality Policy.

We are equipped to control the properties of materials, including various aluminium grades, titanium, steel and stainless steel, to meet industry benchmarks. We achieve this through monitoring that includes incoming inspections, detailed inspection during the parts manufacturing stage, and review following heat-treatment processes. Our test capabilities include:

- Material surface hardness with machines capable of achieving Vickers, Knop, and Rockwell A, B, C methods
- Case-depth hardness (white layer) and microstructure analysis (including moulding)
- Chemical analysis with spark optical emission spectrometer (OES)
- Electrical conductivity measuring of non-ferrous material (aluminium grade/Eddy currents)

**EPI is now expanding its manufacturing capabilities to support the Boeing 787 Dreamliner while working in partnership round the world it provides state-of-the-art engineering services to the world's foremost aviation and defence OEMs, such as Airbus, BAE Systems, Dassault Aviation, Leonardo, Raytheon, SAAB and Steila Aerospace.**



# Potent Firepower



**Hamad Al Ameri**  
CEO, CARACAL

*Hamad Al Ameri is responsible for leading and directing the development, planning, execution and monitoring of all CARACAL functions and businesses. Prior to his role at CARACAL, Hamad was the Business Development Director at Emirates Defence Industries Company (EDIC) where he supervised strategic and operational marketing and customer relationship activities. A former Special Forces Officer in the UAE Presidential Guard, Hamad obtains almost two decades of experience and expertise in the defence industry, possessing a portfolio that includes leadership roles in training, close protection, and weapon development, along with a multitude of defence certifications.*

CARACAL, a world-renowned small-arms manufacturer, produces an unbeatable range of combat pistols, submachine guns, tactical rifles, and sniper rifles well aligned with the evolving mission requirements of law enforcement, security, and military forces. Hamad Al Ameri, CEO of CARACAL, speaks about technological advancements, core product development and strategic objectives to enter international market. Excerpts from the interview

As a part of the Missiles and Weapons cluster within EDGE, CARACAL is now a world-renowned small-arms manufacturer. Could you shed some light on CARACAL's journey since its establishment 15 years ago, the run-up to establishing this company as a pioneer in building high-precision weapons?

CARACAL designs, tests, validates, manufactures, and assembles high-performance products. With over 15 years of experience, we have established ourselves as pioneers in building high-precision weapons. Our field-tested firearms combine accuracy and reliability for law enforcement, security, and military forces.

Headquartered in Abu Dhabi, CARACAL uses some of the world's best computer numerical control (CNC) machines, quality control equipment, and moulding technologies. Every phase of our manufacturing process ensures our products comply with rigorous international standards, such as NATO and CIP.

Advanced technologies, including computer-aided design/simulation/verification and additive manufacturing stand at the core of our design and prototyping processes. We continually enhance our weapons, so they remain aligned with the evolving mission requirements of our customers. As a result, our products provide those on the front lines with the firepower they need for mission success.

CARACAL was awarded the Close-Quarter Carbine contract in 2018 to supply

the Indian Army with the CAR 816, and the company has offered to support the 'Make in India' initiative. At what stage is the establishment of facilities in India?

CARACAL was selected to supply close-quarter carbines to the Indian Army in 2018, following a rigorous selection process. We have gone on to fulfil all necessary requirements and procedures set out in the Defence Procurement Procedure (DPP), with our CAR 816 having undergone extensive trials across different terrains both inside and outside of India. We are confident our product is fully customised to meet the needs of the Indian soldier, with our carbine having beaten off competitors globally in the tender process.

We remain on standby to deliver upon the contract as soon as we are given the official mandate to, and have set the foundations for supporting the objectives of the 'Make in India' programme.

CARACAL's assault rifle CAR 816 has customers around the world. Could you elaborate on the features of this weapon?

The CAR 816 is a centre-fire, gas-operated tactical rifle, chambered in 5.56x45 mm NATO. It is a tactical weapon designed for the high-end use of law enforcement and military applications, and is available in semi-automatic and select-fire configurations.

CAR 816 standard features include:

- CAR 816 operates on short-stroke piston system with three settings
- Semi-automatic only and select-fire models
- Multiple barrel lengths from 7.5" PDW



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to 16"

- Full ambidextrous configuration

CARACAL's portfolio comprises combat pistols, submachine guns, tactical rifles, and sniper rifles. How challenging is the task to continually enhance these weapons so they remain aligned with the evolving mission requirements of the customers?

Client requirements and meeting them stand at the core of our product development efforts at CARACAL. As such, we incorporate advanced technology innovations in the manufacturing of our products. Additive manufacturing, combined with the use of CAD/CAM software during design and prototyping, allows us to quickly and accurately refine the ergonomics of each weapon component to surpass its stringent performance requirements.

CARACAL also leverages additive manufacturing in the production of weapon accessories. As the efficiency and safety of 3D printing of metals and composites evolve, the company is exploring the use of this technology in manufacturing metal parts for lighter, more customisable weapons.

Apart from India, which are the key markets for CARACAL? How do you look at the South Asian and African markets for business?

We continue to seek opportunities around the world. The South Asia and Africa markets are of interest to us as are other geographies, and we are at varying stages in developing relationships to enter markets internationally. Cultivating an export market is one of our main strategic objectives.

Besides ensuring use of advanced technologies and complying with international standards, an arms manufacturer needs to offer services to support maintenance and repair of the weapons. How strong is CARACAL's service support?

CARACAL possesses the know-how and skills that are a useful basis for maintenance, repair and overhaul (MRO) in small arms. With proven processes, competent documentation, excellent availability of spare parts and trained and certified operators, we lift small arms MRO to a new level.

A good rifle is only the starting point, making sure it will perform over the years and in any mission, not letting the operator down when it matters most, is what we do.

What is the roadmap ahead for CARACAL especially in the background of the impact of Covid-19 pandemic in the defence industry? What are the goals and objectives you have set for the company?

The ongoing pandemic has created a challenging operating environment for most commercial companies around the world, and CARACAL and its parent company, EDGE Group, are no different. We are fortunate to enjoy deep and trusted relationships with our customers, so there is an attitude of confronting the challenges together. CARACAL's executive leadership has also been proactive in foreseeing the potential effects of the economic slowdown prompted by the pandemic, and have acted accordingly. The safety of staff, partners and customers has been of the highest priority for CARACAL's internal approach to mitigating the effects of the virus.

**CARACAL leverages additive manufacturing in the production of weapon accessories. As the efficiency and safety of 3D printing of metals and composites evolve, the company is exploring the use of this technology in manufacturing metal parts for lighter, more customisable weapons**



# Transformative Solutions



**Talal Al Hashmi**  
CEO, KNOWLEDGE POINT

*Talal Al Hashmi is the Chief Executive Officer of KNOWLEDGE POINT. In his role, he provides expertise and knowledge transfer to clients in the Defence, Government, Health, and Education sectors. Talal has unique experience in understanding the Armed Forces' warfighting requirements based on his multiple combat deployments while serving with the Special Operations Command and led the Capabilities Based Assessment of the Land Forces, which began the Service's transformation of today's broadly recognised capable force. Furthermore, he possesses strong skills in leading change management, supply chain management, organisational assessments coupled with his many years of experience in the defence and security related sector.*

KNOWLEDGE POINT provides discreet, nuanced and comprehensive solutions for tailored projects in military, government, medical and security training, assisting in identifying, evaluating, and mitigating risks while also developing and implementing solutions and strategies that address those risks. Talal Al Hashmi, Chief Executive Officer of KNOWLEDGE POINT, tells us how they transform organisations when it comes to managing, educating and training people. Excerpts from the interview:

Established in 2009, KNOWLEDGE POINT is now a leading international service provider for defence and security forces. How competitive is the sector and where does the company stand globally now?

With customer knowledge developed over a decade of experience, KNOWLEDGE POINT leverages global expertise, capabilities across several domains, and a diversified and proven team to deliver strategic, operational, and tactical results. Our projects are designed to provide knowledge transfer of proven processes that align with benchmarks that have been effectively executed in conflict areas around the world.

We provide discreet, nuanced and comprehensive solutions for tailored projects in military, government, medical and security training. We assist our clients in identifying, evaluating, and mitigating risks while also developing and implementing solutions and strategies that address those risks. We also leverage our deep-thinking knowledge to provide enduring relevance to create more effective, resilient, and innovative defence and security forces. KNOWLEDGE POINT's competitive advantage is that through our assessments we get full understanding of the client's needs and have the ability to deliver a holistic solution and all our contracts focus on knowledge transfer to develop local talent, and lay out ground

work for customers to self-sustain.

Could you give us a detailed picture of KNOWLEDGE POINT'S services in education, consultancy and training? How successful the company has been in providing sustainable solutions and meeting clients' expectations?

KNOWLEDGE POINT's core competencies are what is considered as among the fundamental pillars of effective defence and security organisations. And this includes capability-based assessment, concept development, doctrine development, SAT compliant education courses, individual and collective training, synthetic training environments, technical implementations, full-spectrum consultancy, modelling and simulation, and digital content. We follow a four-step Capabilities Based Assessment process to produce a comprehensive strategic implementation plan, enabling our clients to identify gaps and prioritize capabilities, based on levels of risk with intent to enhance mission success in the next conflict. Our other capabilities include Capability Maturity Model integration, contingency and crisis planning, continuous improvement process, curriculum development, defence acquisition strategy, deliberate planning, doctrine development, training needs analysis, integrated logistics support, information and communications technology infrastructure support to create the next



generation of competent and confident leaders. Equipped with diverse experiences which can be applied to a wide variety of projects in the UAE and across the MENA region, our international team enable the application of proven techniques and knowledge transfer to build the client's organic capabilities.

**Could you shed some more light on how you transform organisations when it comes to managing, educating and training their people?**

At KNOWLEDGE POINT, we believe that education is fundamental to enduring organisational improvement. And with time, effort and investment we help large organisations sequence their members through education and training programme. Once established, monitored and refined over the years, it will be the key denominator in creating next generation of competent and confident leaders.

Our multicultural mix of experts from around the world come with extensive experience in military and security operations, combat deployments, research, project management, sustainment support and talent development/management. Equipped with diverse experiences which can be applied to a wide variety of projects in the UAE and across the MENA region, our international team enable the application of proven techniques and knowledge transfer to build the client's organic capabilities.

Our comprehensive portfolio of both technical and training solutions and services are built on

proven methodologies and a thorough training needs analysis. We provide our customers with measurable results, improved training and readiness, and superior performance while identifying efficiencies, and cost reductions.

**What is your expertise in cyber awareness?**

Safeguarding one's online identity and personally identifiable information has become more and more important in recent years. This is especially true for our children who are introduced to the online environment from the moment they start school. As a result, we offer programs and training modules in cyber awareness and information technology that focus on creating awareness in people of every age, starting with primary years school aged children, that focuses on making people aware of their cyber surroundings – what to be aware of, how to view social media, and how to safeguard your online profile.

**What are the immediate goals and objectives you have set for the company next?**

We are looking to grow our footprint in the region working with different customers to highlight the value of conducting a capabilities-based assessment in developing a holistic plan to enhance their capabilities.

We also have several strategic initiatives in the pipeline where we are focusing on implementing and providing specialised training to our clients with the ultimate goal of "training the trainer". This will be announced in due course.

**KNOWLEDGE POINT offers programs and training modules in cyber awareness and information technology that focus on making people aware of their cyber surroundings – what to be aware of, how to view social media, and how to safeguard online profile**





# AMMROC: Paradigm Shift in Aviation Sustainment



**Hareb Thani Hareb Al Dhaheri**  
Acting CEO, AMMROC

Hareb Thani Hareb Al Dhaheri, Acting CEO, AMMROC, takes us through the trajectories of its growth as one of the world's very few third-party MRO service providers capable of managing a fleet-wide Performance Based Logistics programme, and now evolving as the anchor military MRO entity in the UAE, fulfilling the needs of UAE Armed Forces and regional operators. Excerpts from the interview:

Over the last one decade, AMMROC has become one of the world's very few third-party MRO service providers capable of managing a fleet-wide Performance Based Logistics programme. Could you share with us the major highlights of this success journey?

AMMROC has supported the United Arab Emirates (UAE) Air Force and Air Defence (AF&AD) and the Joint Aviation Command (JAC), with nose to tail maintenance, repair and overhaul (MRO) services in airframes, engines, and components through a stringent Performance-Based Logistics (PBL) programme for seven plus years. The PBL contract enabled the UAE Armed Forces to streamline processes and optimise manpower by remaining focused on the operation of their aircraft, while AMMROC provided full logistics, maintenance and repair services. Under this model, all material and maintenance activity are provided under a cost per flight hour that provides greater flexibility to the UAE Armed Forces, while facilitating ongoing efficiency improvements. Highlights over this time have included the growth of the employment opportunities within the UAE from a company of 300 to over 3500 personnel, the first ever Mirage 2000 P+ inspection maintenance program undertaken on the Mirage fleet within the UAE, undertaking the armed BLACK HAWK weaponisation program for JAC, the AFAD C-130 Avionics Modification Program (AMP) and the completion of the new state-of-the-art MRO facility in Al Ain are among some of the many achievements

AMMROC has delivered over the course of the last 10 years.

Beginning in mid-2020, AMMROC made a pivot to strategically focus on our core strengths of providing depot level maintenance solutions within the UAE and the wider region. As the company transitions through to a renewed focus on depot level support, leveraging our new dedicated depot facility in Al Ain, we are able to utilize other EDGE assets within the Mission Support cluster such as GAL and HORIZON to provide total solutions to current and future customers.

AMMROC's new MRO facility at Al Ain (MRO AA) is touted as comprehensive aviation sustainment centre dedicated to ensure depot level MRO services to the highest quality standards. What makes the facility unique in the region?

MRO Al Ain is a state-of-the-art facility and is among the largest centres dedicated to military MRO in the world. Developed and built as one project, the one-square-kilometre facility is uniquely positioned adjacent and directly connected to the Al Ain International Airport.

The AMMROC MRO Centre now offers increased hangarage space, dedicated paint and strip capabilities, and provides a universal industrial capability to service a wide variety of aircraft both fixed and rotary. The new facility has over 30+ support shops, inclusive of dedicated Hydraulic, Fuel and Electromechanical test and repair capabilities, an adaptable PTS capability and advanced machining, special processes,

*Hareb Thani Hareb Al Dhaheri has been the Acting Chief Executive Officer (CEO) since 2020. As a retired Brigadier and Pilot with the UAE Armed Forces, he has amassed more than 30 years of experience in military aviation. Hareb is deeply committed to leading the growth of this region's expanding aviation industry and is now responsible provides strategic and operational oversight for all business functions at AMMROC.*





structures, NDI and CMM capabilities. The new facility was designed to cater for future, with ample open area yet to be developed for future capability expansion.

The MRO Al Ain centre has four multi-purpose hangars, offering over 36,500 sqm of usable hangar space, including dedicated special mission hangars designed with highly sensitive project precautions in place.

The Al Ain complex features a dedicated Black Hawk nose-to-tail depot, with capability on 49 LRUs including blades and transmissions, engines, and aircraft subsystems. The facility is equipped with a dynamic whirl stand, a dedicated blade repair capability to and transmission repair shop that is powered with advanced technology, making it a first-in-the-region.

**AMMROC has been executing major and minor modifications and upgrades for a variety of fixed and rotary-wing aircraft tailored to customer requirements. Could you elaborate on the services offered and how strong a presence the modification arm of AMMROC has in the Middle East?**

We execute major and minor modifications and upgrades for a variety of fixed and rotary-wing aircraft. Solutions are tailored to customer requirements that include avionics modernisation programs, hardware and software installation and upgrade. AMMROC is also able to undertake aircraft life extension programs, routine modifications and updates, and integration of upgrades during periodic depot maintenance (PDM). AMMROC has demonstrated its ability to undertake complex modifications and upgrades such as the Black Hawk weaponisation program, structural life extensions on a number of platforms, minor design modifications and crash damage repair and aircraft battle damage repair in the field.

This is achieved through our dedicated engineering team who develop customer focused solutions and customised modifications that draw on our long-term OEM relationships and partnerships with certified solution providers

to meet service bulletin and airworthiness directives. As a third party MRO provider, our partnerships both locally and abroad with major Original Equipment Manufacturers (OEMs) and global MRO leaders is key to delivering successful modification projects. At AMMROC, we have worked with some of the world's leading OEMs such as Lockheed Martin, Sikorsky, and Dassault Aviation among many others in order to deliver highly complex solutions on time and on budget. Now, as part of EDGE, we see more opportunities to benefit from the many local companies under the EDGE umbrella where we can complement each company's core strengths such as with GAL, Horizon and EPI to further grow the modification and upgrade opportunity. Through these local partnerships we hope to elevate both EDGE and AMMROC into a global brand.

**Engine maintenance is one of the core capabilities of the company and the new engine test cell can test a wide variety of engine types. What are the major operational highlights?**

AMMROC has extensive experience in engine maintenance and this includes test, inspection, repair and overhaul for turbo props, turbo fans, turbo shafts, fighter jet engines, auxiliary power units (APU), Quick Engine Change (QEC) components and accessories for maintenance inspection, overhaul, and repairs. Our new engine test cell is currently dedicated to the GE T-700 / CT7 Engine family, however the test cell can be adapted to test a wide variety of engine types such as the Honeywell T-55, Pratt & Whitney PT6A, Rolls-Royce M-250, and SAFRAN Arriel-2/Makila 1A. Further capabilities range from module replacements and implementing modifications to complete piece part disassembly, repair, replacement, overhaul, re-assembly, test, and troubleshooting. Our engine repair shop complies with stringent OEM requirements and is certified by global industry standards. We are the first regional MRO facility to host the Engine Structural Integrity Program (ENSIP) for F-110 engines.

**AMMROC is planning to move beyond military, which potentially could see it enter the civil aerospace MRO market in the future. Gulf air carriers are the largest in the world and AMMROC has sufficient resources and crews for in-house maintenance**

# Next Generation Munitions



**Theunis Botha**  
CEO, AL TARIQ

AL TARIQ manufactures and integrates the mission-proven range of Precision Guided Munitions, used on aerial bombs to convert unguided air-launched weapons into high-precision, longer-range-focused munitions using a range of technologies. Theunis Botha, CEO of AL TARIQ, speaks about their unique capabilities, operational features and strategic direction. Excerpts from the interview:

**Founded in 2012, AL TARIQ is an established manufacturer of Precision-Guided Munitions in the UAE. How has the company enhanced the production capacity over the years and where does the company stand globally now?**

AL TARIQ is committed to leveraging the latest advanced technologies, and is backed by expertise in the various fields of engineering. The company's teams create intellectual property of UAE origin in various areas of missile development.

AL TARIQ has built up its engineering functions and production capacity to consistently deliver enhancements and new operational features and business process improvements over the past few years.

**Could you give us an overview of the products and services offered by AL TARIQ?**

AL TARIQ manufactures and integrates the mission-proven AL TARIQ range of Precision Guided Munitions (PGM), used on aerial bombs to convert unguided air-launched weapons into high-precision, longer-range-focused munitions using a range of technologies. The modular design and mission flexibility of the systems allow them to adapt to new requirements as missions and platforms evolve.

We provide turnkey, high technology PGM solutions to our partners and clients allowing them to benefit from the unique capabilities of our products.

**AL TARIQ states that its very purpose is to develop the next generation of precision-guided munitions using leading edge innovation. How successful have you been**

**in leveraging the advanced technologies to suit your requirements?**

Last November during the Dubai Air Show, AL TARIQ announced major upgrades to its family of PGMs. With the enhancements, the AL TARIQ PGM is updated to the Block 2 definition and boasts a host of latest technology improvements. Platform integration is fully compliant with MIL-STD-1760, and DIGIBUS specifications.

AL TARIQ also recently announced the integration of a Penetration Warhead, which is a milestone development for the company, making it possible to integrate the purpose-built warhead on to the system. This program will be completed towards the latter part of 2021.

**Could you elaborate on the features of AL TARIQ system that helps to convert unguided aerial weapons into high-precision and long-range munitions and achieve enhanced targeting accuracy?**

The AL TARIQ's range of PGM's currently has the longest stand-off range in its class compared to other similar systems. We pride ourselves in the unique modular design that we offer to satisfy a range of mission requirements with a single PGM solution. The AL TARIQ PGM range of guidance kits are designed for ease-of-use and a low life-cycle cost, providing the user with a superior and cost-effective solution. Mission accuracy is achieved by utilising state-of-the-art targeting through a choice of dual-mode seekers, against high-priority fixed, off-axis, moving and re-locatable targets.

AL TARIQ has multiple international quality certifications to guarantee the

*Theunis Botha, the CEO of AL TARIQ, is responsible for liaising with the company's board of directors to steer its strategic direction, while also fulfilling the role as Director Operations, where he plays an instrumental role in the optimisation of company operations and negotiations with suppliers to ensure best prices, schedules and technical solutions. Theunis brings a wealth of experience spanning more than 35 years to his role. Prior to AL TARIQ, Theunis was General Manager of Tawazun Dynamics, later re-branded to Barij Dynamics, where he supervised the product and business development functions.*



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reliability and performance of every guidance kit it produces compliant with all applicable UAE and international military standards, and multiple levels of rigorous testing as part of the company's manufacturing protocol.

AL TARIQ also gives importance to collaborative partnerships to change the face of air defence through innovation and advanced technology. What is the potential for expansion for your business in the Asian and African regions?

We are currently exploring opportunities for supply and partnering with well-established entities in certain markets. Our unique product solutions allow us to remain competitive with a positive long-term business view.

The defence industry across the world is bearing the brunt of Covid-19 pandemic. What are the measures taken by AL TARIQ to overcome the pandemic effect?

The ongoing pandemic has created a challenging operating environment for most companies around the world, and AL TARIQ and its parent company, EDGE Group, are no different. We are fortunate to enjoy deep and trusted relationships, so there is an attitude of confronting the challenges together. AL TARIQ's executive leadership has also been proactive in foreseeing the potential effects of the economic slowdown prompted by the pandemic, and have acted accordingly. The safety of staff, partners and customers are the highest priority of AL TARIQ's internal approach to mitigate the effects of the virus.



AL TARIQ has recently announced the integration of a Penetration Warhead, which is a milestone development for the company, making it possible to integrate the purpose-built warhead onto the system

# Winning in Invisible Battlefield of Electromagnetic Spectrum



**Waleid Al Mesmari**  
Vice President of Program Management,  
Electronic Warfare and Intelligence cluster  
EDGE Group

*Waleid Al Mesmari is Vice President of Program Management at EDGE Group, the advanced technology group for defence and beyond. In his current capacity, he provides oversight and strategic direction on the development and business functions of two companies within the Electronic Warfare and Intelligence (EW&I) cluster, which includes SIGN4L and BEACON RED.*

Waleid Al Mesmari, Vice President of Program Management, Electronic Warfare and Intelligence cluster, EDGE Group, gives us new insights into distinct solutions and capability development services offered by BEACON RED and SIGN4L to national security organisations to support them in a complex global environment. Excerpts from an interview:

**How important is the role being played by electronic warfare and intelligence services and solutions in the modern defence and security systems? What makes EDGE's cluster, comprising BEACON RED and SIGN4L, a distinct player for securing the electromagnetic spectrum in the global arena?**

In an increasingly digitalised defence landscape, the pace of change is exponential and securing the electromagnetic (EM) spectrum is essential to success. Radio and radar systems provide the communication, targeting, navigation and sensing capabilities that define modern defence equipment and operations.

The Electronic Warfare & Intelligence (EW&I) cluster of EDGE Group helps clients augment their capabilities in Anti-Access/Area Denial (A2/AD), build their tactical and strategic awareness, and develop their understanding of the evolving EM landscape.

Within the cluster, SIGN4L offers electromagnetic capabilities that can deceive, disrupt, and defeat hostile surveillance, command and control (C2), and weapon systems and sensors associated with the enemy's integrated air/area defence network. At the same time, the solutions can protect navigation, targeting, communication, and electromagnetic intelligence-gathering capabilities in order to enhance understanding of operational forces and assets in mission environments. Through a disciplined and rigorous cycle of threat analysis, research and development, we can monitor, analyse and counter emerging risks.

On the other hand, BEACON RED provides capability development services to

national security organisations to support them in a complex global environment. The specialised company assesses and develops national security experts with unique training and technological solutions, to prepare the next generation of professionals for a new age of adversity.

**Could you give us an overview of the services and solutions offered including threat detection and training programmes? Who all are the major clients globally?**

Our research and innovation keep us and our clients ahead of new threats and at the cutting edge of new opportunities.

SIGN4L's engineering and development teams work in the fields of: Advanced radio frequency (RF) digital sensors; RF signal processing; RF propagation; threat sensing and warning; and secure communications in contested environments.

BEACON RED provides training solutions that inspire the next generation of national security professionals. Bringing together a diverse range of subject matter experts, the company's innovative training solutions provide the most comprehensive curriculum and training platforms required in any national security space.

Subjects include: Special Skills Training; Professional Development Training, Technical and Cyber Training, Capabilities Assessments Courses, and Language Training Services.

At EDGE, we work with partners and customers in different industries, walking them through the potential risks and scenarios to help them understand the emerging threats in today's environment. It's a very fast-moving environment where we need to be thinking steps ahead of



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everyone else.

You are providing an array of education, assessment and training platforms to enhance the skills of intelligence professionals, besides carrying out research to keep the clients ahead of new threats. Could you elaborate on the advanced technologies and platforms used to provide world-class services?

Leveraging the latest end-to-end capabilities, both companies are laser-focused on providing a relentless pursuit of pioneering, disruptive, and agile methods to evolve circumstances in any operational environment.

One of BEACON RED's core values is to consistently be on the forward edge of ideation, methods, and the application of emerging technologies in training. As the national, regional, and global threats become more capable and sophisticated, so too will the cyber and technical skills needed to confront them.

Similarly, SIGN4L is at the frontlines in pioneering breakthrough technologies in order to gain a strategic advantage in the industry and help clients expand their options in a rapidly changing world. Our latest solutions that will be unveiled at IDEX are prime examples of our agile offerings.

What are the major challenges the next-generation national security professionals would

be facing in the field?

Today's ever-changing political, social, economic, technological, and security environment offers a persistent challenge to national security professionals everywhere. The ubiquitous nature of technology means that in an age of hybrid warfare, forward thinking national security professionals must be ready to deploy new strategies and acquire new capabilities. To be a successful national security professional, one requires a sense of urgency, a drive to meet challenges head-on, intellectual curiosity, and a desire to be part of something greater.

As my colleagues at BEACON RED assert: "The greatest challenge any national security professional will face is complacency."

How do you look at the South Asian market for expanding the business? How strong are your international supplier and client bases?

One of the main focuses of our parent company, EDGE Group, is to develop the country's export potential in response to international demands. With an operating model that focuses on building collaborative opportunities, we work with our partners to serve our shared interests wherever it makes business sense to do so, therefore we are open to expanding into South Asia and Africa when the right opportunity arises. ■

**Leveraging the latest end-to-end capabilities, BEACON RED and SIGN4L are laser-focused on providing a relentless pursuit of pioneering, disruptive, and agile methods to evolve circumstances in any operational environment**



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