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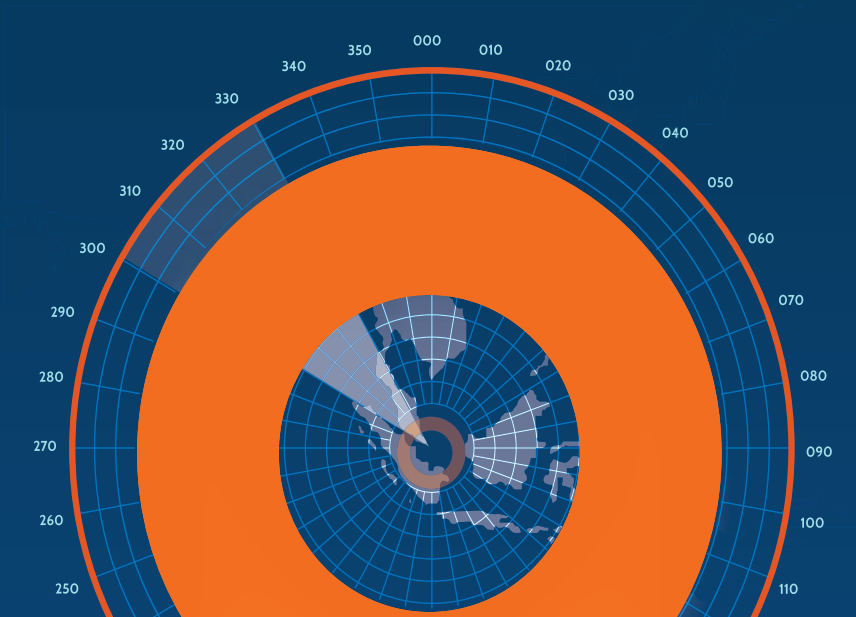


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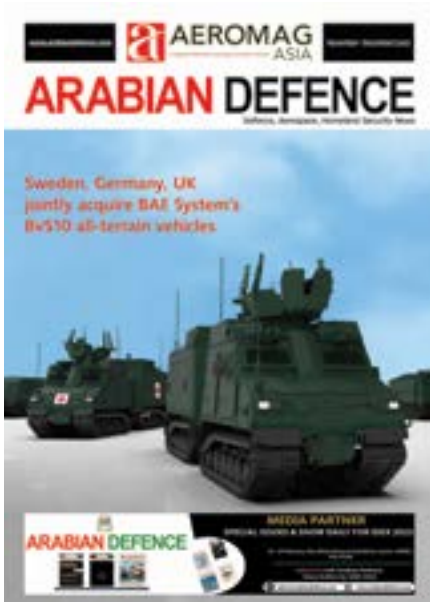


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Navantia delivers the third corvette to the Royal Saudi Naval Force

- HMS HAIL has been commissioned in the San Fernando shipyard three years after cutting its first steel
- The commander of the Royal Saudi Naval Force and the Spanish Minister of Industry, Trade and Tourism presided the ceremony

Navantia delivered the third corvette to the Royal Saudi Naval Force (RSNF). The third of five corvettes built in its shipyards in the Bay of Cadiz, construction 548, named HAIL, at the San Fernando facilities. The commissioning of the next two corvettes will take place in Saudi Arabia.

The delivery ceremony was attended by the commander of the Royal Saudi Naval Force, Vice Admiral Fahad Bin Abdullah Al-Ghofaily; the Spanish Minister of Industry, Commerce and Tourism of Spain, Reyes Maroto; the president of Navantia, Ricardo Domínguez and SAMI Chief Technology Officer (CTO) Mohammad Alkahtani.

The mayoress of San Fernando, Patricia Cavada; the ambassador of Saudi Arabia in Spain, Azzam bin Abdulkarim al Qain; the Director of the National Security Department, Miguel Ángel Ballesteros; the chief of Procurement (DiGAM) of the Ministry of Defence, Aniceto Rosique; and the Chief Admiral of Logistical Support (AJAL) of the Spanish Navy, Ricardo Hernández, among other authorities have also taken part in the event.

Navantia has delivered HMS HAIL to the Royal Saudi Navy three years after

cutting its first steel (September 2019), thus meeting both the demanding quality requirements and deadlines. HAIL is one of the most competitive and capable vessels in its segment, as proved in the sea trials carried out in the waters of the Bay of Cádiz.

During the event, carried out according to military protocol, a Joint Inspection Commission (RSNF and Navantia) has boarded the corvette to carry out the mandatory inspection. Upon completion, the ship's flag was raised, after which RSNF transferred command of the corvette to the Commanding Officer por HMS HAIL. The president of Navantia presented Vice Admiral Al-Ghofaily the ship's bell as an institutional gift.

Vice Admiral Al-Ghofaily has highlighted that "this is one of the most glorious and historic moments for the Royal Saudi Naval Forces when His Majesty Ship HAIL raises the Saudi flag for the first time and commences her long and faithful service to the nation". "HMAS HAIL, as the rest of her class, was designed and built to be one of the most technologically advanced and powerful corvettes to meet national

mandates in realization of Saudi Vision 2030".

He stated that Alsarawat project "has emerges as the largest corporation in terms of defence industry between the Kingdom of Saudi Arabia and the Kingdom of Spain, contributing to the expansion of the strategic relationship between both countries. Vice Admiral Al-Ghofaily praised Navantia's commitment with the project, as well as PMO organization, Spanish Navy and other collaborators.

At the ceremony, the Minister of Industry of Spain, Mrs. Reyes Maroto, pointed out that

"the commissioning of this corvette marks a new milestone in the relationship between our two countries, which have been reinforced in recent years thanks to the trust that the Kingdom of Saudi Arabia has placed in state owned company Navantia". "The MoU signed this week strengthens this trust and is a very important step for Navantia's shipyards in the Bay of Cadiz".

The president of Navantia, Mr. Ricardo Dominguez, thanked all the participants and workers of the programme. "It is thanks to your work that Navantia's name is known around the world", he said, while also commending the support of Spanish

Navy and Government.

He also stated that with Avante 2200 programme Navantia is proving that it can "deliver state-of-the-art complex ships within strict deadlines and with the highest standards of quality, while transferring technology and providing advanced services". "Fulfilling this highly technological programme has undoubtedly been a determining factor in renewing the client's confidence", he added.

SAMI CTO Mohammad Alkahtani has emphasized that "this is a great day for the two countries, it culminates the strong collaboration between the Royal Saudi Naval Forces and its partner: Navantia, SAMI and SAMI Navantia who are building capabilities in Saudi Arabia to support the RSNF needs".

Finally, Navantia's director of Corvettes and Maritime Action Vessel, José Antonio Rodríguez Poch, emphasized the important support of the Spanish Navy to the programme and highlighted the historical milestone of delivering three ships in one year, commending the hard work of all the participants in the programme.

AVANTE 2200 PROGRAMME

The corvette HAIL has a length of 104 meters, a beam of 14 and seating for a total of 102 people between crew and passengers. The contract for the construction of five corvettes entered into force in November 2018 and, since

the launch of the first unit (July 2020), Navantia has already launched the five units with a period of four months between each one of them, which means achieving this milestone in a record time of three years. Deliveries are taking place after just over three years from the cutting of the first plate of each ship.

The corvettes are based on the AVANTE 2200 design, adapted to the requirements of the RSNF, offering advanced performance, excellent work at sea, high survivability, and ability to operate in extreme temperatures.

Concurrently, around 500 crew members of these corvettes are completing the education and training process at the Navantia Training Center (NTC) in San Fernando.

In addition to the corvette contract, Navantia agreed with SAMI (Saudi Arabian Military Industries) to create a joint venture in Saudi Arabia, an alliance that allows Navantia to position its integrated systems and technologically advanced solutions in the Arab market and area of influence and is aligned with the company's internationalization strategy.

The contract assumes a global workload of around seven million hours and 6,000 jobs over five years. Of these, more than 1,100 are direct employees, more than 1,800 collaborating industry employees (more than a hundred companies participate at the programme) and more than 3,000 indirect employees generated by other suppliers.

The program includes, in addition to construction, the Life Cycle Support for five years from the delivery of the first ship, with an option for another five additional years, the last ship of which must be delivered in 2024.

It also includes the provision of various services, such as integrated logistics support, operational and maintenance training, provision of Education and Training Centres for the Combat System and Platform Control System of ships, Life Cycle Support, and ship maintenance systems at the Jeddah Naval Base.





The Higher Organizing Committee for IDEX & NAVDEX 2023 holds third meeting

The Higher Organizing Committee for the 16th edition of International Defence Exhibition (IDEX 2023), and the 7th edition of the Naval Defence & Maritime Security Exhibition (NAVDEX 2023), held its third meeting to discuss preparations for holding the upcoming edition of the two exhibitions. The exhibitions, held under the patronage of His Highness Sheikh Mohamed bin Zayed Al Nahyan, President of the UAE, will take place from February 20-24 2023 at Abu Dhabi National Exhibition Centre, and will mark the 30th anniversary of IDEX and 12th anniversary of NAVDEX, and will be the biggest events of their kind in the region and the world.

The third meeting reviewed the main points that will be highlighted during the event, which is organised by ADNEC Group in cooperation with the Ministry of Defence. The two exhibitions provide an international platform to showcase the latest international defence innovations and technologies, and a world-class forum for reviewing the latest developments in this sector.

The meeting was attended by Staff Major General Pilot Faris Khalaf Al Mazrouei, Chairman of the Higher Organizing Committee for IDEX and NAVDEX, and Major General Dr. Mubarak Saeed Ghafan Al Jabri, Deputy Chairman of the Committee, in addition to members of the Committee and its subcommittees, and Humaid Matar Al Dhaheri, Managing Director and Group CEO of ADNEC Group. The participants reviewed the most prominent participants in the events, which include major international corporations specialising in defence and

military industries, making this the biggest edition of the events and consolidating the UAE's position on regional and international levels.

The Committee discussed the latest developments related to both the series of high-level roundtable dialogues that will feature the participation of thought leaders and influencers in the sector, and the preparations for the IDEX Next-Gen area dedicated to startups, which will allow entrepreneurs to showcase their solutions and technologies in the defence and maritime defence sector alongside the most prominent names in the sector. Also discussed were the preparations for the exceptional pavilions at the event, including the Defence History pavilion for history buffs, which hosts an interactive exhibition highlighting the most important products and technologies adopted in the sector over the past thirty years.

The meeting touched on the preparations for the open discussion activities that will be witnessed at the event that will be held next year, which will revolve around the latest developments in the sector and will include both NAVDEX Talks and IDEX Talks. NAVDEX Talks is set to be held in the Marina Hall which is currently being developed at the new ADNEC Marina at the waterfront of the Abu Dhabi National Exhibition Centre, and will focus on important topics related to the maritime defence sector, while the IDEX Talks event will include sessions covering a variety of important topics related to the global defence sector.

IDEX and NAVDEX 2023 provide an opportunity for building strategic partnerships between major companies

specialized in the defence and military industries from all over the world, and will discuss opportunities for acquiring the latest technologies and equipment developed by defence sectors around the globe.

The new edition of the event will consolidate Abu Dhabi's position as a leading global hub, and embodies its ability to host one of the most important defence exhibitions in the world, which has contributed since its inception nearly 30 years ago to the development of national capabilities and industries by providing a platform to benefit from global expertise and the best successful experiences showcased by global companies.

IDEX and NAVDEX constitute a fundamental pillar in the efforts of the ADNEC Group to support diversification and achieve a positive impact on the national economy, whether by providing opportunities that contribute to the development of sectors and the business of various national companies, or by organising and hosting major events that attract visitors from different countries.

The previous edition of the two exhibitions in 2021 achieved remarkable success, as it hosted more than 62,000 visitors and more than 900 local, regional, and international companies from 59 countries, in addition to hosting 35 national pavilions.

IDEX and NAVDEX exhibitions witnessed a remarkable growth in the volume of deals and the number of exhibiting companies that seek to showcase the best innovations and learn about the latest trends and developments in these vital sectors. ■



MoD signs Rs 1,700-cr deal for dual-role surface-to-surface BrahMos missiles

India's Ministry of Defence (MoD) has signed a contract with BrahMos Aerospace Pvt. Ltd. (BAPL) for acquisition of additional dual-role capable surface-to-surface BrahMos missiles at an overall approximate cost of Rs 1,700 crore under 'Buy-Indian' category. Induction of these dual-role capable missiles will significantly enhance the operational capability of Indian Navy (IN) fleet assets and the contract will provide further impetus to 'Aatmanirbharta' (self-sufficiency) in defence production.

BAPL is a joint venture (JV) between India and Russia and has been making crucial contributions to augment the new

generation Surface-to-Surface Missiles (SSMs) with enhanced range and dual-role capability for land as well as anti-ship attacks. The latest contract would be giving further boost to indigenous production of critical weapon systems and ammunition with active participation of indigenous industry, said MoD.

A combination of the names of Brahmaputra and Moskva rivers, BrahMos missiles are designed, developed and produced by BrahMos Aerospace, a joint venture company set up by Defence Research and Development Organisation (DRDO) and Mashinostroyeniya of Russia. The first test launch of the initial version

of BrahMos took place in 2001. Various types of the BrahMos, including those which can be fired from land, warships and the Sukhoi-30 fighter jets, have already been developed and successfully tested and inducted since then.

BrahMos is a two-stage missile with a solid propellant booster engine. Its first stage brings the missile to supersonic speed and then gets separated. The liquid ramjet or the second stage then takes the missile closer to three times the speed of sound in cruise phase. The missile has a very low radar signature, making it stealthy, and can achieve a variety of trajectories.

The 'fire and forget' type missile can achieve a cruising altitude of 15 km and a terminal altitude as low as 10 m to hit the target. The enhanced range version of the missile has a range of 4,000 km, as compared to the original range of 290 km.

In March 2022 India successfully test-fired the surface-to-surface missile at Andaman and Nicobar Islands.

The extended-range missile was able to hit the target with pinpoint accuracy. The test was conducted in presence of Air Chief Marshal V R Chaudhari who also congratulated everyone involved for the successful test firing of the cruise missile. "Air Chief Marshal V R Chaudhari congratulated on the successful test-firing of surface-to-surface BrahMos supersonic cruise missile. He is in the Island territory of Andaman & Nicobar to review operational preparedness," Defence officials had said during the test. ■

Kalyani Group's Mounting Artillery Gun System 8X8 HMTV unveiled

Kalyani Group's MGS 8X8 HMTV was unveiled. Dr. Samir V Kamat, Secretary Defence R&D and Chairman Defence Research and Development Organization (DRDO) during Def Expo 2022.

The MGS 8x8 is a 155mm/52cal Mounted Artillery Gun System, the only artillery gun in the world with the capability of firing from Zone 1 to Zone 7. With a diverse operating temperature range and capability to fire in extreme diverse weather conditions of - 4 to 45 degrees.



The gun comes equipped with quick shoot and scoot capability with a high degree of accuracy and consistency. The 8x8 has a high chamber volume of 25 litres, with future provision of up gunning.

Key Modern Features of the MGS 8X8

- Auto loading and positioning system
 - Automatic Ammunition Handling system
 - Auto Laying
 - Safety interlocks and redundancy systems
 - All Electric drives ensuring least maintainability and failures
 - Muzzle Velocity Radar
-

Kalashnikov Expands its Business Horizon in Asia

Kalashnikov, popularly known as the Powerhouse of Russia's Small Arms Industry, is aiming big in terms of expanding its global footprints, especially in Asia and beyond. The leading Russian manufacturer of automatic and sniper combat firearms, guided artillery munitions, and a wide range of high-accuracy weapons is offering the world's best weapons for potential importers in and around Asia.

Kalashnikov is the flagship of the Russian weapon industry, producing about 95% of all small arms in the country. Kalashnikov Group companies produce not only small arms, but also specialised military and civilian transport and equipment, such as unmanned aerial vehicles, high-speed transport and assault boats for special operations forces, high-precision missile weapons. Kalashnikov Group exports its products to more than 27 countries around the world.

Russian Kalashnikov assault rifles continue the development of old and new models (including those in NATO calibre), along with ammunitions. At the Defexpo India 2022 military exhibition, held in Gandhinagar, Gujarat (India) earlier this year, Russia announced that the joint venture (JV) Indo-Russian Rifles Private Limited will be ready to start manufacturing Kalashnikov AK203 assault rifles by the end of 2022.

In 2019 an inter-governmental agreement was signed between the Russian Federation and the Republic of India in cooperation in the production of Kalashnikov-series small arms. At DefExpo India Rosoboronexport announced, that the Korwa Ordnance Factory was ready to start manufacturing Kalashnikov AK203 assault rifles by the end of 2022.



The plans include 100% localisation of the production of Russian assault rifles in India.

Kalashnikov AK200 series assault rifles have successfully passed the test program, are supplied to government customers in Russia, and are also exported to partners who impose higher requirements on small arms. These assault rifles have retained all the advantages of the traditional AK pattern: reliability, durability and ease of maintenance. The rifles are chambered for 5.45.39, 7.62.39 and 5.56.45 mm cartridges and there are models with long and shortened barrels in each calibre.

Kalashnikov AK200-series assault rifles are in line with all current trends in small arms technology. They are fitted with Picatinny rails for convenient and easy mounting of sights and tactical accessories, enabling the effective use of weapons in various conditions. The rifles have a folding stock. In addition, a number of other ergonomic solutions have been incorporated into them to optimise operation. In particular, they feature a redesigned fire selector and a modified receiver cover. This gives the users the opportunity to fully realise their shooting skills, regardless of their anthropometric data and the availability of a variety of personal gear, outfit and uniforms.

The 7.62 mm AK-15 is an assault rifle

used by the special operations units of the Russian military and other law enforcement agencies. The AK-15 forms part of the Russian Ratnik equipment kit. The Kalashnikov Group calls this model the pinnacle of the AK system development, different from the previous generations by its elaborate ergonomics, all-day usability and increased accuracy and precision.

Another globally popular Kalashnikov brand is the AK-100th series. The AK-103 is a basic infantry assault rifle with robust mechanics and modern features. The 7.62 mm AK103, based on the standard service AK74M assault rifle, was designed to replace the classic AK chambered in 7.62x39. The AK103 is based on the classic AK pattern, traditionally reliable in adverse conditions and easy to use by personnel with any level of training.

In the field of machine guns the best Russian general-purpose machine gun for global market is the 7.62x54mm PKP Pecheneg. It is a further development and modification of the PK machine gun (PKM). The Pecheneg is produced by the Degtyaryov Plant. Due to modern and time-tested design solutions it is capable of engaging a great variety of targets at distances of up to 1500 m. Modern ergonomic features augment mobility of the operator in the field and also increase sighting distance. ■





IAI Brings High-Performance Electronic Unveiling TacSense Compact ESM System

Israel Aerospace Industries (IAI) has unveiled its latest tactical Electronic Intelligence (ESM) system: TacSense (ELL-8395). TacSense delivers unprecedented ESM performance in a compact form factor with minimal SWaP (size, weight and power).

This allows TacSense to be deployed from a wide range of platforms including tactical ground vehicles and small UAVs. In addition, a manpack configuration enables the system to be easily carried on foot by one person, even in the most difficult terrain. The system's small size and weight also facilitate highly discreet, camouflaged installation at fixed locations.

TacSense is designed to provide high-performance ESM in tactical scenarios, such as ground force maneuvers, discreet operation from fixed installations, and operation from aerial platforms that are limited in their capacity to contain large sensors.

Tactical forces are increasingly exposed to

electronic threats in the modern battlefield. Threats include tactical radars in use by commando and guerilla units, ground-based and airborne radars for search and targeting, and other electromagnetic activity such as communications and radar jamming. Therefore, it is imperative to provide forces with the means to detect hostile electromagnetic activity – taking the force from “electronic blindness” to full electronic awareness, and thereby ensuring their safety and mission success.

Capitalizing on IAI-ELTA's heritage in the design and development of advanced radar and ESM technologies, TacSense employs the latest techniques to intercept, classify, track and analyze radars, including the latest Low Probability of Intercept (LPI) emitters. Covering the entire radar frequency spectrum, TacSense provides powerful, comprehensive ESM capabilities, affording operators a real-time understanding of hostile radars that are threatening them with surveillance

and targeting. Moreover, it detects forces beyond visual range, and even under deep cover, where radar and EO/IR systems are unable to penetrate.

TacSense has been selected for use by a first customer, and has been contracted for delivery of several tens of operational systems.

Adi Dulberg, VP & General Manager, IAI/ELTA Intelligence, Comms & EW Division, said: “With the ever-increasing proliferation of radar technology in the tactical arena, whether for defensive purposes or targeting, ESM is gaining critical importance in contending with the electronic threats. With TacSense, we are now able to answer the need for a compact and cost-effective ESM system with superb performance. The system can be easily deployed by mobile forces, and its size and cost make it equally effective for protecting high-value fixed installations”.

Saudi Arabia sign MOU with Navantia to build combat ships



With the presence and patronage of His Royal Highness Prince Khalid bin Salman bin Abdulaziz, Minister of Defense, and Her Excellency Reyes Maroto Illera, Minister of Industry of Spain, the Ministry of Defense and the General Authority for Military Industries signed a memorandum of understanding with the Spanish company Navantia to acquire and build a number of multi-mission combat ships for the Royal Saudi Naval Force.

The memorandum was signed by His Excellency the Assistant Minister of Defense for Executive Affairs, Dr. Khaled bin Hussein Al-Bayari, and from GAMI, Eng. Ahmed bin Abdulaziz Al-Ohali, Governor of the Authority, and from the side of the Spanish company, Navantia the CEO and Chairman Ricardo Dominguez Garcia-Baquero.

The MoU aims to raise the level of readiness of the RSNF to enhance maritime security in the region, protect the vital and strategic interests of the Kingdom, and support the strategic, operational, and tactical goals of the MoD. In line with the Kingdom's Vision 2030, the MoU aims to promote the localization of up to 100% in the field of naval shipbuilding, integration of combat systems and ship maintenance. It will also concentrate on the integration of combat systems into new ships, systems design and engineering, hardware design, software development, testing, verification systems, prototyping and simulation, logistical support, and training program design.

On this occasion, HE Dr. Khaled Al-Bayari, confirmed that this MoU with the Spanish company comes in accordance with the directives of HRH Prince Khalid bin Salman bin Abdulaziz, with the objective of raising the readiness of the armed forces, the sustainability of systems, and the localization of military industries, and maximizing the use of local content. HE added that this event is of great importance to the Ministry of Defense and a milestone in our cooperation with Navantia company, as it intends to boost the RSNF's naval capabilities, improving joint operations among all security and military agencies, and developing a sustainable local military industries sector, while increasing transparency with spending efficiency.

Adding 'Grip' to Nation's Security Forces

Ever since its inception around seven and a half decades ago, MRF Limited, based out of Chennai, has emerged as one of the most trusted tyre brands in India with its core business is Automobile & Aviation tyres. MRF is the largest manufacturer of tyres in India and has the widest range of tyres from two wheeler to Aero Tyres. With over 10 factories in India, MRF has a total revenue of 2.35 Billion USD.

MRF is the most preferred tyre by automobile manufacturer in India. MRF is one of the leading suppliers of tyres to the Indian Armed Forces and the only manufacturer of Aviation tyres for Indian Air Force. MRF has been actively involved in developing Aviation tyres for India's Armed Force and also in developing special application tyres. These tyres are being used by various customers across the globe.

Earlier in March, has achieved a significant milestone when it supplied the nose wheel tyres to the aircraft deployed by the IAF. MRF has also been supplying the main wheel tyre for SU 30 MKI, which is considered as the most advanced fighter aircraft in the IAF fleet.

Taking a cue from past supplies, the indigenisation of nose wheel tyres for SU 30 MKI was also made by MRF. After going through successful trials, the company could supply more nose wheel tyres for the fighter aircraft.

The 'MRF Aeromuscle Tyre' has been



indigenously developed by the company for the SU 30 MKI aircraft of the IAF. MRF has supplied more than thousand units of Aeromuscle range of main wheel tyres for SU 30 MKI fleet.

MRF, after meeting all the stringent norms laid by the various authorities, has been supplying tyres for Chetak range helicopters since 2008. The company has supplied more than 2,000 tyres for Chetak helicopters.

After this successful stint, the company started working on developing the main wheel tyres for fighter aircraft and came up with Aeromuscle tyres for fighter aircraft. MRF has now become one of the few global OEMs that supply tyres to the defence industry.

The IAF intends to indigenise tyres of all fleet of aircraft and is now looking up for vendors to develop tyres for MiG 29 UPG and IL-76 aircraft fleets. This will soon be

followed by the development of tyres of other aircraft fleets that are operated by the IAF. MRF aims to tap potential in this regard.

MRF is also exporting its tyres to various countries across the globe. MRF has got its own network of sales offices across the country and the widest network of dealers in India. The company has its own state-of-the-art R&D facility at Chennai which also include aircraft tyres testing facilities.

MRF is also diversified into various other business activities like Pretreads (Retreading business), Funskool Toys, MRF Vapocure paints, MRF Sports Goods division. MRF is also a very active participants in various rally activities across the world. The company has won the Asia Pacific Rally Championship for several years and are currently very active in European Rally Championship. ■

In addition, HE the Governor of GAMI Eng. Ahmed Al-Ohali, affirmed: "This MoU promotes the process of localization in the military industries sector by achieving the goals of the Kingdom's vision to localize more than 50% of the total military spending by 2030, which will enable it to achieve the national priorities of strengthening the strategic independence of the Kingdom, in addition to developing a sustainable local military industries sector that will enhance the building of local industrial capabilities and various supply chains, as well as localization of human cadres.

HE added that the MoU comes under the guidance of the wise leadership to strengthen the Kingdom's global position in the military industries sector, especially through its strategic geographical location that connects

three continents, which makes it the ideal destination for investment in this sector.

Mr. Ricardo Dominguez Garcia-Baquero, expressed his contentment at signing the MoU with the Ministry of Defense, after the success of the first project, the "Sarawat Project", which is a quantum leap for Navantia and the RSNF. He also considered the challenging and demanding delivery period of the first project, that contributed to renewing the confidence of the Kingdom of Saudi Arabia in the Navantia company, as two of the project's ships were commissioned successfully; "HMS Jubail" and the "HMS Diriyah". Garcia-Baquero, indicated that the project ships are characterized by their incorporation of the latest combat systems to deal with all air threats, surface and subsurface,

and the latest of their kind in the world. He also affirmed the company's commitment to transfer technology to Saudi engineers and contribute to the localization of the Kingdom's technical capabilities.

The signing ceremony attended by His Excellency the Chief of Staff General Fayyad bin Hamed Al-Ruwaili, His Excellency the Commander of the Royal Saudi Naval Forces, Vice Admiral Fahd bin Abdullah Al-Ghufaili and the Ambassador of Spain His Excellency Jorge Hevia Sierra and the Deputy Defense Minister for Procurement and Armament Ibrahim Bin Ahmed Al Suwayed and the Deputy Governor of Military Acquisition at the General Authority for Military Industries Mr. Mohammad Saleh Al-Athel. ■

Rosoboronexport Steals the Show at Interpolitex-2022



Rosoboronexport, part of Rostec State Corporation, showcased a wide range of Russian security tools and solutions at 26th International Homeland Security Exhibition Interpolitex 2022 in Moscow in October. The exhibits presented modern small arms, including Kalashnikov AK-200-series, AK-12 and AK-15 assault rifles, as well as other weapons intended for police and Special Forces units.

Among the displayed weapons were the CP.1M self-loading pistol, PP-2000 and CP.2M submachine guns, upgraded CP.3M small-sized assault rifle and the ADS amphibious rifle capable of firing underwater that have high export potential. The guests of the exhibition were also shown the VSSM upgraded special sniper rifle, GM-94 magazine grenade launcher and the 12.7 mm SHAK-12 heavy assault rifle system.

"The Russian small arms presented by Rosoboronexport are very popular among the law enforcement agencies of our partners in the Middle East, Africa, the Asia-Pacific region and Latin America. They have proven themselves in the professional environment – among special

forces units, anti-terror groups and the police," said Alexander Mikheev, Director General of Rosoboronexport. "In addition, we showed a wide range of security equipment, civilian weapons, police and guard gear and exhibited a number of new products, including the new ORSIS 12.7 mm sniper rifle. We offered various solutions for cybersecurity, installation and premises security and urban environment monitoring," he said.

The ORSIS 12.7 rifle exhibited at Interpolitex for the first time is a new-generation high-precision sniper rifle suitable for counter-sniping and engaging lightly armoured vehicles. Rosoboronexport also showed other novelties from Russian defence manufacturers, for example, the KIB-10 body armour kit and the SPARTA 10 ultra-light tactical shield. Another debut at Interpolitex was the IT-ONV-01 wide-angle night vision driver goggles for driving combat vehicles at speeds up to 90 km/h with the headlights off. The goggles also enable the user to conduct visual surveillance, navigate the terrain, and operate with small arms and grenade launcher sights.

Among the latest Russian security solutions in mine detection is the NR-900EK3M non-linear detector, which allows roads, terrain and objects inspection for mines, improvised explosive devices (IED) and other explosive appliances with electronic components. Moreover, the detector successfully searches for hidden caches with weapons, ammunition, explosive devices and communication facilities, as well as checks suspicious items.

The drone based system for IED detection Strekoza (Butterfly) is also developed. It carries out preliminary engineering reconnaissance to detect IED (or electronic control device) on a spread ground area in the course of special searching operations. The obtained data can be transmitted to the control centre in real time. If necessary, Strekoza can use 'hang-up' technique to examine a part of ground area in detail.

The NR-MMD portable induction mine detector detects antipersonnel & antitank mines that contain metallic components: on the ground surface or embedded in soil, snow, brickwork or even shallow water.

German Heron TP awarded The Type Certificate from Military Aviation Authority



The German Heron TP (GHTP), remotely piloted aircraft system (RPAS), a unique German and Israeli Project, contracted to Airbus and IAI for modification, production and operation by the German Airforce awarded the type Certificate from the German Military Aviation Authority. The Type Certificate is the result of years of intensive type certification effort by the prime contractor Airbus DS Airborne Solutions GmbH (ADAS), a 100% Airbus subsidiary and its partner the GHTP OEM Israel Aerospace Industry (IAI) together with the GMAA. The Type certificate attests GHTP's compliance with the latest version of military airworthiness standard (STANAG 4671). The effort included adaptations of multiple systems to be compliant with the required standards, compilation and review of hundreds of documents and multiple reviews and tests, in close cooperation between GMAA, ADAS and IAI. All this was performed, and brought to very successful conclusion, despite the challenges imposed by COVID-19 pandemic.

Director General of German Military Aviation Authority (GMAA), Major General Dr. Jan Kuebart, said: "Together, we have achieved a true milestone: The German Heron TP has become the first UAV in the German armed forces and probably the first UAV in the world to fully comply with an internationally agreed airworthiness code. It is probably the first unmanned aircraft system which fully complies to the latest revision of NATO's airworthiness code. This huge success

could only be achieved by a high degree of professionalism on all sides and a close and excellent cooperation of the involved industry partners and authorities.

Head of UAS PEO in the IMOD/DDR&D (MAFAT), said: "The Type Certificate for the German MALE Heron TP project is a great unprecedented achievement, reflecting the collaboration between Germany and Israel. This achievement of GHTP's compliance with STANAG 4671, could not have been accomplished without the excellent teamwork and close professional collaboration between all partners and industries involved, including the German Ministry of Defense (GMOD), German Military Aviation Authority (GMAA), Israeli Ministry of Defense's Directorate of Defense Research & Development (IMOD's DDR&D), German Air Force (GAF), Israeli Air Force (IAF), Airbus DS Airborne Solutions (ADAS) and Israel Aerospace Industries (IAI)".

Airbus DS Airborne Solitons GmbH CEO Tim Behrens, said: The Type Certificate for GHTP is the result of common effort and close cooperation between the customer, our companies and nations and marks

a cornerstone in the RPAS class which has never been achieved before. We are very proud that we can deliver to our customer the German Armed Forces a high performance system according to the latest standards to support their mission related needs."

The German Heron TP is a medium-altitude, long-endurance, multiple payload, remotely piloted aircraft system (MALE-RPAS) developed and built by Israel Aerospace Industries (IAI) and Airbus DS Airborne Solutions (ADAS). It is based on IAI's reliable Heron TP used by the IDF and Heron 1 that already supported German Forces for more than a decade in their missions in Afghanistan and Mali. Measuring 26m span and weighing up to 5,400 kg, capable of multi sensor missions, for up to 27 hours. The system includes high levels of automation and system safety features, in terms of multiple redundancies and automatic monitoring, detection of possible malfunctions and reconfiguration, to maintain safe flight and airspace integration. The system is one of the first UAS in this class ever to receive STANAG 4671 certification. ■



Sweden, Germany, UK jointly acquire BAE System's BvS10 all-terrain vehicles



Sweden, Germany, and the United Kingdom have reached an agreement with BAE Systems to purchase 436 BvS10 all-terrain vehicles. The joint procurement, worth \$760 million, is in support of Arctic operations for the Collaborative All-Terrain Vehicle (CATV) program.

BAE Systems' military all-terrain vehicles are designed for operations in the harshest and most remote environments and this agreement signals the Company's position as the defense industry's leader for these capabilities.

"We are seeing increased interest from numerous countries for the extreme mobility capabilities offered by the BvS10 and its unarmored sister vehicle, Beowulf," said Tommy Gustafsson-Rask, managing director of BAE Systems Hägglunds, which manufactures the vehicles in Örnsköldsvik, Sweden. "Sweden, Germany, and the United Kingdom will be getting an excellent return on their investment in these highly capable vehicles for decades to come. This further demonstrates the strong relationship between BAE Systems and our customers to deliver these critical capabilities."

The three-nation acquisition will deliver

the 436 vehicles beginning in 2024, with 236 BvS10s going to the Swedish Defense Materiel Administration (FMV), 140 to the German Federal Ministry of Defence (BAAINBw), and 60 to the United Kingdom Ministry of Defence (MoD). The vehicles are based on the latest version of the BvS10 currently operated by Sweden, and will include variants for troop transport, logistics, medical evacuation, recovery, and command and control.

The CATV program includes a framework agreement that could lead to the purchase of more vehicles by the three nations, keeping the BvS10, the world's leading all-terrain vehicle, in production for many years to come. Sweden is the lead nation and has established a joint procurement office to lead the effort with representatives from all three nations.

This acquisition follows Sweden's order last year of an additional 127 BvS10 all-terrain vehicles for its existing fleet. In parallel to this agreement, Sweden is also procuring an additional 40 BvS10s in a separate contract valued at approximately \$50 million.

The BvS10 and Beowulf are the world leaders when it comes to all-terrain solutions. Their articulated mobility systems provide optimal maneuverability

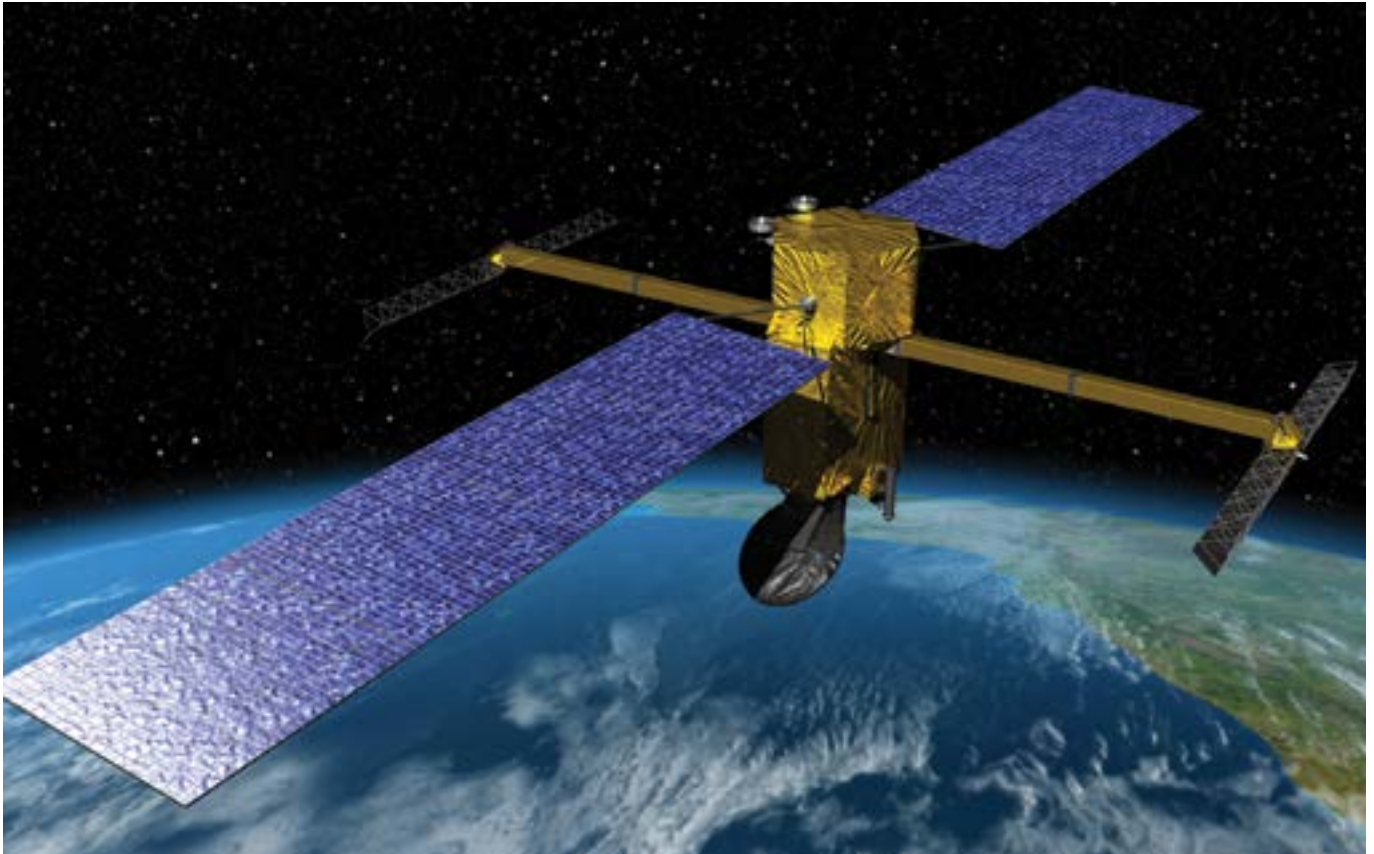
across varying terrains so they can traverse snow, ice, rock, sand, mud or swamps, as well as steep mountain environments. The vehicles' amphibious feature also allow them to swim in flooded areas or coastal waters.

The vehicles can deliver personnel and supplies to sustain strategic, tactical, and operational mobility.

BvS10's unprecedented mobility is based on terrain accessible North Atlantic Treaty Organization (NATO) standards. Its modular design allows it to be reconfigured for varying missions and can be delivered in multiple variants that include carrying personnel, command and control, ambulance, vehicle repair and recovery, logistics support, situational awareness, and a weapons carrier with additional mortar capability.

BvS10 is currently operated by Austria, France, the Netherlands, Sweden, and the United Kingdom. BAE Systems' Beowulf, the unarmored variant of the BvS10, won the U.S. Army's competition for its Cold Weather All-Terrain Vehicle (CATV) program in August. The U.S. Army will receive 110 vehicles over a five-year period.





Boeing's Spectrolab to Power Earth Surface Survey Mission

More than 3,000 solar cells will power the Surface Water and Ocean Topography (SWOT) satellite, as the internationally led mission conducts the first global survey of water on the Earth's surface

As the Surface Water and Ocean Topography (SWOT) mission begins its survey of the Earth's surface this month, the satellite will get power from solar cells built by Spectrolab, Inc., a wholly owned subsidiary of Boeing.

The SWOT satellite, targeted to launch this month from Vandenberg Space Force Base in California, will conduct the first global survey of water on the Earth's surface, observe the fine details of the ocean's surface topography, and measure how water bodies change over time.

The spacecraft will be powered by a six-panel solar array, containing a total of 3,360 of Spectrolab's NeXt Triple Junction (XTJ) solar cells. These advanced cells pull power from multiple wavelengths, allowing higher efficiencies not possible with commercially available silicon solar

cell technology.

"Our Spectrolab team knows our efforts to power space programs improve life on Earth. Learning more about our changing planet is key to that mission," said Tony Mueller, president of Spectrolab. "We're excited Spectrolab solar cells will be powering the first spacecraft to survey nearly all water on the Earth's surface."

From a unique non-sun-synchronous orbit, SWOT's instruments will measure the height of water in the planet's lakes, rivers, reservoirs and oceans in higher definition than ever before. The data will help NASA and its partners at the Centre National D'Etudes Spatiales (CNES), the Canadian Space Agency and U.K. Space Agency, inform water equity and water management decisions, provide new insights into Earth's water and energy

cycle, and help to prepare communities for rising seas and changing coastlines in a warming climate.

The SWOT mission will be managed by NASA's Jet Propulsion Laboratory, which provided the science payload and its instruments. Spectrolab's solar cell work was done for Thales Alenia Space, which was contracted by CNES to manufacture the satellite bus and conduct the final assembly, integration and test.

Spectrolab has produced more than 6.5 million gallium-arsenide solar cells for more than 1,000 spacecraft over the last 65 years in a shared vision with customers to connect and protect people globally, enable the exploration of other worlds, and build a space ecosystem for the future

Slovakia signs \$1.37 billion deal for 152 CV90s under government-to-government agreement

As part of a government-to-government agreement between Sweden and the Slovak Republic, the Ministry of Defence of the Slovak Republic has signed a \$1.37 billion (€1.3 billion) agreement for the delivery of 152 CV9035 infantry fighting vehicles (IFVs) from BAE Systems. The CV90s will be produced and delivered in several configurations with the full cooperation of Slovak industry including ZTS - ŠPECIÁL as the main industry partner to BAE Systems. Other Slovak state-owned and private companies will take critical roles in producing the vehicles and supporting the program in the longer term.

The Slovak Army will receive the newest iteration of the CV9035, known as the CV90MkIV, with the latest advanced capabilities and digital technology. The vehicle combines improved battlefield speeds and handling with an upgraded electronic architecture to support future growth and meet the needs of the evolving battlefield.

The Slovak CV90s will be equipped with the new state-of-the-art D-series turret with a 35 mm gun. The turret provides



CV9035 crews with improved protection and amplified combat efficiency through the latest generation of sensors, artificial intelligence and augmented reality software, increasing the CV9035s multi-domain capabilities on the battlefield. The Slovak CV9035 will also be equipped with Elbit Systems' "Iron Fist" active protection system (APS) solution and an integrated, Rafael Advanced Defense Systems' SPIKE-LR, an advanced anti-tank guided missile.

Of the 152 vehicles, 122 will be

delivered in the infantry fighting vehicle variant. Twelve IFVs will be built in a new configuration for the Anti-Material Rifles and Grenade Launcher Squad. The remaining vehicles will include Command & Control, Reconnaissance and Engineer and Recovery variants, aimed at providing specialist combat logistics support. The contract also covers training and education systems, as well as tactical simulators.

"I am excited for another major modernization project for our land forces. With these vehicles, we are fulfilling our commitment from a few years ago – to build a heavy mechanized brigade. I am looking forward to close cooperation with our partners who are already using the Swedish vehicles," said Minister of Defence Jaroslav Na. ■



Indra rewards the most Innovative in-house Technological Ideas

Indra, one of the leading global technology and consulting companies, has presented awards to the most innovative ideas of its employees in the framework of its intrapreneurship program, Innovators.

Innovators, now in its sixth edition, has a successful track record: on average, one in four professionals from the more than 40 countries where Indra does business participate each year, and more than 2,500 ideas proposed by employees have already been submitted. Under the slogan "think the unthinkable", last May the company

set its professionals challenges related to autonomous and connected mobility, artificial intelligence applied to defence, the secure management of user identities in the metaverse, new relationship models between citizens and public authorities or the potential of 5G technology and code prototypes.

Indraventures and Indra's Innovation Committee, made up of representatives from corporate units, directors from all business units and technological experts, chose nine ideas from more than 280 ideas received. The tenth finalist was

chosen by the company's employees. The teams, from Indra offices and its subsidiary Minsait around the world, shared their ideas at an event held at the company's headquarters in Alcobendas. The staging was very similar to the presentations given by startups to potential investors: employees had just one minute to present an elevator pitch that convinced the jury, who then chose the three winning ideas. The fourth awarded idea was the result of a live vote by the attendees. ■



Boeing awards contract to Lufthansa Technik to support New Zealand's P-8A Poseidon fleet

Boeing has awarded Lufthansa Technik a contract for sustainment services within its support of the Royal New Zealand Air Force's (RNZAF) future fleet of four P-8A aircraft that will leverage commercial capabilities to improve readiness rates.

The contract is for provision of Lufthansa Technik's Total Component Support (TCS), a comprehensive component services program for the 737 covering more than 400 commercial common parts included in the configuration of the P-8A, a military derivative of the popular airliner. Leveraging the 737 commercial market in

support of P-8A international customers will allow smaller fleets easier access to necessary global supply chain inventory from the more than 4,000 737 aircraft operating today.

"Our collaboration with Lufthansa Technik is a strong example of how industry can work together to solve customer challenges and maintain high readiness rates," said Torbjorn (Turbo) Sjogren, Boeing Vice President and General Manager, Government Services. "Our goal is to expand service offerings from a strategic German industry partner for additional P-8A customers to benefit."

The TCS program provided by Lufthansa Technik allows the RNZAF to reduce investment in commercial common parts and improve aircraft readiness through access to the German company's maintenance, repair and overhaul (MRO) global supply chain.

Boeing and Lufthansa Technik signed a strategic Memorandum of Understanding (MOU) in 2021 to support Germany's P-8A Poseidon fleet. The MOU expanded to a three-party agreement with ESG Elektroniksystem- und Logistik- GmbH in 2022.

Japan Orders Two More Boeing KC-46A Tankers

Boeing [NYSE: BA] has been awarded a contract to deliver two additional KC-46A Pegasus tankers to the Japan Air Self-Defense Force (JASDF), bringing the total on contract for Japan to six. Boeing delivered the first KC-46A tanker to Japan in October 2021, and a second in February 2022.

"The unmatched versatility and multi-mission capabilities of the KC-46A tanker further support JASDF's air mobility mission," said James Burgess, vice president and KC-46 program manager. "The growing global KC-46A fleet increases the interoperability advantages for our customers, ensuring mission readiness as well as value for their investment."

Designed to refuel all allied and coalition military aircraft compatible with



international aerial refueling procedures, the proven Pegasus has flown more than 10,000 sorties and is delivering millions of pounds of fuel every month to allied forces around the globe. In addition to refueling, the KC-46A delivers multi-mission capabilities necessary for the 21st century fleet, including data connectivity

and personnel, cargo and aeromedical transportation.

"This additional KC-46A acquisition reinforces the U.S.-Japan security alliance to support security and stability throughout the Pacific region," said Will Shaffer, president of Boeing Japan. "Boeing is proud of our enduring partnership with Japan, and we look forward to supporting the nation's KC-46A fleet that will fly for decades to come."

Boeing has delivered 67 KC-46A tankers, including 65 to the U.S. Air Force and two to Japan. Built on the proven 767 airframe that has more than 1,200 delivered—and with more KC-46A aircraft operational globally than any tanker except the Boeing-built KC-135—the Pegasus also provides crucial mission reliability for global customers.

flydubai continues to grow with new daily flights to St Petersburg



flydubai, the Dubai-based airline, announced the launch of daily flights to St Petersburg's Pulkovo International Airport (LED) from 20 January 2023. The carrier has grown its network to 114 destinations most of which were not previously served with direct airlinks to the United Arab Emirates.

flydubai flights to St Petersburg from Terminal 2, Dubai International (DXB) is currently scheduled to be operated by its fleet of Boeing 737 MAX aircraft. The flight time on this route is six hours and 50 minutes, making it one of the longer flights the carrier operates to after Krabi and Pattaya in Thailand which will also commence on 20 January 2023.

Commenting on the announcement, Ghaith Al Ghaith, Chief Executive Officer

at flydubai, said: "2022 has been a tremendous year for growth for flydubai. We have taken delivery of 18 new aircraft this year which has enabled us to continue to expand our network and add more capacity on some of our existing routes. We are confident this momentum will continue well into next year thanks to the hard work of everyone at flydubai and the encouraging economic environment Dubai has given us."

Commenting on the launch of flights to St Petersburg, Jeyhun Efendi, Senior Vice President, Commercial Operations and E-commerce at flydubai, said: "the start of our operations to St Petersburg will give passengers from the market a more convenient option for travel to Dubai and further afield onto the flydubai network to popular holiday destinations

such as the Maldives, Sri Lanka, Thailand and Zanzibar. Customers can enjoy a comfortable travel experience on board our Boeing 737 MAX aircraft which features a lie-flat seat in Business Class, comfortable seats in Economy Class with in-seat Inflight Entertainment and an internationally inspired menu."

St Petersburg is considered to be Russia's cultural capital. Also known as the "Venice of the North", the city is home to the Neva River canals, impressive historic architecture and one of most renowned museums, the Hermitage palace.

flydubai has recently announced the launch of operations to six new routes in 2023 including flights to Cagliari in Sardinia, Corfu in Greece, Gan in the Maldives, Krabi and Pattaya in Thailand and Milan Bergamo in Italy. ■

MQ-9A Leased to India by GA-ASI Complete 10,000 Flight Hours

On November 22, 2022, a General Atomics Aeronautical Systems, Inc. (GA-ASI) MQ-9A Remotely Piloted Aircraft that is on lease from GA-ASI to India's Navy completed its 10,000th flight hour in support of India national security missions. The 10,000-flight hour mark has been achieved by two MQ-9As being operated by the Indian Navy during a period of almost exactly two years, with the maiden flight of MQ-9A taking place on November 21, 2020.

"The Indian Armed Forces have been impressed by the MQ-9A's over-the-horizon ISR support for surface units and Indian warships, as well as the exceptional endurance and operational availability of



the platform," said GA-ASI CEO Linden Blue. "Our MQ-9As have helped the Indian Navy to cover over 14 million

square miles of operating area."

The MQ-9As are supplied to India by GA-ASI as part of a Company-Owned, Company-Operated (COCO) lease agreement. GA-ASI is the world's leading manufacturer of RPA systems, radars, and electro-optic and related mission systems solutions. MQ-9As are operated by the United States, the United Kingdom, France, Italy, the Netherlands, and Spain. GA-ASI's newer MQ-9B variant has been acquired by the UK and on order for Belgium. The MQ-9B maritime surveillance configuration (SeaGuardian®) recently began operations in support of the Japan Coast Guard. ■

Ilyushin IL-76MD-90A (E): New Multi-Purpose Aircraft is ready for Export



Rostec's United Aircraft Corporation (UAC) continues to expand the number of brand-new Ilyushin IL-76MD-90A heavy military transport aircraft in service. In November UAC handed over another IL-76MD-90A to the Russian Ministry of Defense. The previous plane was delivered in October. The export-oriented version of the aircraft is the IL-76MD-90A(E).

The aircraft features improved specifications compared to the previous variants of the IL-76. In particular, the flight range and the payload capacity have been increased, as well as the accuracy of flight navigation and landing, and the quality of radio communications. The ability of the aircraft to successfully perform tasks in harsh environments (including the mountainous areas) is also enhanced

by the ability to operate from unpaved airfields.

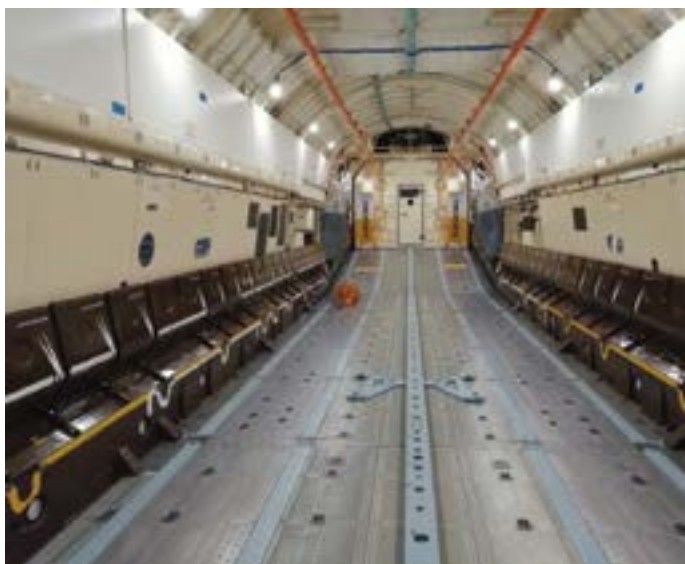
The plane can be converted into ambulance or fire-fighting versions.

"The IL-76MD-90A is a deeply upgraded modification of the renowned Soviet-designed IL-76. It has received a new engine, an improved wing structure, and a 'glass cockpit'; it also features an extended flight range and payload capacity. Actually, this is a new aircraft meeting all modern requirements, which will become the basis of Russian aviation" said Sergey Chemezov, CEO of Rostec.

One of the main differences from the IL-76's previous models is the use of more powerful PS-90A-76 turbofan engines. These engines provide improved take-off and landing, cruising performance, increased payload, longer flight range,

increased efficiency by reducing fuel consumption, and meet high environmental requirements for noise and emissions of harmful substances.

The UAC has also created the brand-new version of the IL-78 aerial tanker, the IL-78M90-A (export variant – IL-78MK-90A). The IL-78-90 tanker has improved aerial refueling equipment, can carry more fuel, and has a longer life. It can refuel up to four aircraft on the ground and one or two aircraft in the air. Apart from its main mission it can be converted into a transport plane. If converted, the IL-78MK-90A carries a 60 ton or up to 225 servicemen. During the conversion process, the fuselage fuel tanks and outboard refueling units are dismantled.



RAFAEL'S C-DOME Completes Final Stage of Operationalization Aboard Saar 6

Rafael Advanced Defense Systems Ltd., with the Israeli Navy, and the Israel Ministry of Defense IMDO completed an advanced interception test of the C-DOME Naval Iron Dome System. The C-DOME is an advanced naval configuration of RAFAEL's IRON DOME aerial defense system and is operated from the Missile Ship (INS) 'Oz' from the Sa'ar 6 'Magen' Class Corvette.

As part of the interception test, the system was installed on the INS 'Oz' corvette, the second of four advanced missile corvettes received by the Israeli Navy in the last two years. Operationalizing the system constitutes a significant milestone in enhancing the capabilities of the corvettes.

The test simulated real threats and included the system's successful detection and interception of targets in challenging scenarios. The C-DOME System constitutes a significant addition to the Israeli Navy's defense capabilities in a wide array of missions, including the guarding of strategic assets, the Exclusive Economic Zone, and maintaining the regional maritime superiority of the State of Israel.

The test's success is a product of the joint technological and engineering efforts of the Israeli Navy, the Ministry of Defense Directorate for Defense R&D (DDR&D), Rafael Advanced Defense Systems as the prime contractor and developer, the Israel Aerospace Industries' Elta as the radar manufacturer, and mPrest as the C2 manufacturer. The operational system was created through the integration of multiple

different systems, utilizing full operational capabilities that will be used by the female and male sailors of the Israeli Navy.

The C-DOME constitutes an additional layer of the State of Israel's multi-tiered missile and air defense array, based on four operational defense tiers: IRON DOME, DAVID'S SLING, Arrow 2, and Arrow 3. The Israel Ministry of Defense Israel Missile Defense Organization (IMDO) within the DDR&D led the systems' development.

Defense Minister, Benny Gantz: "The operationalization of the C-DOME system is a significant milestone for the State of Israel's naval defense capabilities. I would like to congratulate the Israeli Navy, the Ministry of Defense's IMDO, and Rafael, for this groundbreaking technological process and for their cooperation and determination that led to this great success. Israel is continuing to build and strengthen



its defense and attack capabilities – and will continue to keep its defensive edge in the area, protect its assets, its infrastructure and first and foremost – the lives and safety of the citizens of Israel.

Deputy Commander in Chief & Chief of Staff, Rear Admiral Guy Goldfarb: "The Israeli Navy is at the height of the advanced operationalization of the Sa'ar 6 corvettes, currently taking place at record speed. The successful interception tests are a result of the C-DOME system's implementation onboard the INS 'Oz' corvette. We recently acknowledged the initial operationalization of the INS 'Magen' corvette, the first to join the Sa'ar 6 series and complete its first operational activity – the patrol of the State of Israel's Exclusive Economic Zone and the protection of our economic and strategic assets. The maritime arena has changed, thus leading to wider responsibilities and more extensive operational tasks for the Israeli Navy. The Sa'ar 6 corvettes will be a central means of protecting the Exclusive Economic Zone and ensuring the State of Israel's maritime superiority."

Executive Vice President Dr. Ran Gozali, Head of the Land and Naval Systems Directorate, RAFAEL:

"The C-DOME is the first operational naval defense solution of its kind and the test on the Saar 6 corvette of the Israeli Navy serves as a monumental achievement in the development of the system. We are proud to see the C-DOME being operated by the Israeli Navy and its protection of Israel's strategic assets." ■

Empire Aviation Group celebrates 15th anniversary, Inducts Boeing Business Jet into managed fleet



Empire Aviation Group, the Dubai-based integrated private aviation specialist providing aircraft management, sales and charter services and CAMO, will mark its 15th anniversary at MEBAA 2022, where it is also announcing the induction of a Boeing Business Jet (BBJ) into its regional managed fleet of business jets.

Since launching in Dubai in 2007, Empire Aviation has expanded operations globally, inducted more than 70 aircraft on behalf of owners as well as managing many of the aircraft (the company currently has 20 business jets under management), introduced innovations such as the Luxury Partner Program and now has AOCs (Air Operator Certificates) or equivalent in

three countries.

In 2021, the company was appointed by Gulfstream as the International Sales Representative for business aircraft sales activities in India.

Empire Aviation Group has recently inducted a Boeing Business Jet into the company's fleet of managed business jets and is already managing and operating the aircraft on behalf of the owner from its base in Dubai. The Boeing Business Jet (BBJ) is an ultra-large-cabin, long-range aircraft perfectly suited for business, private, charter, corporate and head-of-state operations.

Paras P. Dhamecha, Founder and Managing Director of Empire Aviation Group, commented: "Empire Aviation has

successfully developed into a reputable and award winning global private aviation service provider to aircraft owners and charter clients, thanks to the team and the support of all our partners. There is no doubt that we have benefitted from Dubai and the UAE's position as an international aviation hub with world class infrastructure, facilities and regulators. Our journey continues and the exciting addition of the BBJ quite literally adds a new dimension."

Empire Aviation Group provides all the major services associated with private aviation — aircraft management, aircraft sales, charter and Continuing Airworthiness Management Organization.

Leonardo becomes a partner of the Global Combat Air Programme

Leonardo becomes a strategic partner in the GCAP (Global Combat Air Programme) which aims to create a sixth-generation air platform, a new-generation system of systems for multi-domain operations, to be operational by 2035.

The programme, which involves Italy, UK and Japan, represents a challenge aimed at protecting and strengthening national technological and industrial sovereignty while ensuring prosperity, safeguarding specialist skills, generating employment and improving the competitiveness of the Aerospace, Defence and Security sectors in international markets.

The programme will encompass the entire Italian supply chain, including universities, research centres and SME companies as



well as the industries involved.

Italy, UK and Japan, through their national industry leads Leonardo, BAE Systems and Mitsubishi Heavy Industries, will collaborate in the development of technologies for sixth-generation combat aircraft that will operate within a system of systems concept.

In addition to Leonardo, which has already participated in the programme since 2018 through Leonardo UK, the Italian team will involve Avio Aero, Elettronica and MBDA Italia together with the country's wider innovation and manufacturing ecosystem.

The national ambition is to develop a truly innovative model of collaboration between Defence and industry that can be used as a point of reference for future programmes. In a systemic vision, the technology areas ranging from aeronautics to electronics, from cyberspace to power and propulsion, leveraging on artificial intelligence, big data analytics, quantum computing, digital twin, cyber security and the integration between crewed and uncrewed platforms.

Guyana Accepts GRSE built Ocean Going Passenger Cum Cargo Ferry Vessel

Garden Reach Shipbuilders and Engineers (GRSE) Ltd and Transport & Harbours Department (T&HD), Cooperative Republic of Guyana signed the 'Technical Acceptance' document of the Ocean-Going Passenger & Cargo Ferry Vessel designed and built by GRSE. The technical acceptance was signed by Cmde PR Hari, IN (Retd.), CMD GRSE and Yurlander Hughes, Transport and Harbours Department (T&HD), Guyana, at Kolkata in the presence of officials from GRSE, Ministry of Public Works, Govt of Guyana and Indian MEA. The vessel shall now be transported to Guyana for the final delivery.

On 13 January 21, GRSE and T&HD, Government of Guyana signed the contract for the construction of the Ocean-Going Vessel. The Shipyard bagged this prestigious export contract through competitive bidding. The design incorporates enhanced safety and operational features. The ship was launched on 15 January 2022 by Joan Edghill the spouse of Bishop Juan Anthony Edghill, Minister of Public Works, the Cooperative Republic of Guyana and within six months GRSE has achieved the 'Technical Acceptance' of the vessel.

The 70 m long vessel with a displacement of 1700 Tonnes is propelled by two diesel



Engines and Twin Disc Gear Boxes to achieve a maximum speed of 15 Knots. The ship has been designed by the GRSE in-house design team and can accommodate 294 passengers (including 14 crew members) along with 14 cars, 02 trucks, and 14 containers & cargo. The vessel shall operate in the coastal and riverine area of Northwest District of Guyana. The Indian built vessel plying in Guyana would herald in better ties between the two nations.

Speaking on the occasion, Yurlander Hughes expressed satisfaction over the execution of the project by GRSE as per specifications and within timelines. Addressing the gathering, Cmde PR Hari (IN, Retd), CMD GRSE, reiterated the role of the Indian High Commission in Guyana in ensuring the fructification of

the project. He lauded the support from the officials of the T&HD Guyana in providing prompt clearances for ensuring the smooth progress of work in India. The CMD also conveyed his appreciation to the production partners, OEMs and Classification Agency ABS for their unstinted support in timely execution of the project.

GRSE is currently executing seven shipbuilding projects including three Advanced Frigates under Project 17A, four Survey Vessels (Large) & eight Anti-Submarine Warfare Shallow Water Crafts for the Indian Navy, one Fast Patrol Vessel for the Indian Coast Guard and Next Generation Electric Ferry for Government of West Bengal.

First extra-widebody Dassault Falcon 6Xs to arrive in Middle East mid-2023

Dassault Aviation will be exhibiting its popular Falcon 8X very long range trijet at this year's Middle East & North Africa Business Aviation Association (MEBAA) show and exhibition. The show runs December 6-8 at Dubai's Al Maktoum International Airport (Dubai World Central).

"Operators in the Middle East highly value the performance, flexibility, robustness and technological excellence of large cabin models like the Falcon 8X, which draw heavily on decades of Dassault fighter aircraft experience," said Dassault Aviation Chairman & CEO Eric Trappier. "This appreciation can only grow with



the arrival of the new Falcon 6X and 10X, which will set a new standard in the large cabin segment."

Large cabin Falcons like the 6,450 nm/11,945 km Falcon 8X make up a third

of the 75 Falcons operating in the region. The Falcon 8X can fly nonstop from New York to Dubai, Dubai to Adelaide and Jeddah to Sao Paulo, yet easily access short runway airports like London City Airport or Lugano, Switzerland, that are typically off limits to big business jets. The aircraft's spacious cabin is the quietest of any business jet on the market and its revolutionary FalconEye dual Head-Up Display option allows low visibility approaches with 100-foot minima, providing customers a significant operational benefit and greatly improving access to airports under bad weather conditions.

U.S. Air National Guard recommends BriteCloud 218 decoy

The U.S. Air National Guard (ANG) has issued a 'fielding recommendation' for Leonardo's BriteCloud 218 expendable active decoy, tested on US F-16 Fighting Falcon aircraft.

The force has conducted an extensive testing and live trials campaign with BriteCloud since 2019, and is confident that the decoy meets the requirements. In some instances, even exceeds operational requirements, delivering an increased platform protection capability to 4th generation fighter aircraft like the F-16.

The U.S. Air Force has subsequently designated BriteCloud 218 as AN/ALQ-260(V) 1, identifying it as an airborne electronic warfare countermeasure.

BriteCloud is unique in the combat air countermeasure market, packing the latest-generation DRFM jamming technology into a compact expendable that can be launched from standard countermeasure dispensers. Unlike traditional chaff and flares, BriteCloud employs a sophisticated on-board electronic warfare capability designed to counter radar-guided threats.



BriteCloud has been undergoing evaluation for potential service with U.S. Armed Forces under the Office of Secretary of Defense (OSD) Foreign Comparative Testing (FCT) program. The fielding recommendation by the ANG is one of the final stages of the program and gives the green light to BriteCloud 218 as proven effective and fit for operations.

BriteCloud 218 is also an effective protection capability for smaller uncrewed platforms, with the German Armed Forces successfully trialling the system with target

drone aircraft last year.

Leonardo's original BriteCloud 55 decoy (a slightly larger variant, compatible with round 55mm flare dispensers such as those on the Eurofighter Typhoon and Saab Gripen C/D), is used by the UK's Royal Air Force.

BriteCloud's unique combination of the latest-generation threat protection with extremely low integration costs continues to generate significant international interest and Leonardo is in talks with a number of Air Forces about the capability.

GA-ASI Flies Autonomous Collaboration Using Avenger UAS

On November 17, General Atomics Aeronautical Systems (GA-ASI) paired a company-owned MQ-20 Avenger® Unmanned Aircraft System (UAS) with a Sabreliner, operated by Lockheed Martin and acting as a surrogate fighter, and two F-5 Advanced Tigers (AT) from Tactical Air Support configured with internal TacIRST sensors, to perform multi-platform infrared sensing. During this event, all aircraft performed coordinated maneuvers to sense relevant airborne targets in the infrared spectrum.

The MQ-20 and Sabreliner were digitally connected over a Tactical Targeting Network Technology (TTNT) mesh network to share sensing observations. In addition to the live-flight aircraft, five digital twins of the MQ-20 were integrated to autonomously fly a Live, Virtual, Constructive (LVC) collaborative combat mission.



All live aircraft had operational next-generation Tactical Infrared Search and Track (TacIRST™) sensors during the test to provide Air-to-Air Moving Target Tracking. These live tracks were provided by Lockheed Martin's TacIRST sensor and was processed on a General Dynamics Mission Systems' EMC2 Multi-Function Processor (MFP), commonly referred to as "the Einstein Box." Using this software-defined architecture, the flight demonstrated crewed and uncrewed teaming between the MQ-20s, Sabreliner and manned F-5 AT tactical fighters.

"Flying four platforms with TacIRST installed was a major milestone for

Lockheed Martin," stated Matthew Merluzzi, Sr. Program Manager at Lockheed Martin. "By leveraging open mission systems, our team has demonstrated that common platform integration is possible across a variety of vehicles bringing advanced capabilities to our warfighters quicker and more affordably."

To accomplish the multi-company integration, the MQ-20 team used a government-furnished CODE autonomy engine and the government-standard Open Mission Systems (OMS) messaging protocol to enable communication between the autonomy core and TacIRST.

This is another in an ongoing series of autonomous flights performed using internal research and development (IRAD) funding to prove out important concepts for ACPs.

Leading Advanced Unmanned and Counter-Unmanned Warfare Strategies

Proven Solution, Advanced Technology, Trusted Partner



Providing consultancy and market development services for security and defence industries, TRD has been a pioneer in the anti-drone domain. Beginning operations from a small consultancy firm in 2011 and growing massively into a full-fledged system integrator for complete detect-and-defeat anti-drone solution, TRD is also an Original Equipment Manufacturer (OEM) for defeat systems with its flagship Orion Drone Gun products. Today, TRD's systems span across the world in various segments from safeguarding vital installations such as oil and gas and international airports, to VVIP force and event protection as well as military applications. Speaking to Arabian Defence, Sam Ong, Founder and CEO of TRD, talks about the company's operations and its journey ahead.

TRD offers a full spectrum of Anti-drone system to protect vital installation and defence. Could you talk about the company's inception and growth?

TRD is a pioneer in the Anti-drone domain, beginning operations from a small consultancy firm in 2011 and growing massively into a full-fledged system integrator for complete detect-and-defeat Anti-drone solution, as well as an Original Equipment Manufacturer (OEM) for defeat systems with our flagship ORION Drone Gun products that are already fielded and proven in 18 countries since 2017.

Having first succeeded in our home-ground, we have further established operations in different parts of the world and proceeded to be at the forefront of the industry, competing head-to-head against global companies and winning competition for international projects along our strategy of Grow ASEAN Go Global.

Today, TRD's systems span across the world in various segments from safeguarding vital installations such as oil and gas and international airports, to VVIP force and event protection as well as military applications. TRD is now ready to further embark on the next bound of our journey to transfer our technology for

local production in selected regions for homeland security applications as well as implementing advanced soft kill, directed energy weapon and hard kill Anti-drone technologies into our overall solution to defend against more sophisticated and emerging drone threats especially in the military domain.

Could you give us an overall brief on the company's portfolio of products and services?

TRD's ORION family of Anti-drone systems include a range of portable, vehicle-/ship-mounted and fixed-site solutions that comprise active radar, passive Radio Frequency (RF) detection, electro-optical and infrared (EOIR) camera, jammer, spoofing, take control, C2 software system, as well as hard-kill and "drone-on-drone" capabilities. This addresses the wider spectrum of drone threats and operational scenarios, including autonomous 24/7 area protection.

TRD develops and owns all our Anti-drone mitigation products including the newly announced first-in-the-world ORION-H7 Drone Gun, 8-band selectable ORION-11 RF Jammer, as well as the ORION-12 wide-band selectable jammer that has been proven to be able take down

4G/5G drones in our recent demonstration at the EW Live event in Estonia in September 2022.

Beyond being an OEM for mitigation systems, TRD further offers customised full-suite of integrated Anti-drone solution and provides Antidrone-as-a-Service as well as leasing and training services to offer customers an option to be quickly equipped with Anti-drone capabilities without having to invest upfront.

It is the era of drones and most countries are actively pursuing diverse capabilities in both drone and Anti-drone technologies. How does the company intend to tap the potential?

TRD's main focus is on Anti-drone capabilities and aims to develop the full-spectrum of defeat technology to deal with current and emerging drone threats, with solutions ranging from soft kill to hard kill and drone-on-drone.

Having said that, the company also sees synergies between drone and Anti-drone, hence it is part of our aspiration to become a more holistic company by upgrading drones with capabilities to tackle threats. TRD is currently undergoing testing for one of its first Vertical Take-Off and Landing (VTOL) Unmanned Aerial Vehicle (UAV) project delivery to an Asian customer,

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EDEX 2021 Kickstarts in Style

The International Exhibition Centre in Cairo has welcomed its first of many attendees to kick start the annual edition of Arab Defence Week 2021, which is being co-organised from 4-7 Dec 2021. The event is being co-organised by the Egyptian Ministry of Defence and the Egyptian Ministry of Military Production.

The exhibition is the largest of its kind in the region and is expected to attract a large number of international visitors.

The exhibition is being held at the Egyptian International Exhibition Centre in Cairo, Egypt. The exhibition is being held from 4-7 Dec 2021.

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TRD successful demonstration at EW Live, showing the taking down of drones operating 4G (Photo: TRD)

and we look to incorporate Anti-drone technology on this UAV platform to detect drone threats and defeat them from the sky.

TRD's products have been deployed and proven in over 18 countries. What are the operations of the company in ASEAN, Middle East and the rest of the world?

TRD's headquarters is located in Singapore, where we have our main design, R&D, production, projects, staging, operations and support, as well as testing and logistics facilities for our in-house manufactured products.

TRD also has a branch office in Thailand, where the team conducts live testing and demonstrations of our full-suite integrated solutions to customers, and we are even looking to further develop it into an Anti-drone Test Centre for future and ongoing projects.

Across the rest of the world such as Middle East, Europe and Americas, TRD has engaged marketing representatives and partners to break into these new markets and work closely with them to provide the local customers with a good solution while ensuring a responsive continuous after-sales support. When businesses become larger, it is in TRD's intention to look into transferring our technology to these countries, similar to what we have done in some markets.

Could you elaborate on the company's advanced state-of-the-art ORION-I Anti-drone Vehicle that was unveiled recently?

The ORION-I Anti-drone Vehicle

consists of a comprehensive range of Anti-drone systems from detection (Radar, RF, Camera) to defeat (Jammer) all integrated into one single platform with its own in-built C2, providing the customer with a flexibility to deploy at different locations anytime, anywhere.

The ORION-I Anti-drone Vehicle is 100% designed and built in-house by TRD, from conceptualisation, to engineering and systems design, as well as integration and assembly of the full system, according to customer's requirements. It has been radiation safety certified and compliant to EMI/EMC standards internationally. The team is proud to say that the vehicle has also passed extensive and stringent field tests in very demanding operational scenarios including an urban environment stipulated by the customer.

How strong is the company's R&D, testing and production facilities?

Close to 80% of TRD's employees are engineers with years of defence, security and military operational experience. The company also builds strong ties with international technology partners in the business with ability to tap on their best-in-class technologies.

Our R&D and capability development roadmap for Anti-drone anticipates ahead drone technology trends. Our R&D team continually designs innovative ideas by thinking out-of-the-box, improving and performing robust testing of new solutions that incorporate effective operational concept and yet at an affordable price before getting them into production.

We overcome the limitation of testing full systems on our home-ground by establishing bases in neighbouring

countries such as Thailand to ensure that all our systems are field tested and proven effective in real-world situations.

What are the immediate and long-term goals of the company? What are the challenges ahead?

We want to continue to be the best-in-class Anti-drone company in this niche but rapidly expanding market and be the world-class partner for advanced C4I and security systems to make life safer. We want to push Anti-drone to the edge where we continually come up with new capabilities such as drone-on-drone and other cost-effective drone defeat solutions to keep abreast with the everchanging new drone technologies.

As building Anti-drone capability is not just about technology, we foresee three main challenges ahead. First, is having the knowledge, experience and requirements to know the enemy better and faster than themselves. Second is overcoming regulations, where in most countries, the use of active systems remain greatly controlled which restrict the ability to activate Anti-drone systems whenever necessary.

Third, is choosing the right solution and catching up with the fast cycle of drone technology to build an Anti-drone solution that is overall best-in-class and cost-effective to the customer in the long run. There are no silver bullets in building the "perfect" Anti-drone capability. We need to always "fly" faster and better than the "terrorists" could and continue our learning journey to prepare for an enduring battle.



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EDGE entity ADSB unveils a 51m offshore patrol vessel at Indo Defence

- **510 OPV is co-designed by Abu Dhabi Ship Building (ADSB) and ARES Shipyard, and built by ADSB in the UAE**

- **Modular multi-role platform is ideal for a wide range of critical seakeeping missions**

EDGE entity ADSB, the regional leader in the design, new build, repair, maintenance, refit, and conversion of naval and commercial vessels, unveiled its 510 OPV, a 51m offshore patrol vessel (OPV) which is built in the UAE by ADSB. The Abu Dhabi-based shipbuilder made the announcement on the first day of the Indo Defence Expo & Forum 2022, being held in Jakarta, Indonesia.

510 OPV is designed by ADSB and ARES Shipyard, which has proven hull designs and a diverse portfolio of naval vessels. Built to operate in adverse sea conditions, the 51m vessel features a large modular deck configurable for vessel or equipment transport, or deployment of various combat systems. With a 65,000-litre fuel capacity, it delivers long range and extended endurance, ideal for search and rescue, fast-attack missions, and other offshore activities.

David Massey, CEO of ADSB, said: "We are proud to launch another patrol vessel, co-designed by ADSB and ARES Shipyard, and built by our experts and devoted employees. Built for a diverse

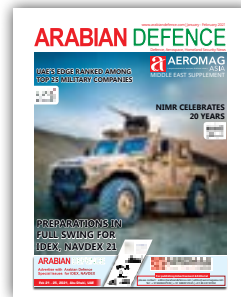
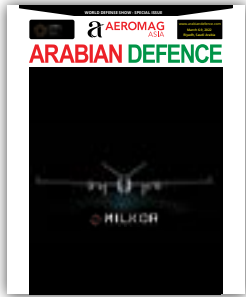
range of tasks, we are meeting the increased global demand for tactical and sophisticated vessels with high level multi-mission capabilities. In line with the UAE leadership's vision, we are focused on developing 'Made in the UAE' products that have serious export potential, and we look forward to meeting prospective customers and showcasing our capabilities during Indo Defence."

Configured for transport, the vessel can accommodate two 11m fast interceptor boats, one rigid hull inflatable boat (RHIB) with rapid deployment, a variety of search & rescue (SAR) equipment, one multifunctional crane, two jet-skis, one remotely operated vehicle (ROV), an aft deck, and side rescue gates.

In February 2021, ADSB launched its first IP-owned 16m and 12m fast interceptors for coastal and inshore requirements. The company is expanding its offerings by building offshore patrol vessels in its 300,000sqm Abu Dhabi shipyard. Part of the Platforms & Systems cluster at EDGE, ADSB now has a portfolio of internationally competitive designs in the 11-51m range. ■

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