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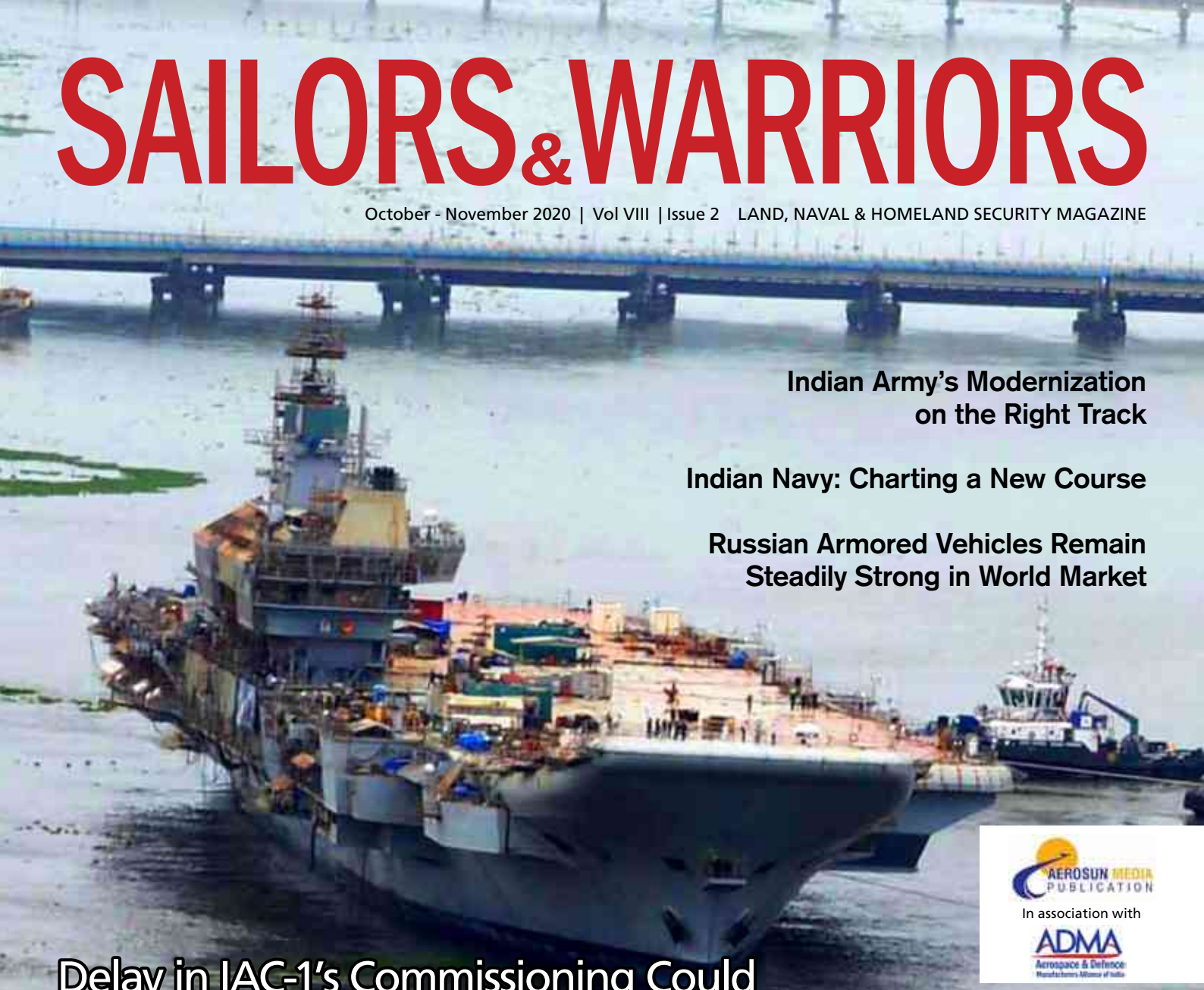

Indian Army's Modernization on the Right Track

Indian Navy: Charting a New Course

Russian Armored Vehicles Remain Steadily Strong in World Market

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Delay in IAC-1's Commissioning Could Diminish India's Maritime Prowess - Page No : 06

General Manoj Mukund Naravane
PVSM, AVSM, SM, VSM, ADC
Chief of Indian Army

Admiral Karambir Singh
PVSM, AVSM, ADC
Chief of Indian Navy

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Editorial

Positive Developments for India's Defence Industry

The Indian Government has released the Defence Acquisition Procedure (DAP)-2020, which incorporates a slew of proposals aimed at achieving the vision of 'Atmanirbhar Bharat' programme and empowering Indian industry through the 'Make in India' initiative. DAP-2020 seeks to bring about reforms in Indian defence industry and turn the country into a global manufacturing hub.

This is imperative for meeting the target set by Prime Minister Narendra Modi for India to export defence equipment worth Rs 35,000 crore (US Dollars 5 billion) by 2025. According to the draft Defence Production Export Promotion Policy-2020 released by the Ministry of Defence, the government is eyeing a turnover of Rs 1.75 lakh crore (US Dollars 25 billion) in defence manufacturing by 2025. The Modi government's policies to encourage export of defence equipment have already resulted in a significant rise of 700 per cent in the sector in just two years, from US Dollars 213 million in FY 2016–17 to US Dollars 1.5 billion in FY 2018–19.

DAP-2020 suggests various measures for boosting indigenization, innovation and adoption of new technologies. It has also dedicated a chapter for design and development. Moreover, the document addresses certain existing voids related to Information Communication Technology, Leasing, Post-contract Management and Other Capital Procurement.

In addition, commercial terms have been made more industry-friendly and payment to vendors aligned with foreign industry. Revising the offset guidelines, DAP-2020 gives preference to manufacture of complete defence products over components.

All these suggestions, along with notification of a list of weapons and platforms to be banned from imports, have made the ground clear for domestic industry to perform.

Meanwhile, with the challenge posed by COVID-19 showing no signs of abating, the Indian defence industry may also need to consider diversification. However, DAP-2020 is a pointer that the Government of India is aware of the realities as the document is not only aligned with the goal of 'Atmanirbhar Bharat' but is also industry-friendly and instills confidence in the domestic defence industry.

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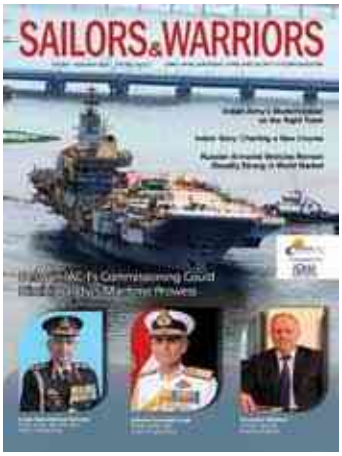

Content

Delay in IAC-1's Commissioning Could Diminish India's Maritime Prowess

Covid19 Furthers Beginning of Basin Trial

While imagining the future of their military forces, the political and military leaders of all seafaring nations with blue-water navies and strong maritime interests, have never been skeptical about the role of naval aircraft carriers. In order to protect its maritime interests and ensure the straits remain open to free commerce and unthreatened by neighbours, all nations try to project its naval power at sea. Despite having brown-water/littoral naval capability and Coast Guards to guard their territorial waters, the most

The Indian Navy's first Indigenous Aircraft Carrier (IAC -1) is set to commence its basin tests soon following the fitting of systems and equipment at Cochin Shipyard Limited (CSL). Basin trials are conducted for proving of the propulsion, transmission and shafting systems which can be tested only out of waters. It will be followed with sea trials by end of this year and IAC is expected to be inducted in Navy by end of 2021 after being rechristened as the Indian Naval Ship Vikrant. An aircraft carrier is considered the most valuable sea-based asset, and offers an incomparable military instrument with its ability to project tactical Air Power over long distances, including Air Interdiction, Anti-Surface Warfare (ASuW), offensive and defensive Counter-Air, AEA and AEW. However the delay in the completion of IAC-1 project, which has already missed multiple deadlines, is a concern for India especially when the country is facing a standoff with China in its Northern frontiers amid Chinese Navy's growing presence in Indian Ocean Region (IOR) and growing ties with Pakistan. Even though the navy chief has visited CSL during his visit to Kochi in September, no words about his review on IAC-1 were made public. Aeromag looks at the IAC-1 project and analyses the importance of its hastened completion with regard to the present strategic scenario.

decipherable symbol of maritime superiority for major powers has always been the aircraft carriers which are considered the strongest military deterrent force since World War II.

As the US recently displayed in the South China Sea, much to China's uneasiness, nothing projects raw combat power like an aircraft carrier strike group (CSG) capable of moving over 500 nautical miles (900 km) in a single day. Reports said that the Chinese People's Liberation Army Navy is now building its third aircraft carrier, which reportedly will be the

first PLA(N) carrier equipped with a catapult system and built completely by indigenous shipyards. With the aim of having a 10-carrier Navy by 2050, China is expected to begin deploying a CSG in the IOR within the next few years.

India too needs large aircraft carriers to secure the seas of the Indo-Pacific, ensure peace, secure shipping lanes, provide security to the region, and in case of a war, unleash lethal firepower. The Indian government too has been keen on empowering its navy by providing it the best assets including the aircraft carrier.

Besides the 44500-tonne INS Vikramaditya, which is the only aircraft carrier in service, the navy is expecting the commissioning of its first Indigenous Aircraft Carrier (IAC) by the end of 2021. Though it has been keen on pushing for a third aircraft carrier, intended to be christened INS Vishal, the focus is fully on completing IAC-1 project at the earliest as it is vital for the nation's naval prowess in the present day scenario, when Chinese Navy is expanding its position in the Indian Ocean Region (IOR).

India's Long Term Perspective Plan envisages at least two operational aircraft carriers at any one time with the third one as hot reserve to substitute during maintenance of either. However, India will have to compromise on displaying its maritime supremacy with just INS Vikramaditya unless and until, the IAC-1 is commissioned.

Indigenous Aircraft Carrier-1 (IAC-1)

The project IAC-1 has marked a golden feather in indigenous defence capabilities of India and will be a big boost to concept of Make in India and Atma Nirbhar Bharat on completion. Because it is the first ever aircraft carrier to be designed by the Directorate of Naval Design (DND) of the Indian Navy, the first warship to be built by Cochin Shipyard Limited (CSL) and the first warship to be built entirely using indigenously produced steel. The ship is built with active participation of private and public enterprises.

The ship, being constructed for Rs 22,590 crore, is 262 metres (860 ft) long and 60 metres (200 ft) wide, and displaces about 40,000 metric tons. It features a Short Take-Off, Barrier Arrested Recovery (STOBAR) configuration with a ski-jump. The deck is designed to enable aircraft such as the MiG-29K to operate from the carrier. It is expected to carry an air group of up to thirty aircraft, which will include up to 26 fixed-wing combat aircraft, primarily the Mikoyan MiG-29K, besides carrying 10 Kamov Ka-31 or Westland Sea King helicopters. While Ka-31 fulfills the airborne early warning (AEW) role and the Sea King will provide anti-submarine warfare (ASW) capability.

What is the status of IAC-1?

Reports say that the harbour trials of the ship were completed and the basin trials, which would have checked the 40,000-tonne warship's

propulsion, transmission and shafting systems, were disrupted by the Covid-19 pandemic. The basin trials, first sanctioned by the government in January 2003, are expected to begin by the end of October.

Basin trials are conducted for proving of the propulsion (move), transmission (electricity) and shafting systems which can be tested only out of waters. It will be followed by extensive sea trials by the end of 2020. The flight trials will started only after IAC-I gets commissioned in September 2021 and the INS Vikrant, will be fully operational by 2022-2023.

In January 2020 the project was reviewed by the Empowered Apex Committee (EAC) headed by Ajay Kumar, Defence Secretary at CSL and major structural and outfitting work of the vessel was completed by February including the major milestone activities like starting of Main Propulsion machinery and trials of Power Generation machinery. IAC had successfully completed the Pre-Contractors Sea Trials dry dock work package in December 2019.

The Chief of Navy Staff, Admiral Karambir Singh, during his four-day visit to Southern Naval Command, Kochi from 14 September 2020, has visited CSL and reviewed the project. But the navy or CSL has not released any details of the project likely due to heightened stand-off with China and an active ongoing Parliament session.

Relevance of faster completion of IAC-1

The blue-waters ranging from the east coast of Africa to the Western Pacific comes under the Indian Navy's area of responsibility as it often conducts joint exercises, goodwill missions, and HADR operations there. As 50% of India's trade passing through South China Sea, it is important to secure India's trade with a CSG especially when China objects the presence of foreign navies in the sea. As the Western side carries the other 50% of India's trade and 80% of its oil supply, this side too needs to be protected.

As India is not fond of overseas basing, a carrier force remains the sole viable alternative to conduct out of area contingencies. A CSG remains the fastest means of deployment of forces whether it is in a show of force or in support of own land operations as well as for providing security to friendly countries in the IOR. With its air complement, Carrier Strike Groups (CSGs) are able to control a huge expanse of the seas compared to other surface and sub-surface platforms on their own. With IOR maritime scenario becoming more uncertain and complex due to Chinese presence, having aircraft carriers to guard the eastern and western fronts of India in more relevant than ever.

Indian Army's Modernization on the Right Track

A series of programmes initiated recently by the Indian Government are expected to change India's status as the world's second-largest arms importer to a nation that boasts of a thriving domestic defence industry.

General Manoj Mukund Naravane
PVSM, AVSM, SM, VSM, ADC
Chief of Indian Army

The Indian Army is engaged in an elaborate and continuous process of modernization with the aim of enhancing its capabilities. Several programmes have been initiated to acquire modern arms, equipment and protective gear. For instance, the army has begun the process to acquire around seven lakh rifles, 44,000 LMGs and 44,600 carbines. India's Ministry of Defence (MoD) has also signed an agreement with the US firm Sig Sauer for procurement of 72,400 assault rifles.

Moreover, a joint venture between the Ordnance Factory Board (OFB) and Russia will manufacture AK 203 Kalashnikov rifle in Amethi, Uttar Pradesh. In addition, India has inducted M777 155 mm howitzer from the USA and a new variant of DRDO-developed Pinaka Multiple rocket launcher. The system, when mounted on TATRA truck, enhances its mobility.

Meanwhile, the Indian Air Force (IAF) is currently operating at least 10 squadrons less out of the sanctioned 42. Making matters worse, around 50 per cent of the aircraft based at these squadrons are obsolete. Belonging to the 1970s and 1980s vintage, they are on the verge of decommissioning. This situation makes modernization of the IAF a top priority. At the same time, the deal for buying 36 Dassault Rafael fighter jets from France in fly-away condition provides some relief. The light combat aircraft (LCA) Tejas also meets some of the requirements of the IAF. The DAC (Defense Acquisition Council) has cleared the

purchase of 33 fighter jets, including 21 upgraded MiG-29 and 12 Sukhoi MKI. The recent induction of CH-47 multi-mission Chinook helicopter and Boeing AH-64 Apache has also enhanced the capabilities of the Indian Air Force. Similarly, IAF maintains UAV (Unmanned Aerial Vehicle) squadrons including Searcher II, Heron from Israel and Rustom, developed by DRDO.

Major plans

In 2019, the Indian Government finalized a road map to spend US Dollars 130 billion in the next five to seven years to modernise the Armed Forces. The plan includes acquisition of a wide variety of weaponry ranging from missiles, warships, drones, fighter jets, surveillance equipment to creation of architecture for Artificial Intelligence. The same year, India and Israel signed a deal for the Spike Missile. This involves a purchase of 12 launchers and 210 missiles.

Alongside, battlefield digitization is also underway. Also termed 'Network Centric Warfare', this process involves Information Sharing, Improved Situation Awareness, Speed of Command and Enhanced Mission Effectiveness.

The most important tank in the Indian Army's inventory is the T-90S, a third generation

Russian tank. By the end of 2020, India is expected to have a total of 2,011 T-90 tanks based in about 40 Armoured Regiments. The Indian Army is also upgrading about 1,600 T-72 tanks with night vision devices.

Research into high-tech aspects of modern warfare encompassing Artificial Intelligence, Robotics, Nano Technology, Lethal Automatic Weapon Systems Directed Energy Weapons, Nuclear, Biological and Chemical Warfare is also continuing.

Early in 2020, the Government of India cleared a US Dollar 2.3 billion deal under which a Turkish company will manufacture 5 Fleet Vessel Ships (FVS) of 45,000 tonnes at Hindustan Shipyard Limited (HSL), Visakhapatnam.

India and the US have signed a US Dollars 930 million agreement for 6 Apache Helicopters for Indian Army. This is the world's most advanced multi-role helicopter. The Indian Government also gave a nod to the Indian Navy to pursue the acquisition of 24 Sikorsky MH-60R helicopters. The Government of India has signed Rs 800 crore deal with the Israel Weapons Industries (IWI) to procure 16,479 Negev 7.62x51 mm light machine guns (gas-operated) for the Indian Armed Forces. The Government of India has also signed a US Dollars 190 million deal with the US Government to procure two self-protection suites (SPS) which will be retrofitted on the two custom-built Boeing-777. The two aircraft will have fully-integrated advanced missile approach warning sensors, defensive electronic warfare systems, infra-red countermeasures, digital radio frequency jammers and other equipment. This will be similar to the US President's Air Force One or the Flying Oval Office. The aircraft will be used by the Prime Minister of India, President of India and other VVIPs for extra-long-haul overseas travel.

During DefExpo 2020, India and Russia signed 14 MoUs for development and production of land, air and naval systems and

hi-tech civilian products. As a result, the defence deals between India and Russia are set to cross US Dollars 16 billion. The deals include the supply of S-400 air defence systems and the production of Kalashnikov rifles and Kamov helicopters.

Rosoboronexport, Russia's state-run organization, has signed deals with DRDO for advanced pyrotechnic ignition systems, HAL for the export of spares and services to allies, and BHEL for land systems. Another deal was signed between Russian Helicopters and Indo-Russian Helicopters Ltd to localise the components used in Kamov Ka-226 helicopters. India is planning to purchase 200 Ka-226 helicopters.

Self-reliance in defence

Defence Minister Rajnath Singh, in a series of tweets, made the major announcement of giving a boost to the indigenization of India's defence industry. "The Ministry of Defence is now ready for a big push to #AtmanirbharBharat initiative. MoD will introduce an import embargo on 101 items beyond the given timeline to boost indigenisation of defence production," he said.

Subsequently, MoD prepared a list of 101 items for which there would be an embargo on the import beyond the timeline indicated against them. "This decision will offer a great opportunity to the Indian defence industry to manufacture the items in the negative list by using their own design and development capabilities or adopting the technologies designed & developed by DRDO to meet the requirements of the Armed Forces," the Minister added.

"Our aim is to apprise the Indian defence industry about the anticipated requirements of the Armed Forces so that they are better prepared to realise the goal of indigenisation. All necessary steps would be taken to ensure that timelines for production of equipment as per the Negative Import List are met, which will include a co-ordinated mechanism for hand holding of the industry by the Defence Services," he tweeted.

Earlier, Finance Minister Nirmala Sitharaman had announced that the FDI limit in defence manufacturing under automatic route will be hiked to 74 per cent from the existing 49 per cent while some weapons and platforms will be banned for imports. The Finance Minister also said that Ordnance Factory Board will be corporatised for better management. Similarly, Prime Minister Narendra Modi has set a target of US Dollars 5 billion worth of military exports in the next five years. Following the Prime Minister's call for going local, MoD released the draft Defence Acquisition Procedure-2020.

All these programmes are expected to change India's status as the world's second-largest arms importer to a nation that boasts of a thriving domestic defence industry.

Indian Navy: Charting a new course

Over the years, India has been launching numerous programmes to modernize its Navy. In addition to aircraft carriers, submarines and large amphibious assault ships, the Indian Navy is acquiring numerous surface combatants.

The Indian Navy is engaged in efforts to have a fleet of at least 150 ships and around 500 aircraft. This would enable the Navy to not only secure both sea flanks in the Bay of Bengal and the Arabian Sea but also respond to emergency situations far away from the mainland.

The latest initiatives of the Indian Navy include enhancing the marine assault capabilities by setting up a new amphibious warfare facility at Kakinada in Andhra Pradesh. The Navy has also initiated Phase II expansion of INS Kadamba, its third largest naval base, near Karwar. This phase will involve expansion of the berthing facilities to accommodate 40–45 more front-line warships, including the aircraft carrier INS Vikramaditya, raise manpower to 300 officers and around 2,500 sailors, and build a naval air station with a 6,000-foot runway. After Phase II is over, Phase IIA and IIB will follow. When all the works are completed, INS Kadamba will be able to base 50 front-line warships. Meanwhile, construction of a new naval base, INS Varsha, at Rambilli for Arihant Class submarines is underway.

Yet another major initiative is building a pair of aircraft carriers. The first carrier, INS Vikrant, was launched in 2013 by Cochin Shipyard and undocked in June 2015. After completing the works, extensive sea trials would be carried out and commissioning is planned for 2021. Vikrant, which has a displacement of 40,000 tonnes, will be capable of operating up to 40 aircraft, including 30 HAL Tejas and MiG-29K fighters. The second aircraft carrier, INS Vishal, will displace around 65,000 tonnes and is expected to be delivered to the Indian Navy by the late 2030s. After Vishal is delivered, the Indian Navy's target of having three aircraft carriers in service would be achieved.

Over the years, India's Defence Acquisition Council has been launching numerous programmes to modernize the Navy. In addition to aircraft carriers and large amphibious assault ships, the Indian Navy is acquiring numerous surface combatants such as; the Visakhapatnam-class destroyers, Project 17A-class and Admiral Grigorovich-class frigates, ASW shallow water corvettes, ASuW corvettes, and MCM vessels. New submarine types include the conventional Kalvari class, Project 75I and the nuclear Arihant class. New auxiliary ships include five Replenishment Oilers, a Missile Range Instrumentation Ship and an Ocean Surveillance Ship.

As part of enhancing its technological capabilities,

Admiral Karambir Singh
PVSM, AVSM, ADC
Chief of the Naval Staff

the Indian Navy is procuring General Atomics Sea Guardian drones at an estimated cost of US Dollars 2 billion. It is pointed out that this is for the first time that drones built by General Atomics are sold to a non-NATO nation.

In yet another first in the history of Indian naval aviation, two women officers have been selected to join as 'Observers' (Airborne Tacticians) in the helicopter stream. They would, in effect, be the first set of women airborne combatants who would be operating from warships. Earlier, entry of women was restricted to the fixed wing aircraft that took off and landed ashore. These officers, SLt Kumudini Tyagi and SLt Riti Singh, are a part of a group of 17 officers of the Indian Navy, including four women officers and three officers of the Indian Coast Guard who were awarded 'Wings' on graduating as 'Observers' at a ceremony held at INS Garuda,

Kochi. After being trained in helicopter operations, women officers would soon be deployed in frontline warships of Indian Navy.

NIIO launched

Meanwhile, Defence Minister of India Rajnath Singh launched the Naval Innovation and Indigenisation Organisation (NIIO) through an online webinar. Chief Minister of Uttar Pradesh Yogi Adityanath was among the dignitaries present at the event. The NIIO has set up dedicated structures for the end users to interact with academia and industry with the aim of fostering innovation and indigenisation for self-reliance in defence, sticking to the vision of Atmanirbhar Bharat.

The NIIO is a three-tiered organisation. Naval Technology Acceleration Council (N-TAC) will bring together the twin aspects of innovation and indigenisation and provide apex level

directives. A working group under the N-TAC will implement the projects. In addition, a Technology Development Acceleration Cell (TDAC) has been created for induction of emerging disruptive technology in an accelerated time frame.

The Draft Defence Acquisition Policy 2020 (DAP 20) envisages Service Headquarters establishing an Innovation & Indigenisation Organisation within existing resources. Indian Navy already has a functional Directorate of Indigenisation (DoI) and the new structures created will build upon the ongoing indigenisation initiatives, as well as focus on innovation.

During the launch event, the Indian Navy signed Memorandums of Understanding (MoUs) with Uttar Pradesh Expressway Industrial Development Authority (UPEIDA); Raksha Shakti University (RSU), Gujarat; Maker Village, Kochi and Society of Indian Defence

Manufacturers (SIDM). An online discussion forum for engaging domestic industry and academic institutes has also been launched created in partnership with RSU. A compendium of Indian Navy's Indigenisation perspective plans titled 'Swavlamban' was also released.

The Indian Navy has also tapped solar power as part of its modernization. Towards this end, the Flag Officer Commanding-in-Chief, Southern Naval Command commissioned a 3 MW Solar Power Plant at Indian Naval Academy (INA), Ezhimala, Kerala via virtual conferencing. This is in line with the Government of India initiative of 'National Solar Mission' to achieve 100 GW of solar power by 2022.

The solar plant is the largest in the Indian Navy and has an estimated life of 25 years. All components have been indigenously sourced, including 9180 highly efficient monocrystalline solar panels employing the latest technology. The project has been executed by Kerala State Electronics Development Corporation Ltd. The Solar Power Plant project will help Naval Station Ezhimala in reducing the carbon footprint and is one of the many initiatives undertaken by INA towards a clean and green environment. ■

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BrahMos Missile with Extended Range Successfully Flight Tested

BrahMos surface-to-surface supersonic cruise missile featuring indigenous Booster and Airframe Section along with many other 'Made in India' sub-systems was successfully flight tested to an extended range from ITR, Balasore in Odisha. It is a major step in enhancing the indigenous content.The missile is capable of hitting targets at more than 400-km range.

The BrahMos Land-Attack Cruise Missile (LACM) was cruising at a top speed of Mach 2.8. Defence Minister Rajnath Singh congratulated all the personnel of DRDO and team BrahMos for the spectacular mission. Dr G Satheesh Reddy, Secretary DD R&D and Chairman DRDO congratulated the scientific community and industry for this feat.

This successful launch has paved the way for the serial production of the indigenous booster and other indigenous components of the powerful BrahMos Weapon System realising Atmanirbhar Bharat pledge.

DRDO's Laser Guided ATGM Flight Tested Successfully

The indigenously developed Laser Guided Anti Tank Guided Missile (ATGM) was successfully test fired defeating a target located at longer range. The test was conducted from MBT Arjun at KK ranges (ACC&S) Ahmednagar in continuation of successful trial done on 22nd September.

The ATGM employs a tandem HEAT warhead to defeat Explosive Reactive Armour (ERA) protected armoured vehicles in ranges from 1.5 to 5 km. It has been developed with multiple platform launch capability and is currently undergoing technical evaluation trials from 120 mm rifled gun of MBT Arjun.

This Laser Guided Missile has been developed by Armament R&D Establishment (ARDE), Pune in association with High Energy Materials Research Laboratory (HEMRL), Pune and Instruments Research & Development Establishment (IRDE), Dehradun.

Defence Minister Rajnath Singh congratulated DRDO for this successful feat. Secretary DD R&D and Chairman DRDO D. G Satheesh Reddy congratulated DRDO personnel for this achievement which paves the way for Atmanirbhar Bharat pledge of Prime Minister Shri Narendra Modi.

GRSE Launched the Portable (Assault) Bridge

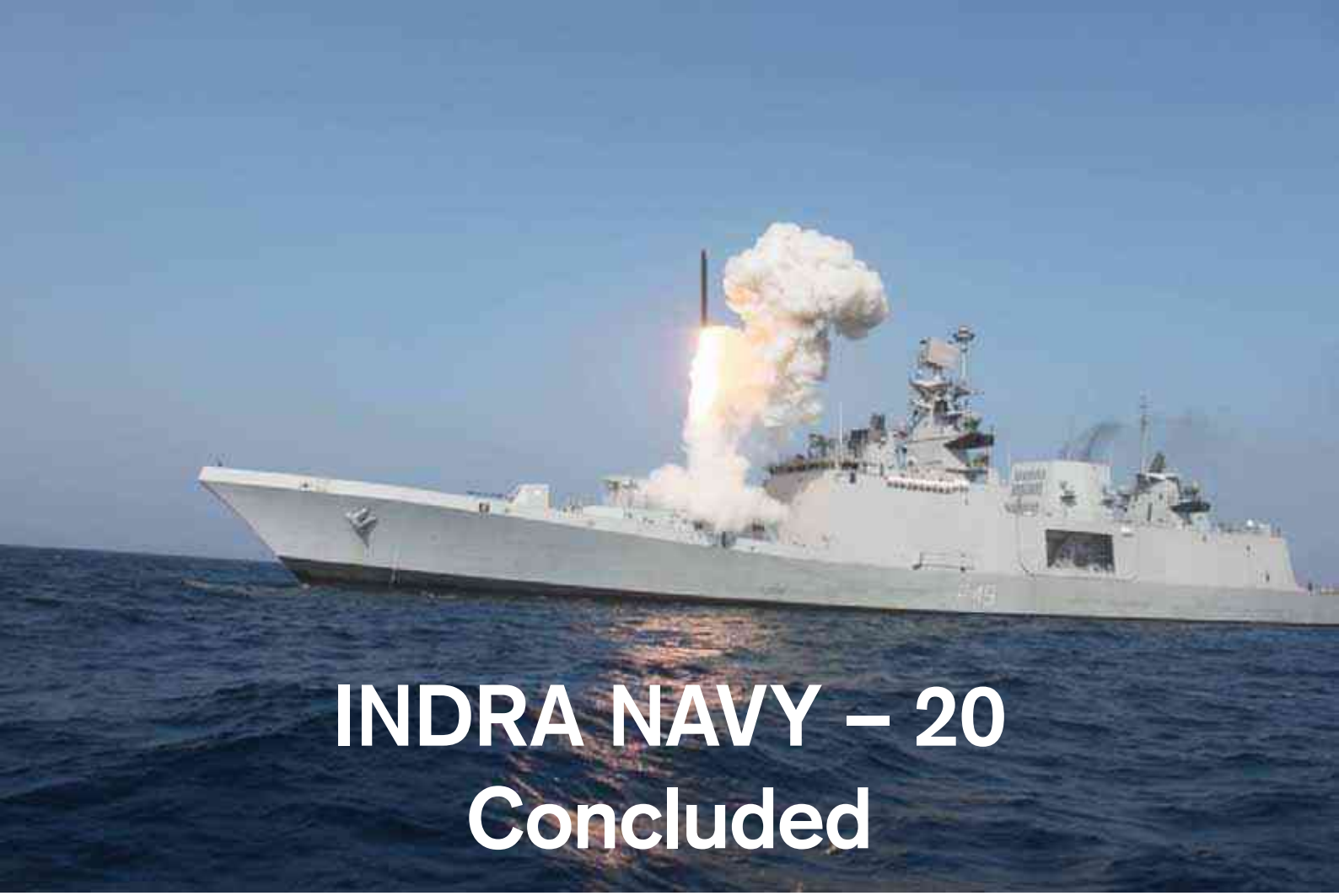
Garden Reach Shipbuilders and Engineers through its Bailey Bridge division has designed and developed a new "Portable (Assault) Bridge". This bridge is made of Carbon Fibre Polymer Composite Material and can be used by pedestrians & light vehicles.

Apart from shipbuilding & ship repair, GRSE is the only Defence Shipyard to have diversified into Engineering Business with a product profile of Pre-fabricated Steel Bridges. Bailey Bridge Unit of the shipyard is engaged in designing, developing and installing bailey bridges to far flung areas& terrain in India and abroad having delivered over 5300 Bailey Bridges to Indian Army, BRO, Central and State PWDs and also friendly neighbourhood countries like Bhutan, Nepal, Sri Lanka and Myanmar.

The features and advantages of this new assault bridge is that, it has a span of 30 ft (9.15 m), width of 2.10 m and weight of 336 kg. It also has a load capacity of IRC-6, 400 kg/sqm (Foot Bridge) & 1.10 MT of ATV.The bridge is Man – Portable and reusable using Crew of 10-12.

Garden Reach Shipbuilders and Engineers has been at the forefront of the nation's maritime progress aimed towards self reliance in the sixty years since its inception in 1960 with the delivery of the first Indigenous warship of independent India in 1961, INS Ajay, a Seaward Defence Boat for the Indian Navy. The shipyard has delivered 105 warships to the Indian Maritime Forces, the highest deliveries by any shipyard in the country, till date.

GRSE has undertaken major modernisation of infrastructure at its Main Unit with modular integrated construction technology. Celebrating the "Atmanirbhar Bharat Abhiyaan", a State-of-the-Art Modern Hull Block Complex and Indigenous Underwater CNC Plasma Cutting Facility was virtually inaugurated by Defence Minister Rajnath Singh at the Rajabagan Dockyard Unit of GRSE on 10 Aug 2020 to augment the existing infrastructure at the Main Unit of the shipyard.Thus a step towards concurrent construction of 24 ships from the existing capacity of 20 has been initiated. GRSE has a dedicated, multi disciplinary, strong Design Team which is continuously working towards developing various concept designs for ships, deck machinery items and pre fabricated bridges that can cater to the current and future requirement of its existing and prospective customers in India and friendly foreign countries.



INDRA NAVY – 20 Concluded

The 11th edition of exercise INDRA NAVY, a biennial bilateral maritime exercise between Indian Navy and Russian Navy was held in the Bay of Bengal from 04 to 05 September 2020. Initiated in 2003, Ex INDRA NAVY epitomises the long-term strategic relationship between the two Navies. Whilst the exercise was hel

Rajnath Singh, Defence Minister of India, was in Moscow on the invitation of Defence Minister of the Russian Federation, General Sergei Shoigu to discuss bilateral cooperation and issues of mutual interest and commemoration of the 75th anniversary of victory in World War II.

This exercise has matured over the years with increase in scope, complexity of operations, and level of participation. The primary aim of exercise INDRA NAVY-20 is to further consolidate inter-operability built up by the two Navies over the years and also to enhance understanding and procedures for multi-faceted maritime operations. The scope of this edition includes wide-ranging and diverse activities across the spectrum of maritime operations. Due to restrictions imposed by the COVID-19 pandemic, INDRA NAVY-20 would be undertaken in a 'non-contact, at sea only' format.

The Indian Navy was be represented by guided

missile destroyer Ranvijay, indigenous frigate Sahyadri and fleet tanker Shakti, along with their integral helicopters. Sahyadri was redeployed to provide assistance to MT New Diamond, which has caught fire off the coast of Sri Lanka.

The Russian Federation Navy was represented by destroyer Admiral Vinogradov, destroyer Admiral Tributs and fleet tanker Boris Butoma of the Pacific Fleet, based at Vladivostok.

The exercise was aimed at enhancing interoperability, improving understanding and imbibing best practices between the two navies, and would involve surface and anti-aircraft drills, firing exercises, helicopter operations, seamanship evolutions etc. The last edition of the exercise was conducted off Visakhapatnam in December 2018.

Exercise INDRA NAVY-20 will help to further boost mutual confidence and cooperation between the two Navies and would reinforce the long-standing bond of friendship between the two countries.

Russian Armored Vehicles Remain Steadily Strong in World Market

Alexander Mikheev
Director General of Rosoboronexport

Rosoboronexport part of the Rostec State Corporation has supplied more than 3000 tanks and vehicles, including artillery, engineer and other weapon systems and military equipment, over 20 years in the international arms market.

"The equipment designed by the Russian school of tank building, which celebrated its 100th anniversary this year, receives acclaim of foreign specialists every year. The latest products from Rostec holding companies – Armata and T-90MS MBTs, BMPT Terminator tank support fighting vehicles, Sprut-SDM1 light amphibious tanks, TOS-1A heavy flamethrower systems, Msta-S self-propelled howitzers, a broad lineup of engineer vehicles based on tank chassis and many other domestic armored vehicles – are in high demand around the world. In several countries, armored units equipped predominantly with Russian vehicles became the backbone of the national armed forces," - said Alexander Mikheev, Director General of Rosoboronexport and Deputy Chairman of the Russian Engineering Union.

Today, more than 40 countries are actively operating not only state-of-the-art Russian armored vehicles, but even those supplied decades ago during the Soviet period. Moreover, over the past 20 years, more than half of these countries have signed large contracts with Rosoboronexport

for the supply of new batches of armored vehicles or the modernization of their tank fleets to radically increase the operational readiness and fighting capacity of their armies.

The following qualities of the Russian armored vehicles are highly appreciated abroad:

• High operational effectiveness and capability to handle a wide range of tasks, including through a gun capable of firing both standard tank ammunition and guided missiles.

• Ease of use (the equipment is easily mastered by personnel, easy to maintain and repair, even in the field);

• Automation of operations and control, increased mobility, good crew protection, operability in the widest range of geographic and climatic conditions, from polar ice to the equator;

• Reliability of armored vehicles, platform and component commonality, their high maintainability on the battlefield.

• Compliance with the claimed performance characteristics.

Success in exporting Russian armored vehicles is inextricably linked with the

quality training of foreign specialists, setting up joint venture productions abroad, and carrying out various R&D projects for foreign customers.

Foreign customers pay great attention to the preliminary evaluation of equipment before making a decision on its procurement. So, the tests of T-90 tanks in the Thar Desert and the Arabian sands became an effective advertising for these vehicles. As a result, a plant was built in India for the licensed production of T-90S MBTs and a number of countries adopted them for service.

For 100 years, the tank building industry in Russia has evolved in a unique way, which no one in the world has followed, becoming a nationwide plant academy, in the shops of which an engineering idea is translated into advanced military equipment. The best achievements of science and the unique century-old experience of using tanks have been implemented today in the Armata universal combat platform, whose counterparts are unlikely to emerge in the foreseeable future. The delivery of vehicles based on this platform abroad is the future of the world tank building industry. Currently, the world tank export market is steadily dominated by T-72, T-80 and T-90 MBTs, which have received a state-of-the-art configuration as a result of Russian modernization.

"An immense amount of research and technological groundwork and colossal capacities of Russian heavy engineering enterprises, which include tank building industry, the latest production processes, from armor plate welding and rolling to delicate integration of high-tech digital equipment into multi-ton hulls – all this ensures Russia's leadership in this segment of the world arms market. This success has been achieved thanks to the talents and conscientious work of hundreds of thousands of people working in design bureaus, operating machines, pouring steel, and assembling powerful combat vehicles. Only cohesive teams can achieve such overwhelming results. This glory belongs in full measure to global tank-building forward Uralvagonzavod Corporation, a subsidiary of the Rostec State Corporation, which has ensured the factory continuity of generations and preserved labor dynasties, where experience is transferred from fathers to sons – Russia's future tank builders, who had and should have no match in the world," stressed Alexander Mikheev.

On the occasion of the 100th anniversary of Russian tank building, a ceremonial passage of the latest Russian armored vehicles took place in Nizhny Tagil, which is a city plant where the main production facilities of world-famous Russian tank manufacturer Uralvagonzavod Research and Production Corporation are concentrated.

Flare Bright Wins Rapid Innovation DASA Contract

UK start-up, Flare Bright Ltd, won a UK Ministry of Defence (MOD) Defence and Security Accelerator (DASA) contract to rapidly innovate their SnapShot product.

SnapShot is a tiny, stealthy and fully autonomous nanodrone. It can fly in almost any weather or atmospheric conditions, and it isn't affected by other electromagnetic signals or needs GPS to guide it. It can take high-quality aerial images with its hand-portable and extremely robust equipment. It is ballistically launched to a height of 100 metres then uses sophisticated and patent pending software to control a glide path and home to the user. Customer interest has been shown from law enforcement, emergency services, industrial inspection companies, urban mapping and the defence sector.

DASA's Rapid Impact Innovations are viewed as those which will deliver a technology model or prototype demonstration at Technology Readiness Level (TRL) 6 or 7. This demonstration puts SnapShot in the hands of end users, and in the context or environment in which it is expected that the solution would be used.

In order to be funded, DASA assessed that the project would have a realistic prospect of achieving an impact within a 3-year time frame from its inception, and that there is a strong customer requirement and capability need for the idea.

To be successful Flare Bright had to provide evidence of how MOD and Security business and capability requirements, such as the Defence Lines of Development (DLOD), could be satisfied should the project to be taken forward after the pilot.

The contract is for £226,200 and will develop a soldier-ready robust prototype for testing with the Army.

To protect soldiers and fight the enemy, frontline soldiers need their own simple aerial surveillance that is lightweight and usable in any circumstance. The Army is keen to test out our technology at the frontline as soon as possible, as SnapShot delivers a simple, man-portable image-capture device that works whether GPS-denied or in jammed environments and in almost all-weather conditions. This is amply demonstrated by a Letter of Support from the Army Land Warfare Centre and winning a coveted space to demonstrate SnapShot at the Army Warfighting Experiment 2020 showcase. Snapshot uses autonomous flight software and has sufficient flight testing to be years ahead of anyone else in perfecting this technology.

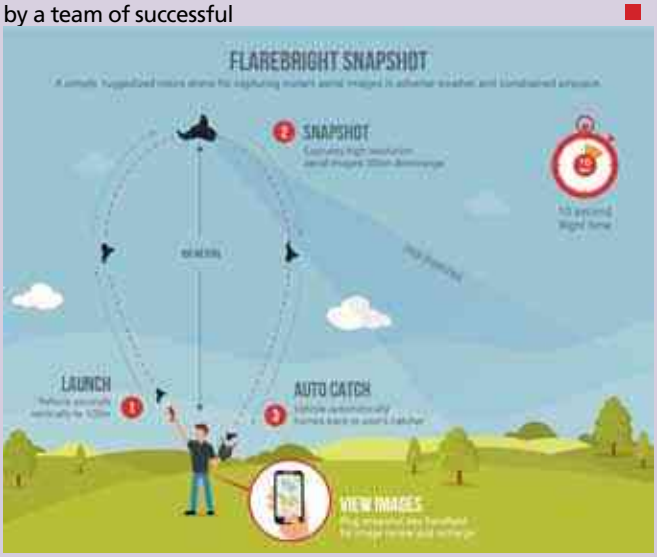
This product uses Artificial Intelligence and complex software to create pinpoint delivery of small packages in all-weather and atmospheric conditions, even when GPS-denied or jammed in the most challenging environments.

"We have had 10 years of software and AI development to reach the point of being confident to deliver true autonomy irrespective of weather or other challenging environments. We are expecting this to launch a new era of autonomy in drones," says Flare Bright's CEO, Kelvin Hamilton.

Flare Bright is the leading developer of fully autonomous drones and drone systems. It is a UK company founded by a team of successful entrepreneurs and engineers. Its key product, SnapShot, is an all-weather instant image capture drone used by defence, the emergency services and for industrial uses.

Flare Bright's mission is to become a leading supplier and innovator of autonomous flight systems. Using SnapShot as our proving technology, we will build robust tech, engineering and manufacturing know-how that creates products and services to supply the world's growing aerospace autonomy sector.

Flare Bright has numerous Letters of Support from key customers, was a winner of Phase 1 of InnovateUK's Future Flight competition and has been selected to be showcased on the Army Warfighting Experiment 2020.



Elbit Systems Awarded a $33 Mn. Contract to supply Radio Systems for an Army in Asia-Pacific

Elbit Systems Ltd. has been awarded a contract valued at approximately $33 million to supply tactical radio systems to a customer in Asia-Pacific. The contract will be performed over a 12-month period.

Under the contract the company will equip the customer's Artillery and Infantry Forces with tactical radio systems including vehicular, man-packed and handheld configurations. The radio systems feature advanced networking capabilities enabling reliable and secure voice and data communication services over extended ranges. This contract award follows a recent decision by the customer to equip its Army with additional networked combat solutions from Elbit Systems, including E-LynX Software Defined Radios (SDR) and TORCH-X Command and Control systems.

Elbit Systems' radio solutions have been selected by numerous Armed Forces around the world, including those of Switzerland, Sweden, Germany and Israel.

Elbit Systems Ltd. is an international high technology company engaged in a wide range of defense, homeland security and commercial programs throughout the world. The Company, which includes Elbit Systems and its subsidiaries, operates in the areas of aerospace, land, and naval systems, command, control, communications, computers, intelligence surveillance and reconnaissance ("C4ISR"), unmanned aircraft systems, advanced electro-optics, electro-optic space systems, EW suites, signal intelligence systems, data links and communications systems, radios, cyber-based systems and munitions. The Company also focuses on the upgrading of existing platforms, developing new technologies for defense, homeland security and commercial applications and providing a range of support services, including training and simulation systems.

MoD signs 409 Cr. contract with Indian company for Hand Grenades to Army

Providing further boost to the 'Make in India' initiative of Government of India in the Defence Sector, Acquisition Wing of Ministry of Defence (MoD) signed a contract with M/s Economic Explosive Ltd (EEL), (Solar Group) Nagpur for supply of 10,00,000 Multi Mode Hand Grenades to the Indian Army at an approximate cost of Rs. 409 Crores. These grenades will be replacing the hand grenade design of World War-II vintage, in use with the Indian Army.

The Multi-Mode Hand Grenade has been designed by DRDO andTerminal Ballistic Research Laboratories (TBRL) and is being produced by M/s EEL, Nagpur. The Grenades have a distinctive design, in that, they can be used in both Offensive and Defensive Modes. This is a flagship project showcasing public-private partnership under the aegis of DRDO & MoD enabling "AtmaNirbharta" in cutting edge ammunition technologies and accomplishes 100% Indigenous Content.

Five Startups Chosen by IAI's Innovation Center

IAI's unique accelerator track allows the startups to work with IAI's technology leaders, realize long-term business potential, leverage breakthrough technologies, and gain access to IAI's customers in

QuantLR, Aigent-tech, DST, Scopoli, and Fvmat are the five finalists chosen for the accelerated development track under a hybrid work model and will benefit from working with Israel Aerospace Industries (IAI) best technology experts. The five companies were selected out of hundreds of companies that expressed their interest in the accelerator and over 90 which applied to IAI's Innovation Center. Following the shortlisting stage, which selected 17 companies,

a steering committee consisting of IAI's R&D and innovation managers, chose the projects that will join the specialized accelerated track.

The accelerator track, scheduled to open on November 1st will run for 13 weeks, and in will operate in a first-of-its-kind hybrid working model with IAI's top tech experts to co-create a Minimum Viable Product (MVP). QuantLR will join IAI\ELTA Group's experts in a quantum sensing project. Scopoli and the Systems, Missile and Space Group will co-develop a solution for tracking people and object in complex terrains. Aigent-tech will work with IAI\ELTA on AI for land applications. DST will collaborate with the Aviation Group in the creation of a real-time monitoring system, and Fvmat will develop an aircraft landing gear with the help of the engineers of the Aviation and Military Aircraft Group.

Amira Sharon, VP of R&D and Innovation at IAI, said, "In addition to choosing the five companies that will use IAI's accelerator, we've established ties with multiple startups from a range of content areas. We are currently assessing our continued business relations with these companies based on relevance. The companies that were selected for the upcoming cohort at the accelerator will have an opportunity to validate and test their technology jointly with IAI experts and supportive environment and, at the same time, become exposed to unique technologies and cross-fertilizing work processes in diverse open innovation fields. The accelerator forms another layer in the broad range of new processes that IAI is implementing to foster a culture of innovation of disruptive technologies."

IAI is an innovation and R&D-oriented company in the fields of aviation, satellites, missiles, intelligence, cyber, UAV's, robotics, and more. Innovation is an integral part of IAI's corporate culture. The company integrates creativity with open innovation managed together under the company's R&D programs. IAI's investment in R&D and innovation totals ~$900 per annum, across varied technologies.

S Anbuvelan takes over as CEO of HAL's Helicopter Complex

S Anbuvelan has taken over as Chief Executive Officer (CEO) of HAL's Helicopter Complex . Prior to this, he was heading the Helicopter Division as Executive Director.

"My focus will be to ensure quality products & services and timely delivery from Helicopter Complex", said Mr Anbuvelan after taking the charge. Anbuvelan did his graduation in mechanical engineering from Alagappa Chettiar College of Engineering, Karaikudi, Tamil Nadu and holds a Post Graduate Degree of M Tech in Aircraft Production Engineering from IIT Madras. He also holds Post Graduate Diploma in Business Management from XIME, Bengaluru. He joined HAL as a management trainee (technical) in 1986 and has experience of 34 years in various key positions. Some of the highlights of his career so far include productionising ALH's integrated transmission assembly, ramping up production of ALH gear boxes, reduction of snags during equipping of ALH, training & development of employees, quality improvements in ROH of Cheetah & Chetak helicopters at Barrackpore, streamlining of ALH production and implementation of latest technologies in the field of manufacturing & assembly of helicopter products.

BEL Upgrades ATDS Maareech Manufacturing Facility With an Eye on 'Atmanirbhar Bharat'

Defence Minister Rajnath Singh, inaugurated the upgraded, state-of-the-art Maareech Integration Facility of the Bharat Electronics Limited through Video Conference.

Gowtama M V, Chairman & Managing Director, (BEL), on the occasion gave a presentation to the minister on Advanced Torpedo Decoy System (ATDS) Maareech. This initiative of BEL is in accordance with the Prime Minister, Narendra Modi's vision of an 'Atmanirbhar Bharat', a self-reliant nation.

ATDS Maareech is a fully indigenous system involving sensors and decoys developed jointly by DRDO labs, Naval Physical & Oceanographic Laboratory (NPOL) and Naval Science and Technological Laboratory (NSTL) and productionised by BEL. Two production grade systems manufactured by BEL have been installed and trial evaluated on-board INS Gomati and INS Ganga. The Indian Navy has awarded BEL a contract for Maareech systems.

Prior to the induction of ATDS Maareech, the Indian Navy had imported the system for 12 platforms. But now with the indigenous development of this system, BEL has upgraded its existing facilities with capacity to manufacture and deliver 12 ATDS Maareech systems every year. This facility enables BEL to provide a reliable defence mechanism for Surface Ships of the Indian Navy against possible torpedo attacks.

The upgraded ATDS facilities include Test Bays for electronic cabinets, Expendable Decoy Manufacturing and Towed Array Integration & Testing facility (Ramp Structure, Oil Filling facility, Load Test facility and Neutral Buoyancy Tank facility). BEL has constructed a new building for ATDS manufacturing at a cost of around Rs.12 Crores. The indigenously developed Maareech System is a big step towards 'Atmanirbhar Bharat', as it saves the country around USD 4 Million in foreign exchange per system.

Keel Laid for the 3rd Stealth Grigate of Project 17A

Keel laid for the third ship (Yard- 12653) of the prestigious P17A class stealth frigates at Mazagon Dock Shipbuiders by Vice Admiral S R Sarma – COM & CWP&A of the Indian Navy and V L Kantha Rao Additional Secretary (Defence Production). The keel laying ceremony was conducted through an e-platform in the presence of Vice Admiral R B Pandit, Chief of Staff, HQWNC and Vice Admiral Narayan Prasad (IN Retd.) – CMD MDL.

Seven frigates under P17A series will be constructed of which four are being constructed in MDL and three in GRSE with MDL as the lead yard. The P17A class frigates are being built using indigenously developed steel and fitted with weapons and sensors along with Integrated Platform Management System. These ships are having stealth features.

Construction of P17A ships differ in the very concept of warship building by way of adoption of the modern technology 'Integrated Construction (IC)' where the blocks are pre-outfitted before joining to reduce the build period of warships. When commissioned the platforms will enhance the combat capability of the Indian Naval fleet.

The function was attended by Rear Admiral G K Harish, DGND, Commodore T V Thomas (IN Retd.), Director (CP&P), MDL, Rear Admiral A K Saxena (IN Retd.), Director (Shipbuilding), Commander Jasbir Singh (IN Retd.), Director (S&HE), MDL, Sanjeev Singhal, Director (Finance), MDL , Mahesh Chandra, CVO, MDL along with senior executives from MDL & Navy through an e-ceremony including the Warship Overseeing Team.

Raytheon and Rafael Team for Iron Dome Weapon Production Facility in U.S.

Raytheon Missiles & Defense, a Raytheon Technologies business, and Rafael Advanced Defense Systems Ltd., an Israeli-based defense technology company, have signed a joint venture to establish an Iron Dome™ Weapon System production facility in the United States. The new partnership, called Raytheon RAFAEL Area Protection Systems, anticipates finalizing a site location before the end of the year.

"This will be the first Iron Dome all-up-round facility outside Israel, and it will help the U.S. Department of Defense and allies across the globe obtain the system for defense of their service members and critical infrastructure," said Sam Deneke, vice president of Land Warfare & Air Defense business execution, Raytheon Missiles & Defense Systems'.

The new facility will produce both the Iron Dome Weapon System, which consists of the Tamir interceptor and launcher, and the SkyHunter® missile, a U.S. derivative of Tamir. Both Tamir and SkyHunter intercept incoming cruise missiles, unmanned aerial systems and short-range targets such as rockets, artillery, mortars and other aerial threats.

"We are excited about this new stage in our partnership with Raytheon and proud of our U.S. production," said Brig. Gen. (res.) Pini Yungman, executive vice president for Air and Missile Defense of Rafael Advanced Defense Systems. "We have long partnered on U.S. production of Iron Dome and are pleased to increase manufacturing and bring SkyHunter to the U.S."

Raytheon Missiles & Defense and Rafael have teamed for over a decade on Iron Dome, the world's most-used system with more than 2,500 operational intercepts and a success rate exceeding 90 percent.

Laser Guided ATGM successfully test-fired

Laser Guided Anti Tank Guided Missile (ATGM) was successfully test fired from MBT Arjun Tank at KK Ranges, Armoured Corps Centre and School (ACC&S) Ahmednagar. In these tests, the ATGM successfully defeated a target located at 3 km. Laser guided ATGMs lock and track the targets with the help of laser designation to ensure precision hit accuracy.

The missile employs a tandem HEAT warhead to defeat Explosive Reactive Armour (ERA) protected armoured vehicles. It has been developed with multiple platform launch capability and is currently undergoing technical evaluation trials from gun of MBT Arjun.

Armament Research & Development Establishment (ARDE) Pune in association with High Energy Materials Research Laboratory (HEMRL) Pune, and Instruments Research & Development Establishment (IRDE) Dehradun have developed the missile.

Defence Minister Rajnath Singh congratulated DRDO for the successfully test firing of the Laser Guided Anti Tank Guided Missile from MBT Arjun at KK Ranges.

Secretary DDR&D & Chairman DRDO congratulated DRDO personnel and industry on the successful test firing.

Defence Minister Inaugurates BEML's Industrial Design Centre

BEML's Industrial Design Centre (IDC), located at its Bangalore Complex was inaugurated by Defence Minister Rajnath Singh.

The inauguration was done virtually in the presence of Minister of State for Defence Shripad Naik, Secretary Defence Dr. Ajay Kumar, Secretary Defence (Production) Rajkumar.

Inaugurating the Centre, Rajnath Singh said, "We are celebrating the 'Atmanirbhar' week to focus on modernisation of defence infrastructure, creation of new manufacturing capability and investments in the sector. BEML's Industrial Design Centre will propel innovative thinking for the future in this regard."

The Design centre will focus at implementing Industrial Design & Human Factors in all BEML Products as a part of developmental strategies for setting the global benchmarking of Industrial Design and Ergonomics. It will be integrated with R&D and manufacturing and will be a hub for exchange of creative ideas and concepts and will provide the 'Design-edge' for better Market & User acceptance.

The Designers, qualified from leading national level Institutes such as NID and IIT, at IDC have carried out a global benchmarking study by means of various research. These will mainly focus on enhancing the look and feel of BEML Products, Operators' ease of work and comfort as per global standards. It will harness the latest technologies like AI and Gesture Recognition and engineering resources for self-reliance, while being sensitive towards 'Eco', 'Green' & 'Sustainability'.

The manufacturing implementations of these strategies will be made possible with the in-house capabilities available with BEML, as well as through the company's network of MSMEs.

Dr. D. K.Hota, CMD, BEML said, "BEML is a highly diversified company and we have invested in developing in-house capabilities of Industrial Design & Human Factors, Engineering & IPs. This will address the 'design' facet of products - presently dependent on foreign facilities and move us towards self-reliant on product design in pursuit of 'AtmaNirbhar Bharat'."

GRSE delivered FPV "ICGS Kanaklata Barua" to Indian Coast Guard

"ICGS Kanaklata Barua", the vessel built by GRSE in the series of five Fast Patrol Vessels for the Indian Coast was o Coast Guard taking the record delivery count of the organization to 105 warships.

The Fast Patrol Vessel (FPV), ICGS Kanaklata Barua was commissioned at GRSE FOJ Unit through video conferencing mode by Jiwesh Nandan, Additional Secretary, MoD. Rear Admiral VK Saxena, IN(Retd), Chairman & Managing Director, GRSE, Cmde. Sanjeev Nayyar, IN (Retd), Director (Shipbuilding), Cmde. P R Hari, IN (Retd), Director (Personnel), R.K Dash, Director (Finance) and other senior officials of GRSE and Indian Coast Guard attended the ceremony.

The FPVs are medium-range surface vessels with a length of 50 m, a width of 7.5 m and displacement of around 308 T and are proficient at operating in the maritime zones of India. These powerful, fuel-efficient platforms are designed to perform multipurpose operations like patrolling, anti-smuggling, anti-poaching, and rescue operations. The vessels are designed for a maximum speed of 34 knots with an endurance of more than 1,500 nautical miles. It is equipped with 03 main engines of MTU make and built up at GRSE with advanced control systems, 'Water Jet' units and an 'Integrated Bridge System' integrating all communication and navigation systems. The ship is also fitted with 40/60 gun as the main armament and will also have improved habitability features with fully air-conditioned modular accommodation for 35 personnel. The entire design of these FPVs has been developed In-House by GRSE as per requirements specified by the Indian Coast Guard.

Over the years, GRSE has established capabilities for In-House Design and Shipbuilding and has made significant contributions to the Indigenous Warship construction program in India. The Design R&D Unit of GRSE has been recognized for its competence by Dept. of Scientific & Industrial Research (DSIR), Ministry of Science & Technology, and Govt. of India.

Celebrating the "Atmanirbhar Bharat Abhiyaan", a State-of-the-Art Modern Hull Block Complex and Indigenous Underwater CNC Plasma Cutting Facility was virtually inaugurated by Hon'ble Raksha Mantri Shri. Rajnath Singh at the Rajabagan Dockyard Unit of GRSE, to augment the existing infrastructure at the Main Unit of the Shipyard.

GRSE enjoys a deep pool of revenue-generating projects with its order book position of Rs. 26,544 crore as on 31 Mar 2020.

GRSE strategies revolve around shifting to smart manufacturing (Industry 4.0), with marked innovations in automation, robotics and the industrial internet of things. Introducing Artificial Intelligence, Machine Learning, Interoperability and secured connectivity enabling real time monitoring, control and optimization of processes, resources and systems shall enable workload consolidation across Design, Production & Supply Chain Management, significantly in the future.

GRSE continues to strive towards Atmanirbharta or self-sufficiency in all its future projects, focused on its core verticals of Shipbuilding, Engineering and Engine Production.

Technion and IAI Co-Develop New Satellite Technology for Search, Rescue, and Signal Detection Missions

The collaboration yielded an innovative electronic receiver and satellite computer for the ADELIS-SAMSON Project;

Three nano-satellites are to perform autonomous formation flight

A close technological and research collaboration between the Technion - Israel Institute of Technology and Israel Aerospace Industries (IAI) has yielded an advanced electronic receiver that constitutes a unique development in the nano-satellite category. The collaboration was part of Technion's " ADELIS-SAMSON" project, in which three nano-satellites will be launched into space in December. The three satellites, which will fly in an autonomous formation without human intervention, are tasked with receiving signals from Earth and detecting their precise location for search and rescue, remote sensing, and environmental monitoring missions. The software and algorithms that control the flight were developed at Technion's Distributed Space Systems Lab in the Asher Space Research Institute.

The electronic receiver, developed and built especially for the " ADELIS-SAMSON" project by ELTA Systems, an IAI division and subsidiary, picks-up, identifies, and records signals from Earth. It comprises an information processing system that calculates the location of the transmission. The miniature system was developed particularly for nano-satellites in order to extend the scope of the missions they can perform. The system integrates with the three mission computers developed by IAI's MABAT Division.

The " ADELIS-SAMSON" project is headed by Professor Pini Gurfil, head of the Asher Space Research Institute and a faculty member in Technion Faculty of Aerospace Engineering and with the support of the ADELIS Foundation and the Israel Space Agency in the Ministry of Science and Technology

"We worked closely with IAI engineers on this development for more than five years," said Prof. Gurfil. "The project showcases the benefits of academy-industry collaboration, which yielded an outstanding result in the form of an innovative space-borne system. We thank IAI engineers for their professionalism and commitment. The system we co-developed places ADELIS-SAMSON at the forefront of nano-satellite technology."

IAI CEO, Nimrod Sheffer, said, "The new development will help promote a new space research area. Collaboration with the Technion and other academic institutions is invaluable to us, as it promotes academic research and our future technological ventures. The receiver developed for this project offers a new way for space geo-location of ground electromagnetic signals. It is based on IAI's extensive engineering know-how and experience in satellites, electronic warfare, intelligence interpretation systems, and communication networks."

Asher Space Research Institute researchers who worked with IAI's engineers in the project included Avner Kaidar, Hovik Agalarian, Eviatar Edlerman, Dr. Alex Frid and Prof. Pini Gurfil.

The ADELIS-SAMSON project is supported by the ADELIS Foundation, the Goldstein Foundation, and Israel's Space Agency. Other parties involved in the project include Israel's Space Agency, RAFAEL, and IAI.

Rohde & Schwarz offers Portfolio for Precise AESA Testing

In order to reduce complexity, costs and efforts for TRM testing, Rohde & Schwarz concentrates on test and measurement solutions to maximize the performance of AESA designs with highest precision instruments and automation of complex test scenarios.

Modern active electronically scanned array (AESA) radars are a strong focal point of the global aerospace and defense industry. The performance of state-of-the-art AESA radar systems depends strongly on the performance of the individual transmit-receive-module (TRM) assembled in the antenna array. Rohde & Schwarz offers new test and measurement solutions for TRM performance validation, enabling the customer to maximize their radar system capabilities.

Typical TRM test cases can be covered with a single Rohde & Schwarz network analyzer as a turnkey solution, such as the R&S ZNA. If higher performance such as the pulsed noise figure is required, the R&S FSW signal and spectrum analyzer is added to the setup. When combined with the integrated calibration routine, this simplifies the setup, ensuring full accuracy and high repeatability. Users benefit from reduced test procedure complexity and a minimized cabling assembly.

The support of multiport calibration units enables the efficient calibration of devices under test (DUTs) with many ports. This combination of a simplified test setup with a high degree of automation ensures reliable and reproducible measurements by a scalable solution. It offers a variety of use cases, from manual testing of components to complete module characterization in development and to automated production testing.

As time is of the essence, Rohde & Schwarz has developed solutions which reduce the number of parallel running systems during production by their efficiency. The R&S TS6 TRM test library, together with the R&S TS6710 TRM radar test system, deliver the fastest possible speeds for TRM testing, in combination with a fast handover between measurement and device programming. A typical test time for a complete TRM characterization can be reduced from hours, required by the legacy TRM test systems, to only a few minutes.

The parameters of TRM designs are radar specific and are considered confidential. Each TRM must be controlled by a specific interface, protocol, and trigger for testing. The R&S TS6 TRM test library has an open software interface for TRM control, which makes it possible that the whole test configuration can be carried 1/2 out locally. This also allows faster on-site adaptations and optimizations. An efficient option is the R&S Compact TSVP test system versatile platform with flexible and fast control interfaces, plus digital and analog measurements. This configuration enables very short test times in setups, without any field-programmable gate array (FPGA) programming.

Saudi International Airshow welcomes Women in Aviation for the first time

Saudi International Airshow 2021, to be held February 16th to 18th in Riyadh, announced the inaugural participation of the Women in Aviation Middle East Chapter, a non-profit association dedicated to providing opportunities to women striving for careers in the aviation industry.

Launched in the UAE, this Chapter shines a light on female role models in the Middle East to demonstrate the many opportunities for women in the aviation sector. It is fueled by the possibilities of supporting current and future generations of women to achieve their goals and ambitions as they work side by side with men in the industry.

Saudi International Airshow forms part of the Vision 2030 program as the aviation sector continues to play an essential role in the diversification and expansion of the Saudi economy. Since the Kingdom of Saudi Arabia has also included women's rights in Vision 2030, exhibiting companies are supporting women and making more jobs available in aviation.

WAI-ME aims to bring together women working in all areas of aviation across the Middle East to inspire and encourage future generations of women to consider a fulfilling career in aviation, and is committed to ensuring its vision, mission and goals are comprehensively realized.

DRDO transfers AHSP of Pinaka Weapon System to DGQA

Authority Holding Sealed Particulars (AHSP) responsibility of Pinaka weapon system was handed over to DGQA by DRDO. AHSP transfer marks successful establishment of production of Pinaka rockets, Launchers, Battery Command Posts, Loader Cum Replenishment and Replenishment Vehicles as well as successful establishment of Quality Assurance processes. AHSP handing over took place at ARDE, Pune wherein the documentation required by various Production agencies, Quality Assurance agencies, Maintenance agencies and Users were formally handed over by ARDE, HEMRL and VRDE to CQA (A).

Pinaka is a free flight artillery rocket system having a range of 37.5 km. Pinaka rockets are launched from a multi barrel rocket launcher which has capability to launch salvo of 12 rockets in 44 seconds. The weapon system is designed and developed by Pune based DRDO lab, Armament Research & Development Establishment (ARDE) in association with HEMRL, VRDE and CAIR. Pinaka rockets and its ground systems are currently under bulk production at Ordnance Factories, BEML, BEL, Tata Power and L&T Defence.

Joining the event by video conferencing Dr G Satheesh Reddy, Secretary DD R&D and Chairman DRDO described the AHSP transfer as a landmark event in the development of Pinaka Rocket Systems and stated that the Pinaka Rocket Systems will go a long way in fulfilling the requirement of services.

Lt Gen Sanjay Chauhan, Director General of DGQA, CS Vishwakarma, Chairman OFB, Lt Gen K Ravi Prasad, VSM and Director General of Artillery, PK Mehta, Director General of Armament & Combat Engineering Cluster joined the event through video conferencing. Dr V Venkateswara Rao, Director ARDE, KPS Murthy, Director HEMRL, Shri Sangam Sinha, Director VRDE, AV Shinde, Officiating Controller CQA (A) and MGP Dhanraj, DDG, Officiating Controller CQA (ME) were present for the event at ARDE.

WFEL Receives MoD Armed Forces Covenant Silver Award

Military bridging supplier, WFEL, has been awarded the coveted Defence Employer Recognition Scheme (ERS) Silver Award, which acknowledges employers who have signed up to the Armed Forces Covenant and provided exceptional support to the armed forces community and defence by going above and beyond their Covenant pledges.

To achieve a Silver Award, employers need to have achieved the Bronze Award level and to have shown flexibility towards the annual training commitments and deployment of Reservists, whilst also supporting the employment of cadet force adult volunteers, service leavers, and military spouses and partners.

Ian Anderton, Managing Director of WFEL, said, "We are absolutely delighted to receive this Silver Award. Our decision to sign the Armed Forces Covenant was a visible and very real demonstration of our continuing commitment to supporting the Armed Forces.

"We recognise that employing military trained personnel is highly beneficial to our business and we value the skills and qualities that veterans, reservists or ex-military personnel bring to the company. We are committed to continuing to employ and support individuals with an Armed Forces background and are very proud to uphold our Armed Forces Covenant."

WFEL counts amongst its employees a number of Reservists and Veterans and supports activities on behalf of the armed forces community. WFEL signed up to the Armed Forces Covenant in late 2018, and subsequently received the Bronze Award in 2019.

WFEL's support of Reservists - by offering the flexibility needed to plan and fulfil their annual training and mobilisation commitments - came to the fore recently during the COVID-19 crisis when a number of North West Reservists were on standby for deployment to provide support to the NHS.

The Employer Recognition Award scheme recognises the different levels of commitment provided by employers and allows the Ministry of Defence to publicly thank and honour those organisations for their support. Launched in 2014 by the Prime Minister, the prestigious initiative was created to recognise and reward UK employers for their support and commitment to Defence.

Johnny Mercer, Minister for Defence People and Veterans, said, "I am grateful for the positive attitude and flexible policies organisations have adopted towards the defence community, which is testament to the fantastic contribution our serving personnel, veterans and their families can make to any organisation."

With over a century of engineering expertise and innovation - and already renowned as an established world leader in rapidly deployable military bridging, having supplied over 600 bridging systems to 43 armed forces worldwide for over four decades - WFEL offers concept design, prototype manufacture and full-scale production of a range of military-grade engineering solutions across the complete spectrum of the defence sector, including vehicle integration and aviation products.

WFEL's range of mobile bridging systems - including the well-known Medium Girder Bridge and the Dry Support Bridge - provide unrestricted manoeuvre capability and interoperability, can be deployed in minutes and have been used by coalition forces on operations worldwide and in civilian aid operations in disaster zones around the world, being in service with the British Army, U.S. Army and many other NATO forces.

WFEL recently announced it will have significant involvement in the production of the Boxer Mechanised Infantry Vehicle for the British Army's £2.3bn contract.

Collins Aerospace to Deliver Higher Resolution, Longer-Range Capabilities on U.S. Navy Maritime Experimental Flights With Ms-177A ISR Sensor

- *Sensor to be installed onboard flight test P-3C Orion aircraft under ONR contract*
- *Experiment will mark the first time Collins Aerospace's MS-177A has been flown by the Navy*
- *Sensor provides better spectral and spatial image resolution at longer ranges and greater coverage area per hour than other airborne ISR sensors in the U.S. Navy inventory, expanding ASW, ASuW and MIW mission capabilities.*

Collins Aerospace Systems, a unit of Raytheon Technologies Corporation has been awarded a $19.9 million contract by the U.S. Navy's Office of Naval Research (ONR) to conduct a maritime experiment of the company's MS-177A long-range multi-spectral imaging sensor on a Navy flight test P-3C Orion aircraft. The experiment will mark the first time Collins Aerospace's MS-177A has been flown by the Navy. The previous version of the sensor, the MS-177, has completed flight testing on the U.S. Air Force (USAF) Global Hawk and will soon go operational.

Over the course of the 30-month contract period, Collins Aerospace will fabricate an MS-177A sensor and supporting flight test hardware from its existing USAF production line and install it on the P-3C aircraft. The follow-on phase will encompass experimental flights in a maritime threat environment. Results of the experiment will demonstrate the MS-177A's ability to expand the Navy's maritime ISR capabilities in the Anti-Submarine Warfare (ASW), Anti-Surface Warfare (ASuW) and Mine Warfare (MIW) mission domains using a mature USAF sensor system.

"When used in conjunction with other spectrum sensors, our proven MS-177 family of systems can greatly increase the probability of detection for threats, while operating in both permissive and contested environments," said Kevin Raftery, vice president and general manager, ISR and Space Solutions for Collins Aerospace.

The MS-177A system employs design elements of Collins Aerospace's fielded Senior Year Electro-optical Reconnaissance System (SYERS) sensor flown on the U-2 to deliver high geo-location accuracy, collecting imagery in the Visible, Near-IR, SWIR and MWIR spectral channels resulting in advanced terrestrial and maritime mission capabilities. The MS-177A sensor's Field of View (FoV) and spectral and spatial resolution offer unmatched high-resolution, multi-spectral, high coverage rate airborne intelligence, surveillance and reconnaissance (ISR) capability to the U.S. military. Its long-range performance allows the host platform to operate in contested as well as permissive environments on both land and sea, day or night.

DSEI 2021: UK MOD to focus on the Integrated Response to Future Threats

DSEI 2021 will put integration in the spotlight as the UK Ministry of Defence and the British Army, Royal Navy, Royal Air Force and UK Strategic Command work to develop and maintain organic integration at all levels and across all domains.

As British forces modernise to meet the demands of the information age, they do so with the understanding that success on the future battlefield requires integration across land, sea, air, cyber and space. Under the theme of 'Integrated Response to Future Threats' DSEI 2021 will be shaped to support this strategic shift with input from industry, academia, international partners and delegates.

With the newly formed Strategic Command leading ambitious plans to deliver a step-change in the way British commands interoperate, UK Defence is driving integration efforts to mesh the way individual armed services operate in the battlespace. Winning the fight no longer depends on success in the air, land or sea; it requires a force that is integrated by design and instinct, that uses defence resources efficiently across multiple domains at an optimum pace to stay ahead of threats and adversaries.

On the industry side, this will require an accelerated pace of change to deliver a competitive advantage. It will see increased demand for the disruptive application of technologies such as artificial intelligence and big data in the cyber domain, increased focus on defeating adversaries in the 'grey zone' through special operations, and support for improved decision making aided by data analytics and information technologies.

The focus on integration has been highlighted by the immense global impact of COVID-19 , and the enforced understanding that robust national resilience relies on more than fire power. With our adversaries increasingly posing non-military threats, greater instinctive integration is required at all levels of the defence community to ensure the UK remains ahead of the challenges that lie ahead.

DSEI 2021 will offer a forum for Defence UK to meet with its industry partners to strengthen relationships, share knowledge, and discuss the technological innovations that will support the British forces in these efforts as they look toward 2030 and beyond, powering progress and defining the future of defence.

Minister for Defence Procurement, Jeremy Quin MP, commented: "Once again, DSEI is showcasing the best of British defence technology and innovation on a world stage. Bringing together strategic partners, international governments and pioneering defence companies this show offers a unique opportunity to collaborate, partner and cooperate to further our collective global defence and security agenda."

"DSEI 2021 falls during a time of great change for the British forces as they implement their heightened integration doctrine, both internally and externally with the wider UK defence landscape," Grant Burgham, DSEI Event Director, Clarion Defence & Security, commented. "DSEI offers the single best opportunity to foster that integration between Defence UK and industry partners. Our exhibitors are keen to meet with all branches of the British Commands and show their capabilities in support of 'Integrated Response to Future Threats' at DSEI 2021."

DSEI connects governments, national armed forces, industry thought leaders and the entire defence & security supply chain on a global scale. With a range of valuable opportunities for networking, a platform for business, access to relevant content & live-action demonstrations, the DSEI community can strengthen relationships, share knowledge and engage in the latest capabilities across the exhibition's Aerospace, Land, Naval, Security & Joint Zones. DSEI is a biennial event held in London and will take place from 14-17 September 2021.

Government to Promote Domestic Defence Manufacturing with Major Initiatives

The defence ministry has taken the following policy initiatives under 'Make in India' to promote defence manufacturing in the country.

Ministry of Defence has prepared 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. It also offers a great opportunity to the Indian defence industry to rise to the occasion to manufacture the items in the negative list to meet the requirements of the Armed Forces in the coming years. This negative list comprises of not just simple parts but also 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.

A new category of capital procurement 'Buy {Indian-IDDM (Indigenously Designed, Developed and Manufactured)}' has been introduced in Defence Procurement Procedure (DPP)-2016 to promote indigenous design and development of defence equipment. It has been accorded topmost priority for procurement of capital equipment.

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 DPP 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, 49 projects relating to Army, Navy & Air Force, have been accorded 'Approval in Principle', valuing about Rs. 30,000 crores.

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. Under the iDEX scheme, a maximum of Rs 1.5 crore funding is available to a participant for development of a prototype. More than 700 start-ups participated in 18 problem statements pertaining to National Defence requirements, launched under 3 rounds of Defence India Start-up Challenges (DISC). 58 winners were announced after rigorous evaluation of applications by the High-Powered Selection Committees. Contracts have already been signed with several winners followed by release of first tranches and second tranche is also being released for some cases for prototype/ technology development.

In Feb 2018, 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 (UP). About Rs. 880 crores in UP Corridor and Rs. 800 crores in TN corridor have already been invested.

An indigenization portal namely SRIJAN DEFENCE has been launched on 14.08.2020

for DPSUs/OFB/Services with an industry interface to provide development support to MSMEs/Startups/Industry for import substitution

Defence EXIM portal has been created for enhancing ease of doing business and to streamline Export authorisation procedures.

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.

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 & 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 during the 20th India-Russia Bilateral Summit in Sep 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.

Department of Defence Production has notified 24 items under the latest Public Procurement Order 2017 notified by Department for Promotion of Industry and Internal Trade (DPIIT), for which there is local capacity and competition and procurement of these items shall be done from local suppliers only irrespective of the purchase value.

FDI Policy has been revised in the year 2016

US and Israel Flight Tested Arrow 2 Weapon System

United States and Israel have successfully completed a Flight Test of the Arrow 2 Weapon System. Israel Defense Minister Benny Gantz said, our 'elite technological unit' ensures that we will always be one step ahead of our enemies."

The Israel Missile Defense Organization (IMDO), of the Directorate of Defense Research and Development (DDR&D), in the Israel Ministry of Defense, together with the American Missile Defense Agency (MDA), and the Israeli Air Force (IAF), have completed a successful test of the Arrow-2 weapon system overnight (12.8), at 11:45 p.m. The test was led by Israel Aerospace Industries (IAI) and conducted at a site located in central Israel.

Throughout the test, the Arrow-2 system successfully engaged a Sparrow target missile, which simulates a long-range surface-to-surface missile. The campaign was conducted in accordance to the defense establishment's plans.

Defense Minister, "Israel must face challenges both near and far, and our 'elite technological unit' led by the DDR&D, IAI, and additional defense industries, ensures that we will always be one step ahead of our enemies, and that we will defend Israeli skies from any threat."

The joint Israeli - American test reflects the partnership and friendship between the two countries as well as the deep commitment of the United States to the safety of the citizens of Israel. We will continue to work together to strengthen the capabilities of the defense establishment in the air, land and sea, as well as in cyberspace.

During the test, the updated capabilities of the Arrow system to contend with current and future threats, were validated. The interception was conducted by IAF service members together with engineers from the institutions involved in the system's development. The various layers of Israel's air defense mechanism were employed in this test, in order to ensure their readiness and efficacy in operational scenarios.

and accordingly, FDI is allowed under automatic route upto 49% and beyond 49% through Government route wherever it is likely to result in access to modern technology or for other reasons to be recorded. So far, FDI inflows of over Rs 3450 crores have been reported in Defence and Aerospace sector.

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

Defence Products list requiring Industrial Licences has been rationalised and manufacture of most of parts or components does not require Industrial License.

The initial validity of the Industrial Licence granted under the IDR Act has been increased from 03 years to 15 years with a provision to further extend it by 03 years on a case-to-case basis. After opening up of the Defence Industry Sector for private Sector participation in 2001, government has issued 488 licenses till 10th Sept, 2020 for manufacture of a wide range of defence items – like EW Systems, Radars, Missiles, Body Armour, Small Arms and their ammunition, Naval Warships, UAVs, Artillery Guns, Armoured Vehicles, Helicopters, Aircrafts, etc. to Indian companies under Industries (Development & Regulation) Act, 1951 and Arms Act, 1959." These industries are spread across various parts of the country.

This information was given by Minister of State for Defence Shripad Naik in a written reply to Dr Vinay P Sahasrabuddhe in Rajya Sabha.

Indian Coast Guard for Securing Maritime Asset and life at Sea

Indian Coast Guard (ICG) created another maritime history by leading a major firefighting operation onboard Very Large Crude Carrier (VLCC) "MT New Diamond" wherein the entire highly inflammable cargo "Kuwait Export Crude" was protected despite raging fire and intermittent explosions.

ICG spearheaded a perilous firefighting operation over seven days, in dousing an intense fire onboard the 333 metre long Oil Tanker off Sri Lankan East Coast, carrying about Three lakh Metric Tons of crude oil {Cat 1 (inflammable liquid as per MSDS)}, thus averting a serious disaster in the region which otherwise would have threatened the bio diversified marine environment of Sri Lanka, Maldives and Southern India. Comparing with the recent oil-spill mishap of 1000 T Bunker Oil from MV Wakashio witnessed off Mauritius in Aug 2020 that led to declaration of "National Emergency" by the Island Nation, the quantum of crude in this incident was 270 times voluminous. It is left to imagination that how devastating an oil spill of this high magnitude would have been for the region.

EXPLOSION IN ENGINE ROOM OF MT NEW DIAMOND RESULTING IN FIRE - 03 SEP 20

MT New Diamond, a Panama flagged vessel with 23 crew, was on passage from Kuwait to India (Paradip Port), reported fire due to boiler explosion aboard on the morning 3rd September 2020 about 40 NM (approx. 70 km) of Tirrukkovil (Southeast Sri Lankan Coast). The distress message was picked-up by Maritime Rescue Coordination Centre (MRCC), Colombo as also by MRCC Mumbai. Sri Lankan Government, post assessing the situation, requested immediate support of India through HCI in Sri Lanka.

Indian Coast Guard is the authority for National Maritime Search & Rescue (NMSAR), National Coordinating authority for Oil Spill Response in Indian waters and Competent National Authority under the Regional South Asian Co-operative Environment Program (SACEP) for responding and coordinating Marine pollution response in South Asian Sea region. The SACEP Sri Lanka, sought assistance of ICG, as the

FIRST RESPONDER - ICGS SHAURYA ONSITE FIGHTING FIRE ON 03 SEP 20

threat of Oil Spill to the entire region was imminent to conduct Rescue and Fire Fighting Operation on the ill-fated Tanker, including Pollution Response operation, India being a signatory to the Regional association mechanism.

A multi-mission capable Offshore Patrol Vessel ICGS Shaurya, on Preventive Deployment off Tamil Nadu coast immediately diverted and was the first ship to arrive at the "Golden Hour" on scene to commence firefighting by afternoon on same day.

The night of 03 Sep witnessed one more blast onboard Motor Tanker and ICGS Shaurya continued her effort to keep the fire under control. Meanwhile, a joint effort by 3 MRCC of ICG and Sri Lanka Navy had ensured rescue of 22 of the 23 crew by alerting nearest ships in vicinity. The timely and daring firefighting efforts by ICGS Shaurya was the game changer and ensured that the fire remain contained within the bridge and accommodation area. If not, the fire would have spread to the cargo hold carrying huge volume of crude, resulting in explosions and consequent catastrophic environmental disaster.

By 4th september, six ICG ships, including specialist Pollution Response

SPECIALISED ICG VESSEL IN ACTION

EXPLOSION ONBOARD MT NEW DIAMOND AT NIGHT OF 03 SEP 20 - ICGS SHAURYA CONTINUES FIREFIGHTING

Vessel, augmented initial response and two Dornier aircraft were pressed in action to operate from Sri Lankan soils for Logistics & Pollution response. ICG Ships utilised sophisticated special-fit External Fire Fighting (EFF) system to spray foam compound for smothering the oil fire. In addition to ICG ships, Sri Lankan tugs Ravana, Vishaba and ALP Winger, also joined on that day and commenced firefighting.

While the collective firefighting was underway, the adrift distressed vessel was moving towards Sri Lanka coast due to the prevailing seasonal currents in area, posing an immediate threat of grounding and resultant oil spill once near depths of 20 metres. Indian Coast Guard boarding team, in a high risk operation braving the rough seas and adverse conditions, embarked the under fire unmanned tanker and successfully connected the tow to Sri Lankan Tug TTT-1 to pull it away from land and position favourably into the wind to prevent spread of fire to the forward section of the ship. This move was crucial in the operation that ensured saving cargo of the oil tanker and averting major oil spill in the region.

With intense and persistent firefighting attack for three days by ICG Ships along with Sri Lankan ships and tugs, coming within 50 metres of a potentially huge explosive seat, the fire got doused by 6th morning. ICG ships however continued to monitor the situation, in case of re-eruption due to prevalent temperature and undertook surface-boundary cooling to reduce it around the cargo holds.

As estimation of a likelihood of reoccurrence, a huge explosion again occurred on the starboard diesel oil tank on 6th afternoon and by midnight, huge flames reaching up to 60 metres height from the deck were seen at the rear part of the ship. All units scaled up from boundary cooling to firefighting and because of yet again sustained and close quarter efforts by four ICG Ships and two Sri Lankan and salvour tugs, the fire was completely doused again by 8th afternoon.

Notwithstanding, continuous boundary cooling with sea water was maintained to reduce temperature of the ship's structure. As a result of two

AUGMENTED & COORDINATED EFFORTS OF ICG ASSETS TO DOUSE FIRE

ANOTHER EXPLOSION REIGNITED FIRE – PM 06 SEP 20

FIRE BEING BROUGHT UNDER CONTROL - PM 08 SEP 20

major explosions of fuel oil tanks, the deck and hull on port and starboard side got ruptured. This led to escape of oil water emulsion from engine room to sea and formation of minor oil sheen. On 9th , ICG Dornier aircraft which was pre-emptively positioned at Sri Lankan air base (Mattala) was launched in Pollution Response configuration for spray of Oil Spill Dispersant (OSD) to neutralise the sheen. Simultaneously, ICG ships in area also sprayed OSD and churned the waters for kinetic action and to accelerate the disintegration of the oil sheen. Under no circumstances, the major cargo tanks were breached, nor the Kuwait export crude escaped to sea.

A major milestone was achieved by preventing the oil spill during the entire operation. Had there been an oil spill of such magnitude, the fisheries and livelihood of fishermen of the entire Region would have been severely impacted. The collective surface firefighting efforts was supplemented by aerial dropping of Dry Chemical Powder (DCP), a fire-fighting substance, by Sri Lankan Airforce. Further, Sri Lankan Naval authorities sought ICG support for Five Tons DCP for firefighting which was sourced from M/s IOC, Chennai and airlifted to Trincomalee. The salvage team hired by the owner which arrived on 6th September aligned with ICG plan and approach for the firefighting operation. The salvage team boarded the vessel on 9th and assessed no hotspots, flames/smoke with no breach of cargo tanks. Naval Architect in salvage team confirmed that the ship's stability remained within the safe zone. Indian Coast Guard continued to closely monitor the situation even after the salvage team took over control of the ship.

Post declaration by the salvour that the casualty vessel is safe as also upon receipt of information from the Sri Lankan authorities through HCI in Sri Lanka, the ICG units were withdrawn from the scene on 10th .The large scale, professional and proactive efforts of ICG have been appreciated at International level by the Government and Armed Forces of Sri Lanka as also by former President of Maldives.

A major ecological disaster was averted in India's backyard by joint efforts of Indian Coast Guard, Sri Lankan Armed Forces and tugs deployed by Sri Lankan Naval authorities and DG (Shipping). The incident response also highlighted close co-operation and inter-operability with forces of our immediate neighbours in all together a new dimension, invoking the established MoU between the two Nations. This operation has brought to fore the lead role played by India and the capability of ICG to respond to an emerging situation to protect the maritime environment in living up to its motto of "Vayam Rakshamah" – "We Protect".

Czech Republic Chooses Rafael's SPYDER Air Defense System

The Czech Ministry of Defense has Informed the Israel Ministry of Defense of its Decision to Equip its Military with an Israeli Air Defense System Produced by Rafael Advanced Defense Systems.

Defense Minister, Benny Gantz said that: "We thank the Czech government for their partnership and for the decision to equip their military with Israeli air defense systems. This is another significant step in strengthening security relations between our two countries, and it is also great news for Israeli defense industries during such a complex period."

Following an international tender process, which lasted several years, the Czech Ministry of Defense informed the Directorate of International Defense Cooperation (SIBAT) in the Israel Ministry of Defense, of its decision to equip its military with Israeli air defense systems.

The Czech government approved the launch of procurement negotiations for four Israeli "SPYDER" batteries, within the framework of a GTG agreement between the two countries. Israel was selected as the sole supplier for the project and the expected agreement between the countries' defense ministries is estimated at hundreds of millions of dollars.

SPYDER (Surface-to-Air Python & Derby), is a quick reaction, low- to-high surface-to-air missile system designed to counter attacks by a variety of aerial threats including aircraft, helicopters and UAVs. The system provides effective protection of valuable assets, as well as first-class defense for maneuvering forces located in combat areas. The SPYDER system includes a radar system produced by Elta, a subsidiary of Israel Aerospace Industries (IAI).

Ariel Karo, EVP marketing and business development at Rafael: "We are very proud to have been selected to provide SPYDER systems to the Czech Republic through a GTG process. The decision to select SPYDER, developed and produced by Rafael, is a significant vote of confidence in our proven air defense capabilities demonstrated over the years through a variety of solutions that span from Iron Dome, David's Sling, and the SPYDER air defense system, in service and combat-proven in different countries around the world."

Rafael designs, develops, manufactures and supplies a wide range of high-tech defense systems for air, land, sea and space applications. Rafael's systems are based on vast expertise, technological know-how, and a thorough understanding of the specific operational requirements of its customers. The company's diversified array of innovative solutions at the leading edge of global technology include Land, Air Superiority, Naval and Underwater, Space and Cyber solutions.

No plan for new Ordnance Manufacturing Industries & Laboratories

Defence ministry has announced that there are no plans for establishing new ordnance industries and laboratories in the government sector.

Defence Public Sector Undertakings, Ordnance Factory Board and the private industries have supplied various Defence Equipment such as missiles, torpedoes, Offshore Patrol Vessels, radars, electronic warfare systems, avionics, sonar, fire control systems, survey vessels, assault bridges, armoured recovery and repair vehicle, high mobility vehicle, submarines, 155mmx45 Artillery Gun Systems, Commander's Thermal Imaging Sights for battle tanks, Bridge Laying Tank, Upgraded Anti-Aircraft Gun L-70, 40mm Under Barrel Grenade Launcher, Armoured NBC Reccee Vehicle etc to the armed forces to strengthen them.

The Government has taken the following policy initiatives to promote 'Make in India' in defence sector: -

Separate procedure for 'Make-II' category (Industry funded) has been notified 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.

Under 'Atmanirbhar Bharat' campaign of Govt of India, Ministry of Defence (MoD) has prepared a list of 101 items for which there would be an embargo on the import beyond the timeline indicated against them. 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.

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.

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 & special materials) and sub-assemblies for defence equipment and platform manufactured in India.

In February, 2018, 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 (UP).

In order to bring more transparency and efficiency into the Offset discharge process, "Offset portal" has been created in May, 2019.

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

Under the Public Procurement Order 2017, Department of Defence Production has notified list of 24 items for which there is local capacity & competition and procurement of these items shall be done from local suppliers only irrespective of the purchase value.

DRDO has established Technology Development Fund (TDF) Scheme under "Make in India" initiative to promote Self Reliance in Defence Technology and to create an eco-system for enhancing cutting edge technology capabilities by inculcating R&D culture in Industry.

The Government has revised the extant FDI Policy in defence sector and enhanced FDI in defence industry from 49% to 74% under automatic route for companies seeking new industrial licenses.

This information was given by Minister of State for Defence Shripad Naik in a written reply to Uday Pratap Singh in Lok Sabha.

Kongsberg to supply four HUGIN AUV survey systems to GRSE, India

Kongsberg Maritime's HUGIN AUV is a Powerful tool for deep-water hydrographic surveys

Kongsberg Maritime will supply four HUGIN AUV systems to the Indian Defence Public Sector shipyard Garden Reach Shipbuilders & Engineers Limited (GRSE), Kolkata. This sale has been conducted in collaboration with Kongsberg Maritime India, a subsidiary of Kongsberg Maritime.

The purchase, which also includes HiPAP 502 high-accuracy acoustic positioning and communication systems to support AUV operations, will be installed on the four Large Survey vessels currently in build for the Indian Navy. GRSE Chairman and Managing Director Rear Admiral (Ret'd) Vipin Saxena said: "We are pleased and look forward to making use of the HUGIN AUVs from KONGSBERG, which will augment the Indian Navy's capabilities for coastal and deep-water hydrographic surveys to aid maritime operations, and will act as a force multiplier."

The AUVs will be supplied with containers and launch and recovery systems, plus training and support.

Kongsberg Maritime is the world leader in deep water AUV systems. Since the first dive in 1993, HUGIN has become the most successful AUV in the deep-water realm, with more kilometres surveyed than any other untethered underwater vehicle. Developed in partnership with FFI – the Norwegian Defence Research Establishment – HUGIN continues to improve with new capabilities, sensors and behaviours being added each year.

"We are honoured to have successfully demonstrated the capability of the system to the Indian Navy and to have them as a returning customer for the HUGIN AUV system," said Stene Førsund, SVP Sensor and Robotics Sales, Kongsberg Maritime. "Their new HUGIN AUV systems are configured for their needs today and tomorrow with a multi-role capability. We are looking forward to working with GRSE."

Webinar held with Israel on Defence Industry Partnership

A webinar between India and Israel was held on "Indian Defence Industry Global Outreach for Collaborative Partnership: Webinar and Expo". It was organized under the aegis of Department of Defence Production, Ministry of Defence through SIDM.

This webinar is the first in the series of webinars which will be organized with friendly foreign countries to boost defence exports and achieve defence export target of $5 billion in the next five years.

Defence Secretaries and other senior MoD officials from both the countries participated in the webinar and spoke about enhancing the defence cooperation between both the nations.

Creation of Sub Working Group (SWG) on Defence Industrial Cooperation between India and Israel was announced in the webinar. The main objective of the SWG will be Transfer of Technology, Co-development & Co-production, Artificial Intelligence, Innovation and Joint Export to friendly foreign countries.

A MoU was also signed between Kalyani Group and Rafael Advanced Defence Systems during the webinar.

A Knowledge paper by SIDM-KPMG was released by Dr Ajay Kumar, Defence Secretary on the occasion.The webinar was attended by more than 300 delegates and 90 virtual exhibition stalls have been set up for the Expo.

Ultra Receives Order for ORION Tactical Communications Systems from the U.S. Marine Corps

- Order is for ORION X500 tactical radio systems
- The ORION will replace legacy AN/MRC-142 and WPPL radio platforms for the Marine Corps
- Several major branches of the U.S. DoD will now be direct users of the ORION

Ultra announced that the U.S. Marine Corps Systems Command branch has placed a US $31M order for Ultra ORION X500 radio systems for the Line of Sight Radio System (LRS) Project supported by the Terrestrial High Capacity Communications Program Office. The order will be placed under the $497M indefinite award/indefinite quantity (IDIQ) contract awarded to Ultra TCS earlier in 2019 in support of the U.S. Army's TRILOS Radio Program of Record.

The U.S. Marine Corps, a longtime customer of Ultra TCS, will be a new primary user of the ORION X500 radio system. Ultra TCS recently signed a separate contract with the U.S. Navy with the announcement of the ATCS contract in August of 2020. The U.S. Army has purchased several generations of the company's tactical communications systems over the years, including the ORION. With the latest addition of the Marine Corps, several major branches of the U.S. DoD will be direct users of the ORION radio system.

Marine Corps Systems Command serves as the Department of the Navy's systems command for Marine Corps ground weapon and information technology system programs in order to equip and sustain Marine forces with full-spectrum, current and future expeditionary and crisis-response capabilities.

The Marine Corps chose the ORION for its small size, power and weight, its high-bandwidth capacity and long-range line-of-sight communications capabilities as well as its ability to be rapidly deployed. The LRS project aims to replace the legacy AN/MRC-142 and WPPL radio platforms, and the ORION was selected because it satisfies all Marine Corps requirements in a single platform. Adoption of the ORION by the Marine Corps will ensure interoperability with other deployed communications assets already in use across the Department of Defense, including the U.S. Army, U.S. Navy and U.S. Special Forces.

The ORION radio system is a software-defined, multi-channel, multi-band, MIMO radio platform that enables a Unified Heterogeneous Wireless Network (HETNET) capable of supporting a diversity of user requirements and resilient network operations in contested and congested environments.

Performance Security Waived off by DRDO

To support the defence manufacturing industry, DRDO and ATVP has waived off the requirement of "Performance Security" for the "Development Contracts" as per the approval of Defence Minister Rajnath Singh. This will apply to development contracts only, as defined in para 12.5 of the DRDO Procurement Manual, PM 2016, as amended. However, Warranty Bond would continue to be obtained from successful development partner to cover the DRDO/ ATVP interest during the warranty period.

This provision will be applicable for all RFPs issued in respect of development contracts after the date of issue of this amendment that is 23 September 2020. All ongoing cases of development contracts in which Request for proposal (RFP)/ contract has already been issued may continue to be regulated as per the provisions contained in the issued RFP/ contract.

Secretary DD R&D and Chairman DRDO Dr G Satheesh Reddy stated that it is another important milestone to support Industry.

EPI Expands Facility to Manufacture Boeing Dreamliner Metallic Parts in UAE

EPI manufacturing capabilities to include serial assembly lines, establishing it as a regional leader in aircraft component production

EPI, the precision engineering backbone of the UAE's aerospace and defence industry, has decided to expand its manufacturing capabilities to support the Boeing 787 Dreamliner.

The announcement was made on the side-lines of the Global Aerospace Summit, which takes place, virtually from Abu Dhabi.

EPI will machine aluminium trailing edge ribs for use in the 787-commercial aircraft. The serial assembly lines will be an extension to the Abu Dhabi facility, with the processed parts additionally going through EPI's surface treatment plant launched last year.

Established in April 2019, the plant is part of an industrial collaboration agreement between Tawazun Economic Council (Tawazun), Boeing Defense, Space & Security (Boeing) and EPI, to build a chemical processing plant that would ramp up its existing production capabilities, and move beyond machining and into aircraft assembly for aerospace Original Equipment Manufacturers (OEMs).

Speaking on the occasion, Khalid Al Breiki, President – Mission Support, EDGE, said: "In recent years, the UAE has significantly amplified its domestic manufacturing capabilities and the opportunities facilitated by Tawazun - between Boeing and EPI - contributes to this rapidly growing infrastructure. Backed by our industry-leading expertise in specialised equipment and engagements with other leading OEMs, we are proud to expand our support for the 787 programme and are focused on delivering high-quality components for Boeing and its customers."

He added: "Our continued relationship with Boeing is symbolic of the partnerships we build and value. Today's announcement expanding EPI's manufacturing capabilities is an encouraging indicator for the region's aerospace and defence industries and we look forward to exploring similar opportunities in the coming years."

"This contract with EPI will expand the capability and capacity of Boeing's global supply chain while supporting further development of the UAE's aerospace industry," said Bernard Dunn, president of Boeing Middle East, North Africa and Turkey. "Adding EPI as a new supplier for the 787 Dreamliner, is a prime example of our mutually beneficial approach to engagement in the UAE."

The Boeing 787 Dreamliner is an all-new, super-efficient family of commercial airplanes that brings big-jet ranges and speed to the middle of the market. Boeing designed the 787 family with superior efficiency, allowing airlines to profitably open new routes and fly people directly to where they would like to go in exceptional comfort. Since entering service in 2011, the 787 family is flying more than 1,900 routes and has made possible 300+ new nonstop routes around the world.

The move consolidates EPI's status as a leader in commercial aircraft production. Earlier this year, the company became a key regional manufacturer of Airbus aircraft parts. EPI manufactures high-quality complex engineering components for the defence, aerospace, and oil and gas sectors at its advanced facilities in Abu Dhabi. The company's capabilities span engineering, production, surface and heat treatment, machining, coating, repairing and tooling.

EPI is part of the Mission Support Cluster within EDGE, an advanced technology group for defence and beyond. EDGE was inaugurated in November 2019.

CARACAL International Refocuses Commitment in line with 'Make in India' Initiative

2018 winner of Indian Government tender to supply Army with 93,895 CAR 816 assault rifles, moves commitment to fully manufacture in India from start of contract, as opposed to the initial phased approach.

CARACAL, the world-renowned and UAE-based small arms manufacturer, announced "its commitment to the 'Make in India' initiative", after having previously been selected by the Indian Ministry of Defence in 2018 to fast-track the supply of 93,895 CAR 816 assault rifles to the Indian Army.

CARACAL has already identified the required land, facility and local partners to be able to commence production immediately. Over 20% of the components fitted on the CAR 816 are already made in India, with CARACAL now making commitment to fully manufacture the rifles in-country, in alignment with the 'Make in India' initiative. The initiative will also see CARACAL oversee technology transfer.

The company already surpassed global competitors in terms of performance and technicalities to win the bid two years ago, and now confirms its readiness to service the fast track order from India within 12 months.

Hamad Al Ameri, Chief Executive Officer, CARACAL, said: "CARACAL was awarded the Close-Quarter Carbine contract in 2018 to supply the Indian Army with the CAR 816, after having undergone a rigorous selection process. Having agreed to fast track the supply, and with the formalities still under discussion, we would like to reiterate our commitment to our bid and to the 'Make in India' initiative. With strong bilateral ties between our two nations, and with India being a key market for CARACAL, we remain on standby to supply the product to the customer upon instruction."

The CAR 816 carbines are intended to replace the Indian Army's current 9mm Sterling carbines, with the CAR 816 boasting higher bullet velocity and reduced weight compared to the Sterling carbines. The assault rifle has secured a number of contracts from customers across the Middle East, Europe, and Asia, and has been adapted to suit the Indian Army's needs, incorporating the latest technological advances.

CARACAL is part of the Missiles & Weapons cluster within EDGE, an advanced technology group for defence and beyond, and has wholly owned subsidiaries in Germany and the USA.

Webinar with Cambodia on Defence Industry Collabration

A webinar between India and Cambodia was held on Indian Defence Industry Global Outreach for Collaborative Partnership. It was organized under the aegis of Department of Defence Production, Ministry of Defence through SIDM.

This webinar is the part of the series of webinars which are being organized with friendly foreign countries to boost defence exports and achieve defence export target of $5 billion in the next five years.

Senior MoD officials from Indian side and senior army officials from Cambodian side participated in the webinar and spoke about enhancing the defence cooperation between both the nations.

Various Indian companies such as Alpha Design Technologies Pvt Ltd, L&T, TATA Advanced Systems Pvt Ltd, BEL, Bharat Forge Ltd, Ashok Leyland Ltd. and Mahindra Defence Systems Pvt Ltd. made company and product presentations on major platforms / equipment like Artillery Systems, Mine Protected Vehicles, Electronic and telecommunication systems, Demining equipment etc. were shown in the webinar. The webinar was attended by more than 200 delegates and 100 virtual exhibition stalls have been set up in the Expo.

Netherlands and Estonia to Acquire seven Milrem Robotics' THeMIS UGVs

The Estonian Centre for Defence Investment (ECDI) signed a Joint Procurement Agreement with the Dutch authorities to procure a total of seven THeMIS unmanned ground vehicles (UGVs) from Milrem Robotics, the leading developer of robotics and autonomous systems in Europe.

Milrem Robotics will deliver four THeMIS vehicles acquired by the Royal Netherlands Army in the coming months. The Estonian Defence Forces (EDF) will receive their three vehicles this month.

According to the contract, Milrem Robotics is the system integrator who, in addition to the supplying the vehicles, also performs all the integration of third-party technologies, including weapons systems, onto the delivered UGVs. Notably these unmanned weapons systems will remain under human control.

"We are pleased that the unmanned ground vehicles developed by an Estonian company in the course of a defence research and development project supported by the Estonian Ministry of Defence can now be used by our armed forces," said Ivar Janson, Strategic Category Manager for Armoured Vehicles at the ECDI. "We are especially pleased, that we found a common ground with our Dutch partners to conduct the Joint R&D project and procurement," he added.

"We are delighted to enhance our cooperation with Milrem Robotics by increasing our fleet to six THeMIS vehicles in joint efforts with the Estonian Ministry of Defence. So far, the THeMIS has successfully been used for research and experiments by operational units of the 13 Light Brigade in Scotland, Germany, The Netherlands and during a live fire exercise in Austria. The addition of four extra THeMIS vehicles with a Remote Controlled Weapon System that is operated by a soldier provides us the opportunity to continue to develop concepts to enhance the combat power and decrease the risk for our soldiers," said LtCol Martijn Hadicke, Commander of the Robot and Autonomous Systems (RAS) unit.

Milrem Robotics has already delivered two THeMIS UGVs to the RAS Unit of the 13th Light Brigade of the Royal Netherlands in 2019.

The Estonian Defence Forces used the THeMIS for 12 months in Mali during Operation Barkhane. Various EDF units have first-hand experience with the UGV from several military exercises.

Milrem Robotics' first product, the THeMIS UGV has been delivered to nine countries of which seven are NATO members. The company's other products are the Type-X Robotic Combat Vehicle, intended to support mechanized units, and the Intelligent Functions Integration Kit, which enables the THeMIS but also other unmanned ground vehicles autonomous functionalities like waypoint navigation and follow-me. Milrem Robotics also performs system integration of capabilities such as sensors, software and sensor based intelligent functions, and weapon systems.

The company also leads iMUGS, an EDIDP funded project. This project develops the European standard architecture for unmanned ground vehicles and their management system, including cyber defence solutions, and demonstrates the advantages of unmanned systems for enhancing defence capabilities

DAC accords approval for arms and equipment worth Rs. 2,290 Cr.

The Defence Acquisition Council meeting held under the Chairmanship of Defence Minister Rajnath Singh approved proposals for Capital acquisitions of various equipment required by the Indian Armed Forces at an approximate cost of Rs 2,290 crore. These include procurement from domestic industry as well as foreign vendors.

Under the Buy Indian (IDDM) category, the DAC approved procurement of Static HF Tans-receiver sets and Smart Anti Airfield Weapon (SAAW). The HF radio sets will enable seamless communication for the field units of Army and Air Force and are being procured at an approx. cost of Rs. 540 crores. The Smart Anti Airfield Weapon being procured at an approx. cost of Rs. 970 crores will add to the fire power of Navy and Airforce.

For the Frontline Troops of the Army the DAC also accorded approval for procurement of SIG SAUER Assault Rifles at a cost of approx. Rs.780 crore.

4IR Technology to Transform Strata

Strata Manufacturing (Strata), the advanced composite aero structures manufacturing company wholly owned by Mubadala Investment Company PJSC, has leveraged Fourth Industrial Revolution (4IR) technology to strengthen core manufacturing capabilities, diversify product portfolio and pivot into new areas of manufacturing.

Speaking at Global Aerospace Summit, Ismail Ali Abdulla, CEO of Strata, highlighted how the Al Ain-based company is embracing digital transformation through investments in Research & Development (R&D) and cutting-edge technologies, and building knowledge and expertise in collaboration with local universities, technology partners and OEM customers.

As a result, Strata has successfully adopted and deployed smart and additive manufacturing technologies, including robotic and automated assembly of aircraft structures, advanced thermography inspection techniques, and optimised processing and machining of composite parts.

According to Abdulla, the technology investment has not come at a human cost, with Strata's implementation and adoption of 4IR solutions simultaneously boosting employee productivity and optimising manufacturing operations.

"Adopting 4IR technologies in manufacturing facilities is no longer a luxury but a necessity," Abdulla said. "Significant investments on R&D, design capabilities and manufacturing methods is imperative. Companies within the aerospace industry must collaborate with partners and technology companies to enhance competitive advantage, and further advance agility and ability to face digital disruption."

Throughout its first decade of operations, Strata has enhanced its homegrown capabilities in manufacturing composite aero-structures components to become an increasingly competitive player in the global aerospace industry and supply chain.

Moving forward into the next decade, Abdulla revealed: "Strata is a beacon for the successful deployment of 4IR technologies by UAE companies, and we are playing a key role in the advancement of the national aerospace sector. Strata recognises the importance of staying ahead of the game and securing our future within the manufacturing and aerospace sectors."

During the Global Aerospace Summit panel, Abdulla identified several tools redefining digital transformation in the manufacturing sector. These include robotics and automation; additive manufacturing in all forms; data analytics, artificial intelligence (AI), blockchain, and digital simulation of work environment (AR/VR/MR); ICT connectivity solutions such as Internet of Things (IoT), cloud-based processing and data storage; as well as other supplementary technologies of critical importance such as advanced materials.

"As with the last decade, technology advancements have a significant impact on manufacturing, and if adopted correctly, can only positively benefit the supply chain and process," Abdulla explained. "During the next 10 years, if not during a shorter timeframe, 4IR technologies will not only revolutionise manufacturing processes across several industries including aerospace, but we will see further integration of traditional manufacturing boundaries throughout the value chain as digital and physical worlds converge. Data sharing and coordination will be enhanced and will greatly influence decisions and insights, including forecasting accuracy, collaboration, and risk management. This will also support efficiencies in product handling, flow performance and cost management."

Abdulla also revealed that Strata's advanced manufacturing capabilities have enabled the company to seamlessly pivot into new areas of manufacturing and assist in addressing the urgent demand for Personal Protective Equipment (PPE) during the COVID-19 pandemic.

"Strata saw an opportunity to utilise our manufacturing capabilities to help protect frontline workers and support the UAE's global fight against the virus," Abdulla said.

By collaborating with Honeywell, a long-standing Mubadala partner, Strata built the Arabian Gulf's first production line for the N95 mask within 30 days of initial talks. To date, Strata has surpassed the one million mask production milestone to help meet the UAE's domestic PPE demands. It has also started shipping the masks to overseas markets including the UK and Japan.

Rostec Starts Assembling Parts for the First Russian Offshore Helicopter Mi-171A3

Russian Helicopters holding company (part of Rostec State Corporation) started production of the first pre-production prototype of Mi-171A3 offshore helicopter. Flight tests of the state-of-the-art rotorcraft are to start on the summer of 2021. The first Mi-171A3 offshore helicopter is being built by several plants forming part of Russian Helicopters which specialize in serial production, and JSC "National Helicopter Center Mil&Kamov" (NHC). They are working in close cooperation.

The main task of Mi-171A3 is servicing of offshore drilling rigs of companies in the fuel and energy sector. It is capable of transporting people, freight, and carrying out search and rescue operations if necessary – for that purpose, additional installation of a special complex comprising search capabilities, on-board hoists, and medical equipment is provided for.

"Unique solutions ensuring safety of flights over water have been developed for the first offshore helicopter in Russia. The helicopter's onboard equipment provides for navigation in high latitudes and communication with sea-going vessels. The helicopter has an emergency floatation system and life rafts, and a special crash-resistant fuselage section has been developed for it. Separate parts of the helicopter are already being assembled. The first rotorcraft for flights is to be assembled in early 2021 at Ulan-Ude Aviation Plant. Besides, in 2021 we plan to show the rotorcraft at MAKS International Aviation and Space Salon for the first time as one of the most recent key developments of Rostec," stated Rostec Aviation Cluster Industrial Director Anatoliy Serdyukov.

After being completely assembled, the helicopter will be transferred to NHC; the National Helicopter Center will add avionics to it. After that, a cycle of ground and flight tests will take place. Other enterprises of the holding company will also take an active part in helicopter production. Kazan Helicopters will make the helicopter's cargo floor, which has been made similar to that of Mi-38. Progress Arsenyev Aviation Company is making parts of composite materials for the nose and board panels for the middle part of the fuselage section.

"Mi-171A3 is very much sought-after for offshore operations. The rotorcraft has been created as a result of cooperation among Rostec holding companies. Expanding hydrocarbon production on the Arctic shelf requires a fleet of reliable and modern helicopters, which can be operated in the most difficult weather and climatic conditions," emphasized Director General of Russian Helicopters holding company Andrey Boginsky. "Starting from 2022, we will be ready to hand over the first serial helicopters to the launch customer."

Mi-171A3 is a multipurpose helicopter meeting the most modern Russian and international aviation standards, including IOGP requirements. The helicopter development started in 2018. The rotorcraft's maximum takeoff weight is 13,000 kg. It can carry up to 24 passengers, and the maximum range is 1,000 km.

The helicopter is intended for operation in various climatic conditions, including maritime, tropical and cold climate, with ambient temperatures ranging between -50 C and +50 C. Mi-171AZ avionics will provide for automated and manual control of the helicopter at all stages of the flight, from takeoff to landing, and automatic piloting is possible for both air routes and non-regulatory airspace, irrespective of the degree of ground-based radio navigation.

Sanad signs One Billion agreement with Pratt & Whitney and IAE

Sanad, an industry leader in aerospace engineering and leasing solutions, and a wholly owned subsidiary of Mubadala Investment Company (Mubadala), announced a new one billion dirhams deal with Pratt & Whitney and International Aero Engines (IAE). The new agreement will see Sanad Aerotech providing IAE with expanded MRO services for its V2500 engines, which powers the Airbus A320 family of aircraft.

The announcement of the new deal came during the Global Aerospace Summit in Abu Dhabi, where industry leaders convened to discuss the impact of COVID-19 on the aerospace, defence and space industries. This agreement expands the cooperation between Sanad and IAE in the field of maintenance, repair and overhaul (MRO) of aircraft engines. Under the agreement IAE, the manufacturer of V2500 engines, will offload V2500 engines for MRO services to Sanad's state-of-the-art facility in Abu Dhabi Airports Free Zone. This step reaffirms the confidence of major global OEMs to collaborate with Abu Dhabi's resilient aerospace sector especially during turbulent times.

Commenting on this new agreement, Mansoor Janahi, Deputy Group CEO, Sanad, said, "We are signing this new agreement at a critical stage in the history of the aviation industry. This agreement is another testament on Abu Dhabi's established position as a reliable global centre for the aerospace industry and its state-of-the-art engineering services. With many global companies reformulating their relationships with their partners in line with the lessons learned from the pandemic, it seems that flexibility, sustainability and the capacity to deal with crises qualifies the aerospace sector in the UAE to re-enforce its position as a preferred partner for major international companies. Sanad Aerotech has demonstrated the distinction of its engineering teams that were able to meet customer needs in addition to dealing efficiently with the disruptions that resulted from the pandemic."

Dave Emmerling, Vice President, Commercial Aftermarket at Pratt & Whitney, said, "The relationship between Pratt & Whitney, IAE and Sanad is strong and we look forward to continuing to strengthen it for years to come. We expect our V2500 customers will benefit greatly from the MRO services provided by Sanad."

Sanad is a leading provider of aerospace engineering and leasing solutions for customers around the world, providing its services to more than 300 V2500 engines since 2012 with year-on-year growth of over 19 per cent. The V2500 engine on the popular Airbus A320 aircraft has sold over 7,000 engines worldwide and is in service with 190 leading airlines and leasing companies in every corner of the globe.

Sanad is a trusted partner of original engine manufacturers (OEMs) such as Rolls-Royce, GE Aviation, and Pratt & Whitney. These relationships have enabled it to provide competitive MRO services for various aircraft engines.

The highly reliable V2500 engine is offered through IAE International Aero Engines AG, a multinational aero engine consortium whose shareholders comprise Pratt & Whitney, a unit of Raytheon Technologies Corp and a world leader in the design, manufacture and service of aircraft and helicopter engines, and auxiliary power units, Pratt & Whitney Aero Engines International GmbH, Japanese Aero Engines Corporation and MTU Aero Engines.

Elbit Systems UK Demonstrates Hermes 900 for the Maritime and Coastguard Agency

> Hermes 900 was able to fly in unsegregated and uncontrolled airspace in full alignment with the UK Civil Aviation Authority.

Elbit Systems' Hermes 900 Unmanned Aerial System (UAS) recently successfully completed a series of flight demonstrations for the Maritime and Coastguard Agency (MCA). The demonstrations were run by the MCA and were designed to test the capabilities of using a UAS to enhance Search and Rescue (SaR) capabilities and the use of long-range unmanned capabilities in civilian airspace.

Taking place off the West Coast of Wales over the first two weeks of September, the Hermes 900 was able to fly advanced Beyond Line of Sight (BLOS) missions into unsegregated and uncontrolled airspace, in full alignment with the UK Civil Aviation Authority (CAA). The success of these trials is a significant step forward in enhancing the capabilities of the MCA as they seek to improve the efficiency and effectiveness of its search and rescue operations while reducing the risk to MCA personnel in the field. Elbit Systems UK is closely collaborating with the UK Civil Aviation Authority, supported by additional UK companies, including Inzpire and Aviation Systems Group.

In the recent demonstration, the Hermes 900 equipped with search and rescue specific radar, an Automatic Identification System (AIS), EO/IR payload, an Emergency Position-Indicating Radio Beacon (EPIRB) and full satellite communications, was deployed on a range of missions that simulated shore-line rescues, water rescues in dangerous air space and long-distance ship rescues which crossed international air space lines.

With a wingspan of 15m, the 1.2 ton, Hermes 900 is already deployed with more than a dozen advanced customers around the globe providing search, rescue and reconnaissance capabilities. The Company offers extended life-saving capabilities with its recently launched Hermes 900 Maritime Patrol configuration with inflated life-rafts for detection, identification and saving the lives of survivors at sea. It was revealed that this configuration was delivered to an undisclosed customer in South-East Asia.

Martin Fausset, CEO of Elbit Systems UK commented: "We are pleased to have had the opportunity to showcase our enhanced search and rescue capabilities to the MCA this week. The Hermes 900 is perfectly equipped to deal with the needs of the Maritime and Coastguard Agency and we are proud to be able to support them as they continue with their vital, life-saving work."

Director of HM Coastguard Claire Hughes said: "We continue to do all we can to use existing technology as well as look to the future in our ongoing work of saving lives at sea. Remotely piloted aircraft continue to be a big part of that work both to potentially save lives in search and rescue and protect our beautiful coastlines from the worst effects of pollution." ■

AMMROC marks first Aircraft delivery from the new Al Ain MRO facility

AMMROC, the leading provider of military maintenance, repair, and overhaul (MRO) services in the region, announced the delivery of the first C-130 aircraft from its new state-of-the-art MRO depot in Al Ain.

The company is set to deliver nose-to-tail advanced MRO services, and holds the capability to modify and upgrade multiple aircraft types. The C-130 aircraft delivered from the Al Ain facility underwent a Programmed Depot Maintenance (PDM) to increase its capability through extending the aircraft lifecycle. This is the first of many PDMs that are scheduled to take place at this world- class facility.

With the capability to support more than 35 different aircraft types, both fixed and rotary wing, AMMROC's facility offers one of the region's largest military and civil MRO hangar capacities - spanning an area of 36,500 sq m. It is also the only certified Lockheed Martin Service Center for C-130 aircraft in the region, and is at the forefront of aircraft PDM and integrated fleet sustainment services in line with its wider mandate to support the UAE and other regional markets.

In March 2020, AMMROC inducted a CN235 and an A330 Multi Role Tanker Transport (MRTT) aircraft, marking the launch of the 1-square-kilometre operations facility.

Speaking on the development, Khalid Al Breiki, President of Mission Support at EDGE and Chairman of AMMROC, said: "AMMROC is leveraging its engineering excellence and cutting-edge solutions to establish new regional benchmarks for military operations. The delivery of the first C-130 aircraft from our state-of-the-art facility highlights our capacity to meet the dynamic needs of our customers as we further strengthen our credentials as an industry-leading MRO innovation hub."

"This facility is testament to AMMROC's vision to be the leading regional centre of excellence that provides aircraft sustainment solutions in MRO and upgrade services. Progressing on the Abu Dhabi Economic Vision 2030, we also look forward to building on our STEM initiatives and creating a highly skilled local workforce that takes the national aerospace and defence industry to new heights", he added.

Incorporating four multi-purpose hangars, over 30 back shops and a specialised environmentally controlled strip/paint facility, AMMROC's MRO hub is also unique in serving as a dedicated Black Hawk depot facility that provides nose-to-tail MRO capabilities, inclusive of rotors and transmissions, blades, engines, components and aircraft sub-systems.

AMMROC is part of the Mission Support cluster within EDGE, the advanced technology group for defence and beyond. In July 2020, EDGE announced that it had entered into a conditional agreement to acquire the remaining 40 per cent stake in AMMROC, held by Lockheed Martin Corporation and Sikorsky, a Lockheed Martin company.

Elbit Awarded Contract for Assemblies for the F-35

Elbit Systems Ltd. announced that its wholly-owned subsidiary, Elbit Systems - Cyclone Ltd., was awarded a contract by Lockheed Martin for the manufacture of assemblies for Forward Equipment Bay assemblies for the F-35. The contract is in an amount that is not material to Elbit Systems and will be performed over a period of four-years.

The contract calls for Elbit Systems to supply assemblies for the F-35's Forward Equipment Bay – made from composite materials and the associated structures – for all F-35 aircraft variants. Elbit Systems will deliver more than 1,400 components to Lockheed Martin during the contract period. The decision by Lockheed Martin comes as a result of Elbit Systems successful performance on the production of other composite structures for the F-35 program.

This award further expands Elbit Systems work on the F-35, which includes the helmet mounted display systems, the development of the panoramic cockpit display, power amplifiers and 22 different structural assemblies.

Yoram Shmuely, General Manager of Elbit Systems Aerospace Division, said: "We are proud to have been selected by Lockheed Martin to provide additional structural assemblies for the F-35 aircraft. This contract reflects the recognition and trust we have established with Lockheed Martin in our many years of collaborative work". ■

Vision Box Implements Automated Gates at Terminal 1 of Kansai International Airport

Vision-Box,Europe's leading multinational technology company, dedicated to improving the quality and security in government services, travel and border control, has announced the launch of automated pre-security gates at the Kansai International Airport in Osaka, Japan, the second largest airport in the Vinci Group, handling over 30 million passengers annually.

Vision-Box has successfully implemented five banks of 12 pre-security gates (GT11) at Terminal 1 of the Kansai International Airport, operational from Monday, 27 July 2020. The partnership supports Kansai Airports' wider efforts to promote a 'Fast Travel' experience for passengers, allowing for a smoother departure procedure. By automating the boarding pass confirmation procedure at the departure gate, the self-scan will replace the need for inspectors to manually check and scan passenger boarding passes, speeding up the overall travel experience.

The launch of the automated gates comes at a pivotal moment for Kansai International Airport, allowing for fast contactless operation, helping prevent the spread of infectious diseases especially during the current covid-19 pandemic.

Speaking about the launch of the automated gates, Jeremy Goldstrich, COO at Kansai Aiports said: "We are delighted to partner with Vision-Box to implement cutting edge contactless automated gates at Terminal 1, allowing for a seamless travel experience for passengers. By automating the boarding pass confirmation procedure at the departure gate, we will realize a smoother departure procedure. Until now, an inspector took a boarding pass from the customer in front of the international security checkpoint and read it with a scanner to determine whether or not to pass it. Kansai Airports will continue to proactively introduce cutting-edge technology to improve the convenience of the airport and provide a comfortable and new travel experience."

Speaking about the partnership Miguel Leitmann, CEO of Vision-Box, said: "We are delighted to announce a partnership with Kansai Airports. This is another positive step forward in increasing our presence in the country as we aim to deliver innovate projects which focus on seamless travel and identity management. We believe that the team at Kansai International Airport share our vision to modernise and change the landscape of the travel and aviation industry for the better. While Vision-Box continues to drive such technology in the field, Japan is no doubt one of the leaders in technological development and this partnership is testament to our hard work and expertise in delivering such innovation."

This latest partnership is another successful milestone for Vision-Box, who have continued to pioneer seamless technology innovations to optimise the flow of travellers both during and after the Covid-19 pandemic. Vision-Box has been at the forefront of contactless automation technology, having installed Europe's first facial recognition e-Gate at Faro International Airport in 2007. Today, the company's key partners and customers include the UK Home Office, US CBP, London Gatwick Airport, Eurostar, Air Asia, Emirates, KLM, Dubai Airport, Schiphol Airport, Bangalore International Airport and JFK.

Vision-Box is also working closely with The World Travel & Tourism Council's (WTTC) and other industry organisations to launch a second phase of measures to rebuild global consumer confidence to encourage the return of travelling, which will focus on safe and efficient solutions to get the travel sector functioning near normal conditions. Vision Box also recently published a focused, high-level industry survey of the world's top airports, airlines, and government agencies titled the 'Effects of COVID-19 pandemic on the aviation sector', which found 63% of organisations in the aviation, airline sector and government agencies seek to implement biometric technologies at airports for contactless travel.

Ultra secures UK Sonobuoy Test Facility Upgrade contract with QinetiQ

Ultra has secured a contract from QinetiQ to support them in replacing the entire Sonobuoy Test Facility (STF) system at the British Underwater Test & Evaluation Centre, MOD BUTEC. This work includes replacing the Software Defined Sonobuoy Receivers (SDSRs), the Command function transmitters as well as a suite of analysis software for the Ground Monitoring Station which provides control, monitoring, recording and analysis capabilities for the Sonobuoy on test.

New capabilities, which include user friendly graphics and the reuse of seabed hardware to replace surface test equipment, will offer a real saving to the customer. Not having to deploy equipment manually from a small boat means the new system will be safer and less time consuming to use.

QinetiQ and Ultra will collaborate to deliver the STF requirements with QinetiQ providing the COTS computer equipment including networking, data storage and installation.

For over 70 years Ultra has supplied world-leading sonobuoys, sonobuoy receivers and sonobuoy command transmitters to navies worldwide for airborne Anti-Submarine Warfare (ASW). Sonobuoys are deployed onto the sea surface and used for detection, classification and localisation of submarines. Test and training for UK sonobuoys is undertaken at the STF at MOD BUTEC in North West Scotland.

MBDA Gets International Recognition for its Management of Innovation

MBDA has been accredited as Investor in Innovations Standard by the Institute of and Knowledge Exchange Innovation (IKE Institute) as a recognition of its good practices and adherence to the newly published ISO 56002 Innovation Management System standard. This rewards an Innovation Management. Creating advantage through innovation by applying a systemic approach, instilling a culture that is pro-innovation, embracing an open innovation ecosystem and accelerating promising innovations from idea to solution, quickly and affordably are some of the recommended practices that MBDA has been recognised for, when it successfully achieved the Accreditation.

Eric Béranger, CEO of MBDA commented on achieving this combined recognition: "Innovation is one of our 5 corporate values. We bet on innovation because it is central to our future growth and competitiveness, allows to reduce costs and waste, and increases productivity and resource efficiency, ensuring in the end our customers' satisfaction and improving sustainability and resilience for the company. To grab the full benefits of innovation, MBDA has put in place organisations and processes that span over its five home nations in Europe, engaging our engineers to share knowledge, experience and best practices fitting with our vision of creating the world's best complex weapons that deliver the required proportionate military effects. I take the IKE Institute's ISO 56002 accreditation as a strong recognition of the commitment and efforts of all our employees, partners and stakeholders who have made this achievement possible, particularly in the current circumstances of COVID-19."

Professor Sa'ad Sam Medhat, IKE Institute Chief Executive and member of the BSI/ ISO Innovation Standards Committee said: "MBDA continues to surprise us with their unwavering efforts to push the innovation envelope to the next stage, and have demonstrated best practice in a number of benchmarking categories. MBDA's Innovation Policy and its consistent execution within the teams spread across many countries including France, Italy, Germany and the UK, demonstrates a systematic approach to innovation capability development that delivers value to everyone involved. This rigorous review and robust analysis by the Validation Panel of c-suite executives drawn from the Innovation Council, provided a thorough action plan for crystallising innovation further within MBDA's strategic mission. I believe, MBDA is the first multinational company that has embraced and implemented the international innovation guidelines as set out by the ISO 56002 standard. So, may I congratulate MBDA on this excellent achievement."

Schiebel CAMCOPTER® S-100 to Monitor Ship Emissions for France

Schiebel, together with partners Nordic Unmanned and the NORCE Research Institute AS, is operating the CAMCOPTER® S-100 to monitor ship emissions for French Maritime Authorities.

The service providers for this French deployment cover ship sulphur emission monitoring in one of the world's busiest shipping lanes in the strait of Pas-de-Calais.

The operation started on 23 September and will run for three months. The Unmanned Air System (UAS) CAMCOPTER® S-100 specifically measures the ships' sulphur emissions to check compliance with the EU rules governing the sulphur content of marine fuels. Measurements are transmitted in real time through the EMSA RPAS Data Centre to the relevant authorities.

The Remotely Piloted Aircraft System (RPAS) service is offered by the European Maritime Safety Agency (EMSA). As part of this contract, Schiebel provides various maritime surveillance services for EMSA to several EU member states and EU bodies. Currently, the CAMCOPTER® S-100 is also operational in Denmark for emission monitoring purposes, as well as in Finland supporting coast guard functions.

In addition to the EMSA contract, the S-100 is being operated by the French Navy to conduct maritime surveillance. The S-100 has a flight endurance of more than six hours and operates day and night. It is equipped with an Explicit mini sniffer sensor system, an Electro-Optical / Infra-Red (EO/IR) camera gimbal and an Automatic Identification System (AIS) receiver.

Hans Georg Schiebel, Chairman of the Schiebel Group, said: "Due to its multi-payload capacity, the applications for the S-100 are limitless. The sulphur sniffing capability is one of the latest innovations and we are very proud to play such an important role in enforcing marine fuel sulphur content regulations."

Raman R is GM (Internal Audit) at BEL

Raman R took charge as General Manager (Internal Audit) of Navratna Defence PSU Bharat Electronics Limited (BEL). He was Additional General Manager (Internal Audit) at BEL-Corporate Office prior to his elevation.

A postgraduate in Commerce and Fellow Member of the Institute of Chartered Accountants of India, Raman joined BEL on July 17, 1989, as Accounts Officer. He started his career, making significant contributions in almost all areas of Finance & Accounts working at BEL's Corporate Office and International Marketing Division.

In August 2010, he was transferred to BEL's Bangalore Complex, where he worked for about a decade, in various capacities and in many Strategic Business Units (SBUs) such as Military Communications (Milcom), Naval Systems (Radar & Fire Control Systems), Missile Systems and Central Finance.

Raman has spearheaded the formulation of BEL Executives' Pension Scheme and was instrumental in BEL bagging its first national award from ICWAI, New Delhi, for "Cost Management" during FY 2005-06.

Virgin Galactic Unveils Mach 3 Aircraft Design, Signs MOU with Rolls-Royce

Company Announces Completion of Mission Concept Review Program Milestone.

Virgin Galactic Holdings, Inc., a vertically integrated aerospace and space travel company, which includes its manufacturer of advanced air and space vehicles, The Spaceship Company ("TSC"), announced the first stage design scope for the build of its high speed aircraft design, and the signing of a non-binding Memorandum of Understanding (MOU) with Rolls-Royce to collaborate in designing and developing engine propulsion technology for high speed commercial aircraft. This follows the successful completion of its Mission Concept Review ("MCR") program milestone and authorization from the Federal Aviation Administration's ("FAA") Center for Emerging Concepts and Innovation to work with Virgin Galactic to outline a certification framework. This marks an exciting step forward in Virgin Galactic's development of a new generation of high-speed aircraft, in partnership with industry and government leaders, with a focus on customer experience and environmental sustainability.

Rolls-Royce is a leader in the cutting-edge technologies that deliver clean, safe, and competitive solutions to the planet's vital power needs. Rolls-Royce has a proven record of delivering high Mach propulsion, powering the only civil-certified commercial aircraft (Concorde) capable of supersonic flight.

George Whitesides, Chief Space Officer, Virgin Galactic said, "We are excited to complete the Mission Concept Review and unveil this initial design concept of a high speed aircraft, which we envision as blending safe and reliable commercial travel with an unrivalled customer experience. We are pleased to collaborate with the innovative team at Rolls-Royce as we strive to develop sustainable, cutting-edge propulsion systems for the aircraft, and we are pleased to be working with the FAA to ensure our designs can make a practical impact from the start. We have made great progress so far, and we look forward to opening up a new frontier in high speed travel."

"We are excited to partner with Virgin Galactic and TSC to explore the future of sustainable high-speed flight," said Rolls-Royce North America Chairman & CEO Tom Bell. "Rolls-Royce brings a unique history in high speed propulsion, going back to the Concorde, and offers world-class technical capabilities to develop and field the advanced propulsion systems needed to power commercially available high-Mach travel."

The Mission Concept Review, which included representatives from NASA, is an important program milestone at which the Virgin Galactic high speed team confirmed that, based on the research and analysis work completed, its design concept can meet the high-level requirements and objectives of the

Schiebel, Nordic Unmanned Demonstrated Cargo Delivery Capability of CAMCOPTER® S-100

Schiebel, together with partner Nordic Unmanned, successfully demonstrated the cargo delivery capability of its Unmanned Aerial Vehicle (UAV) CAMCOPTER® S-100 to offshore platform Troll A to Norwegian energy company Equinor.

This is world's first in terms of full-scale offshore UAV delivery from shore to an active oil and gas installation. The exercise simulated the scenario of an urgent requirement for specific essential spare parts at the gas production platform Troll A. The CAMCOPTER® S-100 successfully carried out the long-range delivery flight from Mongstad, where the spare parts were 3D-printed, to the offshore platform Troll A located in the North Sea.

The unmanned delivery distance was 100 km (55 nm). After the UAV supplied the spare parts, it carried out a close inspection around the platform before it headed back to Mongstad. The flight trials also included a successful Search and Rescue (SAR) mission, where a "man over board" dummy was quickly located by the UAV, transmitting the positioning data and live images using the L3 Harris Wescam real-time Electro-Optical/ Infra-Red (EO/IR) camera and an Automatic Identification System (AIS).

Hans Georg Schiebel, Chairman of the Schiebel Group, said: "This was the perfect trial to show off the exceptional maritime capabilities of the S-100 for the oil and gas industry. We have extensive experience in long-range unmanned flights, especially in the maritime domain and under adverse weather conditions. The S-100 was able to show off its outstanding capabilities and we have proven once again that the S-100 UAV is the superior choice."

mission. Previously, NASA signed a Space Act Agreement with Virgin Galactic to collaborate on high speed technologies.

The basic parameters of the initial high speed aircraft design include a targeted Mach 3 certified delta-wing aircraft that would have capacity for 9 to 19 people at an altitude above 60,000 feet and would also be able to incorporate custom cabin layouts to address customer needs, including Business or First Class seating arrangements. The aircraft design also aims to help lead the way toward use of state-of-the-art sustainable aviation fuel. Baselining sustainable technologies and techniques into the aircraft design early on is expected to also act as a catalyst to adoption in the rest of the aviation community.

The MCR concluded that the team can progress to the next phase of design, consisting of defining specific system architectures and configurations, and determining which materials to use in the design and manufacturing of the aircraft. The team will also work to address key challenges in thermal management, maintenance, noise, emissions, and economics that routine high speed commercial flights would entail.

The design philosophy of the aircraft is geared around making high speed travel practical, sustainable, safe, and reliable, while making customer experience a top priority. Virgin Galactic is designing the aircraft for a range of operational scenarios, including service for passengers on long-distance commercial aviation routes. The aircraft would take off and land like any other passenger aircraft and be expected to integrate into existing airport infrastructure and international airspace around the world.

Virgin Galactic is working closely with international regulatory communities to ensure compliance with safety and environmental standards. Last week the FAA's Center for Emerging Concepts and Innovation reviewed the project direction and authorized FAA resources to work with the Virgin Galactic team to begin to outline a certification framework during the pre-project guidance phase. Virgin Galactic believes that working together with regulators and industry leaders such as Rolls Royce and Boeing will support the mission to broaden and transform global travel technologies, with a focus on customer experience.

Lufthansa handed over the New Airbus A350-900s German Government's Special Air Mission Wing

Lufthansa Technik AG handed over the first of three new Airbus A350-900s to the German Armed Forces. During a ceremony in Hamburg, conducted according to current pandemic rules, Minister of Defence Annegret Kramp-Karrenbauer took a first look at the future flagship of the Federal Ministry of Defence's (BMVg) Special Air Mission Wing. On the way to the final operational readiness of the aircraft, the military certification for the 10+03 designation and various test flights with the new wide-body aircraft will take place in the coming weeks. This is the world's first government aircraft of this type and thus also the world's first Airbus A350 not to be used in commercial airline service.

"The exemplary procurement process is really something to be proud of," said Minister Kramp-Karrenbauer. "The decision to purchase the new A350 fleet was made just 1.5 years ago. My thanks therefore go to all those involved in industry and German Armed Forces, because everyone really pulled together here. With its 25 percent lower fuel consumption - compared to older, comparable types - the ultra-modern A350 is future-oriented, and with the new fleet we are securing global mobility as an important part of the Federal Government's ability to work", the Federal Minister continued. "And with the addition of two more brand-new A350s, the mobility expected of an industrial nation like Germany is adequately ensured."

"Today we are proud to present to the Federal Minister of Defence the new lagship of the Federal Government's Special Air Mission Wing, the world's very first Airbus A350 as a government aircraft," said Dr. Johannes Bussmann, Chairman of the Executive Board of Lufthansa Technik AG. "The 10+03 and its two subsequent sister aircraft are a continuation of the successful tradition of supplying the German Armed Forces and having them as one of our best and most important customers."

The factory-fresh aircraft, which was still on the civil register as D-AGAF, arrived at Lufthansa Technik at the beginning of May. It is equipped with a special transitional cabin for political-parliamentary flight operations. The cabin comes with office and conference areas, adjoined by a multifunctional lounge area. The remaining space is available for delegations flying on the aircraft. After sister aircraft 10+01 and 10+02, which are currently under construction, will receive a fully-fledged government cabin from Lufthansa Technik next year, the transitional cabin in the 10+03 will also be exchanged.

The effects of the global coronavirus pandemic on the supply chain slightly delayed the planned delivery of the 10+03 to the German Armed Forces. It will now take place in the coming weeks, during which the aircraft will receive its military certification and be prepared for a smooth entry-into-service at the Federal Ministry of Defence's pecial Air Mission Wing, complete with crew training and various test flights. ■

HAL Helicopters in Rescue Operations at Mauritius Reef

HAL's indigenous Advanced Light Helicopter Dhruv and Chetak helicopters were pressed into service to rescue people and extricate skimmed oil from the Japanese owned cargo ship MV Wakashio. The ship was on its way from China to Brazil but ran aground on the reef at Pointe d'Esny, Mauritius recently.

"Time and again the indigenous Dhruv helicopter have proven its capabilities. Our helicopters were extensively utilized for search and rescue operations in the past as well", says R Madhavan, CMD, HAL.

Thanks to the Indian Air Force, Indian Coast Guards and Mauritius police, HAL helicopters flew non-stop dawn to dusk till all the survivors on board were safely rescued. A total of 210 cargo operations and 270 winch operations were undertaken by HAL choppers towards salvage and rescue missions so far. The Chetak helicopters were used primarily for winching survivors. The ALHs flew continuous missions to get the international salvage team on-board the ship to contain the spill.

The spill was close to two environmentally protected marine ecosystems and the Blue Bay Marine Park reserve. Nearby are a number of popular tourist beaches and mangrove plantations. Mauritius had declared a state of environmental emergency. A crack inside the hull of the ship expanded earlier this week leading to the ship splitting into two halves.

Dhruv is indigenously designed and developed by HAL for the military as well as civil applications. The utility version of the Dhruv helicopter can be used for VIP travel, commuter, search and rescue, emergency medical service, under slung load, disaster relief, and offshore operations. Dhruv helicopter is suitable for increased payload at higher altitudes and is in operation with all the three Service wings. More than 240 helicopters are operational with the Indian Armed Forces clocking more than 2,70,000 flying hours.

Saab Delivers Second GlobalEye to UAE

Saab delivers the second GlobalEye Swing Role Surveillance System to the United Arab Emirates on 30 September 2020.

This follows Saab's delivery of the first GlobalEye aircraft in April 2020 to the United Arab Emirates, which has ordered three GlobalEye aircraft. The initial contract was signed in late 2015.

"Completing the second GlobalEye delivery in five months is a testament to Saab's in-house expertise as aircraft manufacturer, sensor provider and large system integrator. I am proud to contribute to the United Arab Emirates' airborne surveillance capability with GlobalEye, which is the most advanced solution of its kind", says Micael Johansson, President and CEO of Saab.

GlobalEye is Saab's new airborne early warning and control solution. It provides air, maritime and ground surveillance in a single solution. GlobalEye combines Saab's new Erieye Extended Range Radar and a range of additional advanced sensors with the ultra-long range Global 6000 aircraft from Bombardier.

Lufthansa to Increase Flight Operations to the Middle East

Lufthansa Group has announced that it will be increasing its flight operations to the Middle East from October. Lufthansa German Airlines will increase its capacity from four flights per week from Dubai to Frankfurt, to five flights per week as of October 2020.

In addition, SWISS is set to restart its services from Dubai to Zurich with three flights per week beginning on the 29th of October 2020, further boosting connectivity between the two destinations. The new SWISS Dubai–Zurich service will depart on Mondays, Thursdays, and Saturdays, while Zurich–Dubai flights will run on Tuesdays, Thursdays, and Saturdays. Dubai–Zurich flights will depart at 01:55 hrs and arrive at 06:10 hrs, and Zurich–Dubai flights depart at 21:50 hrs and arrive at 07:00 hrs (+1). The flights have been introduced as part of Lufthansa Group's winter schedule to cater to continuing growth in demand for intercontinental travel.

SWISS and Edelweiss have jointly decided to rearrange services from Muscat to Zurich. SWISS previously operated a triangular flight to Zurich from Muscat via Dubai. This will be replaced by a non-stop Muscat to Zurich flight from Edelweiss, which will run once per week starting from the 8th of November 2020. The Muscat-Zurich service will depart every Sunday at 9:50 hrs and arrive at 14:10 hrs. The Zurich-Muscat flight will operate every Friday at 21:30 hrs and arrive at 07:00 hrs (+1).

Heinrich Lange, Senior Director Sales, Gulf, Afghanistan and Pakistan, Lufthansa Group, commented: "We are pleased to unveil details of our winter schedule between our hubs Frankfurt and Zurich and the Middle East. Recent steady increases in passenger numbers signal a growing confidence in the safety of air travel. In line with this encouraging rise in demand, we aim to bring our customers multiple options that offer greater choice and convenience while maintaining the highest standards of safety at all times. It's wonderful to see travellers taking to the skies again and we look forward to connecting them to where they need to be in the months ahead."

As part of its commitment to safeguarding the health and safety of its customers and team members, Lufthansa is continuing to implement stringent hygiene and safety protocols both on the ground and aboard its aircraft.

In addition, following Dubai governmental guidelines, Passengers are expected to wear a face mask and gloves during the entire journey and maintain social distancing at all times. Travellers are advised to consider the current entry and quarantine regulations at their final destinations. Passengers must present a negative COVID-19 test certificate at the check-in desk in both Dubai and Zurich to be allowed to travel. Certificates are valid for up to 96 hours from the time of testing. Travellers arriving more than four hours before their scheduled departure time will not be permitted to access the terminal building.

Passengers are also required to download the COVID19 – DXB Smart App, which ensures they will receive all the latest travel alerts and safety information.

Indian Navy & Bangladesh Navy organised Bongosagar exercise

The second edition of bilateral Naval exercise Bongosagar by Indian Navy (IN) – Bangladesh Navy (BN)held in Northern Bay of Bengal. Ships from both navies participated in surface warfare drills, seamanship evolutions and helicopter operations.

The 3rd edition of IN - BN Coordinated Patrol (CORPAT) in Northern Bay of Bengal also held, with joint patrolling along the International Maritime Boundary Line (IMBL). Conduct of CORPATs has strengthened understanding between both the navies and instituted measures to stop conduct of unlawful activities.

Indian Naval Ship (INS) Kiltan, an indigenously built Anti-Submarine Warfare Corvette and INS Khukri, an indigenously built Guided-Missile Corvette participated in the event along with Bangladesh Naval Ship (BNS) Abu Bakr, a Guided-Missile Frigate and BNS Prottoy, a Guided-Missile Corvette. In addition to ships, Maritime Patrol Aircraft from both navies and integral helicopter(s) also participated in the exercise.

India and Bangladesh have a close, long-standing relationship covering a wide spectrum of activities and interactions, which has strengthened over the years.This edition of Exercise Bongosagar assumes greater significance since it is being conducted during Mujib Barsho, the 100th birth anniversary of Bangabandhu Sheikh Mujibur Rahman.

Exercise Bongosagar and IN - BN CORPAT reflects the priority that Indian Navy accords to Bangladesh Navy as part of Prime Minister Narendra Modi's vision of SAGAR (Security And Growth for all in the region).

Defence Acquisition Procedure - 2020 unveiled; More focus on Make in India

Services	MoD	Think Tanks	Associations	Industry
•DMA •Army •Navy •Air Force •ICG	•MoD(Fin) •DRDO •DDP •DGQA	•MP IDSA •PHD Chamber •Delhi Policy Group •Indian Defence Research	•FICCI, CII, ASSOCHAM •USIBC/USISF •AMCHAM •UKIBC •ROE •KPMG	•Indian(30) •TATA •L&T •Mahindra •Adani Gp •Foreign(20)
• NSCS				

Defence Acquisition Procedure (DAP) – 2020 was unveiled by Defence Minister Rajnath Singh with more focus on Atmanirbhar Bharat under Make in India initiative.

The first Defence Procurement Procedure (DPP) which was announced in 2002 has since been revised periodically to provide impetus to the growing domestic industry and achieve enhanced self-reliance in defence manufacturing. The defence minister had approved constitution of Main Review Committee under Chairmanship of DG (Acquisition) Apurva Chandra in Aug 2019 for preparation of DAP-2020. DAP 2020 is applicable with effect from 01 October 2020. Formulation of DAP 2020 has been done over more than one year, incorporating comments/suggestions from a wide spectrum of stakeholders as under :-

2. DAP 2020 has been aligned with the vision of the Government of Atmanirbhar Bharat and empowering Indian domestic industry through Make in India initiative with the aim of turning India into a global manufacturing hub. With the new Foreign Direct Investment policy DAP 2020 has adequately included provisions to encourage FDI to establish manufacturing hubs both for import substitution and exports while protecting interests of Indian domestic industry. Specific reforms enunciated in Atmanirbhar Bharat Abhiyan, have been incorporated as under:-

(a) Notify a List of Weapons/ Platforms for Ban on Import. Relevant incorporation has been done in the DAP to ensure that NO equipment as mentioned in the list is procured ex import post timelines notified.

(b) Indigenisation of Imported Spares.

(i) Request For Information. RFI stage will explore willingness of the prospective foreign vendors to progressively undertake manufacture and setup an indigenous eco system at the spares/sub component level.

(ii) New Category of Buy (Global – Manufacture in India). The new category incorporates 'manufacture of either the entire/part of the equipment or spares/ assemblies/sub-assemblies/Maintenance, Repair and Overhaul (MRO) facility for the equipment, through its subsidiary in India.

(iii) Co-production through IGA. This enables establishment of co-production facilities through IGA achieving 'Import Substitution' and reduce Life Cycle Cost.

(iv) Contractual Enablement. Buyer's Right to optimise Life Cycle Support costs and system enhancements through indigenous eco system incorporated.

(c) FDI in Defence Manufacturing. With the announcement of new FDI Policy, suitable provisions have been incorporated like new category 'Buy (Global – Manufacture in India)' done to encourage foreign OEMs to setup 'manufacturing/maintenance entities' through its subsidiary in India while enabling requisite protections to domestic industry.

(d) Time Bound Defence Procurement Process and Faster Decision Making. As part of the Defence Reforms announced in the Atmanirbhar Abhiyan, setting up of a PMU has been mandated to support contract management. The PMU will facilitate obtaining advisory and consultancy support in specified areas to streamline Acquisition process. Other issues included in these reforms are:-

(i) Realistic Setting of GSQRs of Weapons/Platforms. The process of formulation of SQRs has been further refined with greater emphasis on identifying verifiable parameters based on analysis of 'Comparative' equipment available in the World and Domestic markets.

(ii) Simplification of Trial Procedures. DAP 2020 emphasises the need to conduct trials with an objective to nurture competition based on the principles of transparency, fairness and equal opportunities to all and not as a process of elimination.

3. Ease of Doing Business. One of the key focus areas of the review was to implement 'Ease of Doing Business' with emphasis on simplification, delegation and making the process industry friendly with certain specific provisions incorporated: -

(a) Procedural Changes.

Single stage accord of AoN in all

cases upto Rs 500 crores has been instituted thereby reducing time.

FTP cases, post accord of AoN, will be progressed as per delegated powers thereby reducing the procurement cycle considerably.

(iii) In Planning Process, LTIPP has been re-designated as Integrated Capability Development Plan (ICDP) covering planning period of ten years instead of 15 years.

(b) Request for Proposal (RFP) and Standard Contract Document (SCD). Certain measures to provide clarity and alignment of requirements as also enabling provisions have been incorporated in the RFP and SCD in terms of Flow Chart driven guidelines, provision of in-storage preservation and termination of contracts in cases where projects are not progressing as per pre–defined milestones.

Salient features of DAP 2020

4.Reservation in Categories for Indian Vendors. The categories of Buy(Indian-IDDM), Make I, Make II, Production Agency in Design &Development, OFB/DPSU and SP model will be exclusively reserved for Indian Vendors meeting the criteria of Ownership and Control by resident Indian Citizens with FDI not more than 49%. This reservation will provide exclusivity in participation to domestic Indian industry.

5. Enhancement of Indigenous Content. (a) Overall Enhancement in Indigenous Content (IC).

(b) IC Verification. A simple and practical verification process has been instituted and IC will now be calculated on 'Base Contract Price' i.e. Total Contract Price less taxes & duties.

Ser No	Category	DPP 2016	DAP 2020
(i)	Buy (Indian-IDDM)	Min 40%	Min 50%
(ii)	Buy (Indian)	Min 40%	Indigenous design – Min 50% Otherwise – Min 60%
(iii)	Buy & Make (Indian)	Min 50% of Make	Min 50% of Make
(iv)	Buy (Global – Manufacture in India)	-	Min 50% of Buy plus Make
(v)	Buy (Global)	-	Min 30% for Indian vendors

(c) Indigenous Military Material. Promoting use of indigenous military material with provisions for examination of platforms and other equipment/ systems and reward for vendors for using indigenous raw material.

(d) Indigenous Software. Provision for exploring options for operating base applications like Fire Control System, Radars, Encryption, Communications etc on indigenous software in Buy (Indian- IDDM) & Buy (Indian) cases has been included.

6. Rationalisation of Trial and Testing Procedures.

(a) Testing equipment based on its employability and for other conditions appropriate certifications confirming functional effectiveness may be obtained.

(b) Scope of Trials will be restricted to physical evaluation of core operational parameters, other parameters may be evaluated based on vendor certification, certification by accredited laboratories, computer simulations of parameters..

(c) Avoid duplication of trials and waiver will be granted based on Certificates of Conformance. Ensure simultaneity of various Trials and wherever feasible, entire trials be conducted by a Combine Trial Team in order to save time.

(d) Requisite opportunity will be afforded to participating vendors to rectify shortcomings/ faults during the Trials with permission to carry out repairs.

(e) Request For Proposal will apprise vendors to submit draft Acceptance Test Procedure (ATP), to be finalised by QA agency during Technical Trials itself. Sample size for destructive tests including the aspect of cost to be borne by seller will be stated upfront in the RFP for vendor.

(f) Inspections. No repetition of inspections will be done especially during acceptance of equipment. Third Party Inspections will also be carried out.

7. Make & Innovation.

(a) Make I (Government Funded upto 70%). Laying down a cap of Rs 250 crore/DA and selection of DAs based on bidding criteria.

(b) Make II (Industry Funded) for production of indigenously designed & developed weapons/ equipment/systems/platforms along with sub components/assemblies.

(c) Make III (Indigenously Manufactured) category for manufacture of equipment/platforms or spares/assemblies/sub-assemblies

Liebherr Overhauls Landing Gears for Austral

Liebherr-Aerospace has been selected by Austral Líneas Aereas to overhaul the landing gears of the airline's Embraer E-Jet E190 fleet. It is the first major contract for Liebherr in Argentina. The overhaul activities have already started in July 2020 and are performed by Liebherr-Aerospace's customer service facility in Saline, Michigan (USA).

This major landing gear overhaul contract with Austral (affiliated of Aerolíneas Argentinas) highlights the customer proximity that Liebherr-Aerospace has been developing in Latin America with its liaison office in São José dos Campos (Brazil). It is also proof of the top service level regarding landing gear overhauls executed by Liebherr Aerospace Saline, Inc., Saline, Michigan (USA), Liebherr-Aerospace's customer service station.

"We are very pleased with this agreement with Liebherr which provide us best technical and economical solutions for our E190 Landing Gear Campaign", commented Juan Rubinich, Engine & Components Provisioning Manager of Austral which is the biggest domestic airline in Argentina, serving also destinations in Brazil and Uruguay.

"This contract represents another major step in our worldwide landing gear overhaul campaign. We are very happy and honored to be able to welcome Austral/ Aerolíneas Argentinas as our new customer," said Daniel Brum Pretto, Regional Sales Manager at Liebherr-Aerospace in Brazil.

The complete landing gear system for the E-Jet E1 family (E170/E175/ E190/E195) has been developed, manufactured and certified by OEM Liebherr-Aerospace Lindenberg GmbH, Lindenberg (Germany), Liebherr's center of competence for flight controls, landing gear systems, gears, gearboxes as well as electronics.

for enabling import substitution.

(d) Procurement of prototypes developed through 'Innovation' under various initiatives like iDEX, Technology Development Fund and Internal Services Organisations has been facilitated.

8.Design & Development. A separate dedicated chapter has been incorporated in the DAP 2020 for acquisition of systems Designed and Developed by DRDO/DPSUs/OFB. A simplified procedure with Integrated Single Stage Trials to reduce timelines and laying greater emphasis on evaluation through certification and simulation. Aspects of Spiral Development have been incorporated.

9. Address Voids. Certain existing voids have been addressed in the form of new Chapters as under:-

(a)'Information Communication Technology'. Peculiar issues related to procurement of ICT intensive equipment especially of Interoperability & Built-in Upgradability, enhanced security requirements and change management have been included.

(b)Leasing. A new category introduced to enable operating of assets without owning thereby, substitute huge initial capital outlays.

(c) Post Contact Management. To formalise procedures post signing of contract with respect to inspections, levying of Liquidity Damages, Contract Amendments etc.

(d) Other Capital Procurement Procedure. A new procedure has been included as a new chapter in DAP and structured as an enabling provision for Services to procure essential items through Capital Budget under a simplified procedure in a time bound manner.

10. Industry Friendly Commercial Terms.

(a)Price Variation Clause has been incorporated for large and protracted contracts in order to avert inflated initial quotes by vendors and arriving at a realistic price of the project.

(b) Payments to Vendors. Suitable provisions like parallel processing of documents by SHQ/PCDA through digital verification, within laid down timelines, has been included to ensure timely payment to vendors. Payments to Indian industry have been aligned with foreign industry.

11. Offsets. The Offset guidelines have been revised, wherein preference will be given to manufacture of complete defence products over components and various multipliers have been added to give incentivisation in discharge of Offsets.

12. In fact, DAP 2020 which has been formulated post interactions over a year, is an enabler & industry friendly procedure aligned with Government of India's vision of Atmanirbhar Bharat & impetus to Make in India. DAP 2020 document instills a confidence and will meet aspirations of stakeholders across the spectrum.

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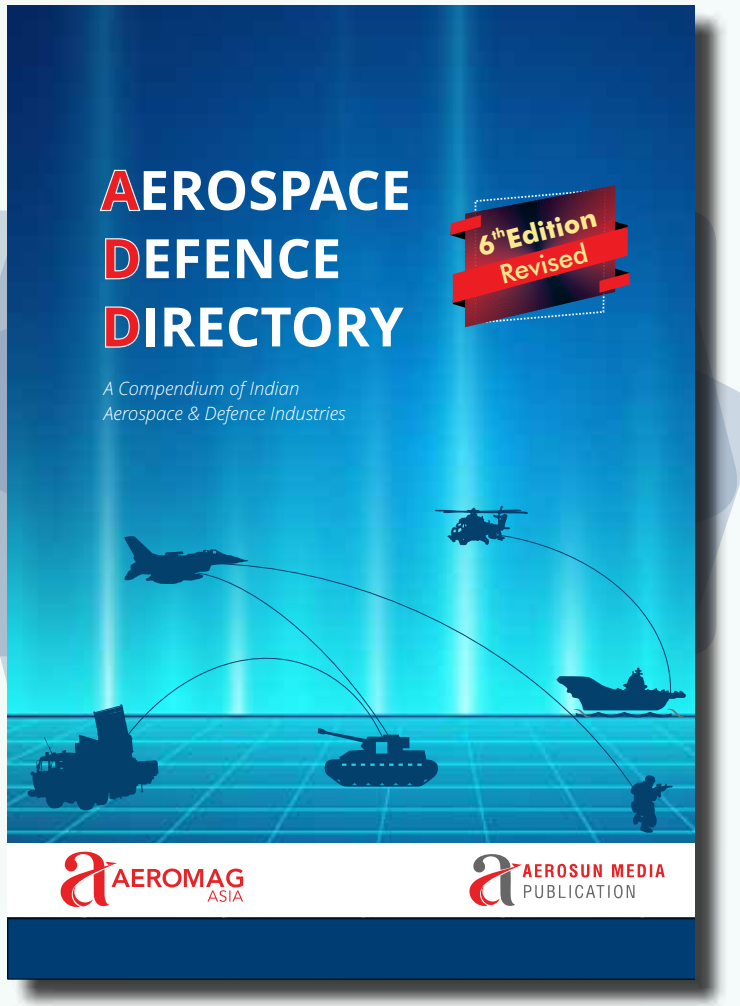

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