

CDS @ DEFEXPO 20
FEBRUARY 6 | LUCKNOW



BANDHAN

EVENTS ON FEBRUARY 7, 2020

Bandhan, a ceremony for signing of MoUs, launch of products and major announcements, will be presided by Raksha Mantri Rajnath Singh.

Handing over of LUHIOC Certificate Ceremony, handing over of Licensing Agreement for Transfer of Technology of DRDO to Industries, Exchange of "MoU between UPEIDA and DRDO" to provide Technology Support to UP Defence Industrial Corridor, Signing of MoUs and Major Announcements.

FIRST INDIA-AFRICA DEFENCE CONCLAVE HELD IN LUCKNOW



RAKSHA MANTRI RAJNATH SINGH ADDRESSING THE FIRST INDIA-AFRICA DEFENCE MINISTERS' CONCLAVE 2020, ON THE SIDELINES OF THE DEFEXPO 20, IN LUCKNOW ON FEBRUARY 6, 2020. THE MINISTER OF STATE FOR AYUSH (INDEPENDENT CHARGE) AND DEFENCE, SHRIPAD YESSO NAIK AND THE CHIEF OF DEFENCE STAFF (CDS), GENERAL BIPIN RAWAT ARE ALSO SEEN.

Raksha Mantri Rajnath Singh today signalled India's readiness to take the defence engagements with the friendly African countries to the next level. Addressing the India-Africa Defence Ministers Conclave in Lucknow today, on the sidelines of DefExpo 20, Rajnath Singh said "India will continue to intensify and deepen engagement. It will be a partnership guided by your priorities. More specifically on the defence cooperation, these include strengthening cooperation and mutual capabilities in combating terrorism and extremism, keeping our cyberspace safe and secure and supporting the UN in advancing and keeping peace." 12 Defence Ministers and 38 Countries represented the India-Africa Defence Ministers' Conclave on February 6, 2020.

He added that New Delhi looks forward to deeper cooperation in the domain of defence industry including through investment, joint ventures in defence equipment, software, digital defence, research and development, provisioning of defence equipment, spares and their maintenance. He said "rapid strides made by the Indian defence industry - both public and private, and defence R&D has opened up new vistas for cooperation to take our engagement to the next level. Indian defence manufacturing companies are now partnering

with some of the leading names in the business and are part of their global supply chains".

He added "India is geared up to provide Offshore Patrol Vessels (OPVs), Fast Interceptor Boats, body and vehicle armour, Night Vision Goggles (NVGs), Unmanned Aerial Vehicles (UAVs), Dornier aircraft, and arms and ammunition to our African counterparts."

Raksha Mantri Rajnath Singh also offered to share India's experience in Implementing initiatives like iDEX (Innovations for Defence Excellence) and Make-II Procurement Procedure, for small, innovative solutions to a plethora of defence needs and challenges faced by the African countries. Raksha Mantri stressed that "our partnership with Africa is an open partnership with all the possibilities and avenues for collaboration from our side being open to you to choose from and decide as per your priorities."

Reiterating that the guiding principles given by Prime Minister Narendra Modi for India's engagement with Africa has deepened economic and security cooperation with its maritime neighbours he said Maritime security in the region is a matter of common interest for both India and Africa, which is highlighted by the Government's emphasis on SAGAR (Security and Growth for all in the Region) for the Indo-Pacific region.

"Our partnership with Africa is an open partnership with all the possibilities and avenues for collaboration from our side being open to you to choose from and decide as per your priorities."
—RM Rajnath Singh

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RAKSHA MANTRI RAJNATH SINGH AND SENIOR MOD OFFICIALS WITH DELEGATES OF THE FIRST INDIA-AFRICA DEFENCE MINISTERS' CONCLAVE 2020



(LEFT) RAKSHA MANTRI RAJNATH SINGH ADDRESSING THE FIRST INDIA-AFRICA DEFENCE MINISTERS' CONCLAVE 2020. ALSO SEEN ARE RAKSHA RAJYA MANTRI SHRIPAD NAIK AND DEFENCE SECRETARY DR AJAY KUMAR. (RIGHT) DEFENCE SECRETARY DR AJAY KUMAR ADDRESSING THE FIRST INDIA-AFRICA DEFENCE MINISTERS' CONCLAVE 2020. ALSO SEEN IS RAKSHA RAJYA MANTRI SHRIPAD NAIK.



RAKSHA MANTRI RAJNATH SINGH CHAIRING THE FIRST INDIA-AFRICA DEFENCE MINISTERS' CONCLAVE 2020. ALSO SEEN ARE RAKSHA RAJYA MANTRI SHRIPAD NAIK, CHIEF OF DEFENCE STAFF GENERAL BIPIN RAWAT, CHIEF OF THE NAVAL STAFF ADMIRAL KARAMBIR SINGH, CHIEF OF THE AIR STAFF AIR CHIEF MARSHAL R.K.S. BHADIAURIA, CHIEF OF THE ARMY STAFF GENERAL M.M. NARAVANE AND DEFENCE SECRETARY DR AJAY KUMAR.

Raksha Mantri said India's security relations with Africa have centered on providing training to African Service personnel, participation in United Nations peacekeeping efforts on the continent and maritime cooperation.

Raksha Mantri stressed the importance of safe secure seas which were a pre-requisite for development of Blue economy in the region. He said that India recognized the common security challenges in the form of transnational crimes of piracy, trafficking of drugs, arms and humans and illegal fishing. In the light of these challenges there was a call for stronger partnerships for capacity building, information sharing and surveillance, he added.

LUCKNOW DECLARATION

The 1st India-Africa Defence Ministers' Conclave adopted an 18-point Lucknow Declaration in the run-up to India-Africa Forum Summit-IV. Some highlights:

- Collaboration in the fields of peace & security, including UN Peacekeeping
- Call for deeper cooperation in Defence Industry
- Recognise terrorism and extremism as common security challenges
- Urge all countries to resolutely act against terrorism, terrorist safe havens and infrastructure, disrupting terrorist networks and eliminating financing channels and halting cross-border movement of terrorists
- Understand the need for all countries to ensure that all territory under their control is not used to launch terrorist attacks on other countries in any manner
- Call for strengthening the UN Counter-Terrorism mechanisms and ensure strict compliance with the UN Security Council sanctions regime on terrorism; urge international community to envisage the adoption of Comprehensive Convention on International Terrorism in the UNGA
- Increase cooperation in securing sea lines of communication, preventing maritime crimes, disaster
- Welcome the AU vision for peace and security in Africa that coincides with India's vision of SAGAR (Security and Growth for all in the Region).
- Support the great strides in reducing the number of violent conflicts in the African continent, continue to support the African Union Mission in Somalia (AMISOM) and other Africa-led efforts to enhance peace and security.
- Support initiatives such as African Peace and Security Architecture (APSA), Silence The Guns in Africa and Agenda 2063.

He said India's increased engagement in the region has enabled it to be the first responders in providing humanitarian assistance in times of crisis like cyclone Idai in Mozambique and more recently, cyclone Diane in Madagascar.

The Conclave adopted India-Africa Declaration on Defence Cooperation.

Raksha Rajya Mantri Shripad Naik, Chief of Defence Staff Gen Bipin Rawat, Chief of the Naval Staff Admiral Karambir Singh, Chief of Air Staff Air Chief Marshal R.K.S. Bhadauria, Chief of the Army Staff General M.M. Naravane, Defence Secretary Dr Ajay Kumar, Senior officials of Ministry of Defence and Ministry of External Affairs were present. ●

RAKSHA MANTRI MEETS FOREIGN DELEGATES



(L-R) RAKSHA MANTRI RAJNATH SINGH WITH LT GENERAL ROKOTONIRINA RICHARD, DEFENCE MINISTER OF MADAGASCAR; RAKSHA MANTRI WITH THE SOMALIAN DELEGATE AND RAKSHA MANTRI WITH THE DELEGATE FROM CONGO.



FIFTH INDIA-RUSSIA MILITARY INDUSTRIAL CONFERENCE



MOU ON MANUFACTURE OF SPARES IN INDIA FOR RUSSIAN-ORIGIN MILITARY EQUIPMENT BEING SIGNED IN THE PRESENCE OF DEFENCE SECRETARY AJAY KUMAR AND RUSSIAN DEPUTY MINISTER FOR INDUSTRY AND TRADE OLEG RAYZANTSEV.

India has asked Russia to speed up legislation to enable its OEMs to form joint ventures for the manufacture of critically needed spare parts for Russian military equipment in India. This request was made by Defence Secretary Ajay Kumar to the visiting Russian Deputy Minister for Industry & Trade Oleg Rayzantsev at the 5th India-Russia Military Industrial Conference on the occasion of DefExpo20 on February 6.

It is a follow-up of the India-Russia Inter-Governmental Agreement (IGA) signed during the Vladivostok Summit meeting between Prime Minister Narendra Modi and Russian President Vladimir Putin in September 2019.

The IGA provides for a framework for partnership between Russian OEMs and Indian Industry for joint manufacturing of spares, components and aggregates of Russian equipment in use by the Indian armed forces.

India asks Russia to speed up legislation allowing manufacture of military spares in India

Under the IGA, India will provide assurance of order to manufacturing facilities created under this IGA, on a single vendor basis for a period of not less than 5 years with the objective of lowering of cost, reduction in time frame of supplies and progressive indigenization of production of spares. There's a provision of extending this IGA to provisioning of MRO services by Indian companies in collaboration with Russian OEMs.

"In order to address some bottlenecks, I would like to request Russian Deputy Minister for Industry & Trade Ryazantsev for his assistance to expedite amendment in Russian legislation so that nominated Russian OEMs may form joint ventures with Indian companies for production in India and create a mechanism for timely response of Russian side towards list of spares shared by Indian side," Defence Secretary Kumar said during his address at the Conference.

In response, the Russian Minister said the list of over 1,000 spares provided by India for ships, submarines and aircraft is being reviewed with Russian sub-contractors. "We're asking India to add to this list," Rayzantsev said, while seeking to assure India that efforts are underway to create a legislative basis to action the IGA.

Terming Russia a "natural partner" for the 'Make in India' initiative, Defence Secretary Kumar announced that India had promulgated guidelines in December 2019 to specify processes to be followed for the manufacture of Russian spares under the IGA. At the Conference, the first RFP under this IGA was handed over by the Indian Navy's Chief of Material, Vice Admiral G.S. Pabby to the Russian side for the manufacture of specified spares for the next seven years. The Defence Secretary disclosed that 7 more RFPs would be issued for naval spares in the next two months. Similar cases are being processed by the other Services.

Several MoUs were signed at this Conference in addition to the 7 already in existence over the last two years. For aviation systems, Missile companies BDL and AlmazAntey signed an MoU for production of sub-systems of Air Defence Missile Complex, Air Defence gun and life extension of missiles.

For land systems, an MoU was signed by Punj Corporation and Uralgaza-vod for spares of battle tanks. In the area of naval systems, Vista Consoles & Electronics signed up with AgatMoruinformsystem. Another one was signed by BHEL and Rosboronexport/Arsenal. Six more MoUs were signed for high-end technologies which have a Defence application.

Presentations were made by the Services at the Conference on opportunities under the IGA. Russian and Indian Industry representatives also made presentations on the possibilities, which was followed by Business-to-Business panel discussions. ●

—Vishal Thapar

SEMINAR ON INDIGENISATION OF DEFENCE PRODUCTION

The issue of indigenisation is critical to India's force modernisation efforts given its plans to spend \$130 billion on defence procurements in the next five years alone.

IIT Madras partnered news portal Bharatshakti.in to conduct a seminar on Indigenisation of Defence Production on February 6 as a DefExpo 20 event.

The issue of indigenisation is critical to India's force modernisation efforts given its plans to spend \$130 billion on Defence procurements in the next five years alone.

Lt General P.R. Shankar (Retd) Professor of Practice, IIT Madras delivered the Opening Address and dwelt upon the issue of harnessing the potential of our institutions of excellence that needs to be dovetailed into our research and technology development endeavours in the defence sector.

Vice Admiral M.S. Pawar, Deputy Chief of Naval Staff (DCNS) delivered the inaugural address. He highlighted the Navy's commitment to indigenisation and the requirement of R&D establishments gearing up to provide technological support for user requirements. He explained the steps initiated for a closer user and R&D establishment interaction. The Navy has been pursuing indigenisation most fruitfully for decades, the results of which are quite visible when our shipbuilding and submarine construction capabilities are assessed.



VICE ADMIRAL M.S. PAWAR,
DEPUTY CHIEF OF THE NAVAL STAFF (DCNS)

The seminar had two technical sessions. The first one was devoted to synchronising the Academia and Defence Industry relationship. The issue was analysed by three senior professors of IIT Madras, including Professor V. Kamakoti, who is also a member of the National Security Advisory Board. Professor H.S.N. Murthy and Professor A. Ramakrishna were the two other speakers.

The Second Technical Session was chaired by Lt General Raj Shukla, Director General Perspective Planning of Indian Army. The speakers included P. Udaykumar Director, National Small Industries Corporation (NSIC). Industry was represented by Commodore B.B. Nagpal (Retd), Chairman and Managing Director Goa Shipyard. Dr S. Guruprasad Director General R&D, Defence Research and Development Organisation (DRDO) provided insights into the efforts of R&D establishments.

Deputy Chief of the Air Staff Air Marshal Sandeep Singh delivered the closing address and reiterated the need for the multifarious agencies in the defence sector to synergise their strengths to indigenise the inventories of the forces. ●

—Vishal Thapar



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UP AWAITS TO UNFURL THE DEFENCE POSSIBILITIES TO THE WORLD

Being held in the capital of Uttar Pradesh, Lucknow, the DefExpo 20 has brought sufficient spotlight on this northern India state and its emergence in the times to come. The 11th edition of the biennial exhibition also has an entire pavilion dedicated to the state's defence infrastructure. The major highlight during the show has been the Uttar Pradesh Defence Industrial Corridor. In 2018, Prime Minister Narendra Modi announced two Defence Industrial Corridors to be established in the country – one in Uttar Pradesh (UP) and another in Tamil Nadu. Making use of the opportunity that the DefExpo 20 has given to the state, a seminar was conducted on the second day of the exhibition about the Corridor. It was an attempt to ideally market about the corridor and attract prospective investors. The seminar was graced by Raksha Mantri Rajnath Singh and Chief Minister Yogi Adityanath along with Cabinet Minister of Industrial Development, Government of Uttar Pradesh, Satish Mahana.

Highlighting the significant impact that the corridor will have on the development of the state and the eminent contribution it will make in India's defence industry, Group President and CEO, Mahindra Aerospace and Defence Sector, S.P. Shukla remarked that this corridor can create about 2,50,000 jobs, hence cater to the employment ratio. The employment enhancement was further highlighted by Mahana who said that when MSMEs and bigger players come together then more employment is guaranteed. "The availability as well as the reasonable price of nodes like Agra and Chitrakoot ensure the presence of land to build the infrastructure. Such points ensure the faster execution of the plan," he added. As part of the UP defence corridor, six major nodes were identified: Aligarh, Agra, Jhansi, Chitrakoot, Kanpur and Lucknow. At the start of the DefExpo 20, the CM announced



RAKSHA MANTRI RAJNATH SINGH ADDRESSING THE GATHERING ON HIS VISIT TO UP PAVILION SET UP IN DEFEXPO 20 IN LUCKNOW

that three more nodes Ghaziabad, Meerut and Gautam Buddh Nagar have been added to the list.

The CEO of UP Expressways Industrial Development Authority (UPEIDA), Awanish Kumar Awasthi, took the opportunity to talk about the related schemes like one district, one product scheme, the Nivesh Mitra scheme, etc. He also acknowledged the presence of delegation from Ukraine who have offered to create a defence hub in Jhansi. Awasthi further invited them to have a word with the CM right after the seminar. "We are committed towards the UP Defence Corridor project and I want to mention here that within days clearance will be given to potential proposals. By February 28, all the MoUs (Memorandum of Understanding) that we will sign tomorrow as part of 'Bandhan' (the ceremony of signing MoUs, to be held on February 7 at DefExpo 20) will be cleared," Awasthi added.

Among other things, the CM talked about the 17 smart and safe cities being transformed in the state and the largest airport of Asia also being constructed in Jewar, UP. With the aim to showcase the swift development happening in UP, he also highlighted the air traffic increase in the state and the creation of over 35 lakh job opportunities in the last two years since the defence corridor was announced.

Congratulating the CM on the development in the state and the underlining the guaranteed enhancement of India as one of the largest defence manufacturing hub with the UP Defence Industrial Corridor, the Raksha Mantri called on the investors to come and explore the possibilities that the state and the nation awaits in the field of defence and aerospace. ●

—Ayushee Chaudhary



STRATEGIC MATERIAL PARTNER IN KEY NATIONAL PROGRAMMES

MIDHANI is Mini-Ratna, Category-I Public Sector Company under the Ministry of Defence and a Strategic Material Supplier to the Indian Defence, Space & Energy sector. Dr Dinesh Kumar Likhi, Chairman & Managing Director of MIDHANI, talks about the company's presence in the strategic sector and other wide range of operations undertaken.

Question (Q): MIDHANI has decades of experience in the defence, space and energy sectors. Can you share in detail the major areas/sectors operated by MIDHANI?

Answer (A): MIDHANI operates mainly in Defence, Space, Energy & Commercial sector. In line with the thrust given by Government of India (GoI) on "Defence preparedness", MIDHANI has focused more on Defence sector. Presently majority of MIDHANI products cater to strategic sectors and applications of Air, Naval, and Land Forces etc.

In addition, MIDHANI also supplies special alloys to private commercial sector which also finally goes into Defence and Atomic energy sectors of our country. Traditionally defence has been a key sector, but in the last couple of years; Space & Energy has contributed significantly to MIDHANI growth.

Our Product Portfolio is in three major areas:

- Super Alloys: Iron, Cobalt, Nickel Base
- Special Alloys: Ferritic, Austenitic, Martensitic, Maraging and Precipitation Hardened
- Titanium Alloys: Commercially Pure Titanium & Titanium Alloy.

Q: How important is Research & Development (R&D) to your company?

A: For a company like MIDHANI, R&D is critical for sustenance & growth.

Our focus areas for R&D are: Product Development, Process Design & New Alloy Development. Annually ~ 3 per cent of revenue is invested back into research activities. We have an in-house Research and Development team having expertise in the design and development of special metals and alloys. The Team continuously works towards improvement of Product quality and Process innovation to meet the expected demands at acceptable costs.

Also, "Technology Advisory Board" comprising of eminent personalities in

the field of Metals and Materials guide us on the required technologies for the development of new products.

Q: Has MIDHANI safe guarded its innovations by filing patents? Also what is MIDHANI's take on Artificial Intelligence?

A: In today scenario, patent filling have become very critical. We are invested in Intellectual Property Right (IPR) in a big way. In FY 18-19, our officers were trained on intricacies of IPR. Around 50 Trademarks/Copy Rights were filed during the year. We expect to see some positive results in the next 2-3 years.

On Artificial Intelligence (AI), we have conducted a one day workshop with industry experts and academicians. A task force has been constituted to work in the area. In the coming year, we will be leveraging AI to develop new alloys & predictive model few grades of special steel.

Q: Can you share details of MIDHANI's indigenisation efforts?

A: MIDHANI has indigenously developed equipments using in-house design capability & leveraging local vendors (MSEs). These equipments have been designed to manufacture wide range of alloys.

Q: What is your future strategy for MIDHANI?

A: FY 19-20 looks very promising with a strong order book position of ₹1,800+ crore. Also, we have forged several partnerships with multinational and Indian companies to enter into new areas i.e. Power Generation, Oil & Gas applications; Tubacex, Development of powders for Additive Manufacturing - International Advanced Research Centre for Powder Metallurgy and New Materials. Our investments in different sectors during the last two years will start reaping benefits in the coming year. ●

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THE OLDEST AND THE LARGEST DEMOCRACIES COME TOGETHER TO ENHANCE DEFENCE MANUFACTURING

US highlights its belief in India's abilities to soon be a successful manufacturing hub.



(LEFT) DEFENCE MINISTER RAJNATH SINGH ADDRESSING THE INDO-US DEFENCE INDUSTRY AND MAKE IN INDIA BY USIBC;
(RIGHT) SEMINAR ON INDO-US DEFENCE INDUSTRY AND MAKE IN INDIA BY USIBC IN PROGRESS.

Converging capabilities, goals and objectives, the dedication between India and the United States of America (US) to maintain a strong strategic partnership with each other was once again highlighted during the DefExpo 20. The representatives of the largest democracy in the world, India, and one of the oldest democracies in the world, the US, got together during a seminar organised by the US India Business Council (USIBC) on the second day of the biennial exhibition. The focus of the seminar was around the US defence industry contribution towards 'Make in India' that highlighted the US-India partnership for defence and aerospace specifically around the indigenisation of defence manufacturing in India.

Dennis D. Swanson, Vice President, International Sales, Defence Space & Security, Boeing set the context for the seminar as he specified how defence cooperation strengthens through informational exchange, and coming together of research & development, and manufacturing.

Lockheed Martin's Director for Asia, Dave Sutton remarked that the defence industrial relationship has been a hallmark of the India-US strategic tie-up and how the business opportunities that they saw in India when they started have only continued to grow. Sutton also said, "I would say India has already emerged as a defence manufacturing hub in context of the opportunities that are in front of us. Evidences in the form of the success of the DRDO, the successful landing of the naval variant of Tejas on INS Vikramaditya, and many other major recent arrangements are only testaments to that."

The seminar that was a clear indication of the US' belief in India's defence

future and its abilities to become a manufacturing hub as well as its commitment to ensure that it succeeds in doing so.

Among the dignitaries who were a part of the seminar panel were Raksha Rajya Mantri, Ministry of Defence, Government of India, Shripad Yesso Naik along with Minister for Industries, Commerce, Information Technology, Government of Andhra Pradesh, Mekapati Goutham Reddy, and Captain Daniel Fillion from the US Embassy. Naik extended India's support to the US laws and ensured a long-standing strong partnership. "We would endorse to go by the rules rather than going by force. And the presence of this huge delegation from the U.S. here is an indication that this companionship will go to new heights in the coming future" he said.

While Reddy pointed out that even though federal government brings out the laws, the last mile connection is by the states. Bringing to light the Tiger Triumph exercise held in Andhra Pradesh in 2019, he displayed the focus and significance of his state in the defence sector. Tiger Triumph is a bilateral tri-service amphibious military exercise involving the armed forces of India and the United States. He also underlined that his state is focused on infrastructure-led development.

The collaboration and synergising of the two nations around the defence industry was further brought to emphasis with the presence of India's Raksha Mantri, Rajnath Singh, at the seminar who ensured that the opportunities in the field of defence will only increase in the times to come. "Reforms have been made and we will not stop here," he added. ●

—Ayushee Chaudhary

KALYANI GROUP AND ARSENAL FORM A STRATEGIC ALLIANCE

Kalyani Strategic Systems Ltd (KSSL), The Defense Arm of Kalyani Group and Arsenal Joint Stock Company, Bulgaria signed a Memorandum of Understanding (MoU) to form a strategic alliance in India for manufacturing small arms and ammunition.

KSSL and Arsenal will be aggressively developing a manufacturing capability in India for the "AR" 7.62 x 39mm Assault Rifle and "MG" 7.62 x 51mm Machine Gun series. The Strategic Alliance is also actively participating in the projects for meeting the Army's requirement of certain types of ammunition over a ten-year program. Arsenal small arms have been in active operations in India for decades and have a proven record of performance.

Rajinder Singh Bhatia, Chairman KSSL said: "We are very excited to enter the Small Arms segment. This Strategic Alliance will combine Arsenal's Proven technology, knowledge and experience as an OEM with world class design, development and manufacturing capabilities of the Kalyani Group. The Strategic Alliance will provide indigenously manufactured, desired high performance and economic solutions for the Armed Forces, thereby furthering the 'Make in India' initiative of the Government."

Hristo Ibouchev Executive Director, Arsenal 2000 JSCo said: "Arsenal is proud to be the first Defence OEM in Bulgaria to become an active participant in the 'Make in India' programme with Kalyani Group as its partner for assault rifle, machine gun and ammunition for Ministry of Defence, India." ●



(L-R) HRISTO IBOUCHEV, ARSENAL WITH BABA KALYANI, BHARAT FORGE AND COL. RAJINDER BHATIA, KSSL

50 KGS SIDE BLAST PROTECTION



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MAZAGON DOCK SHIPBUILDERS LIMITED: SHIP BUILDER TO THE NATION

In conversation with Vice Admiral Narayan Prasad (Retd), Chairman and Managing Director, Mazagon Dock Shipbuilders Limited, one of India's leading Defence PSU shipyard under the Ministry of Defence

Question (Q): What products and capabilities is MDL principally showcasing at Defexpo 2020, and in which areas is it seeking partnerships and collaborations?

Answer (A): In the MDL stall at the Defexpo, the shipyard will be showcasing their three (3) premier product viz. Destroyer, Frigate and Submarine that are being built for the Indian Navy. MDL is also showcasing its multifaceted capability for building warships and merchant vessels. Further MDL would like to export a wide range of smaller vessels (platforms), render services, export products by entering into global supply chain and also spearhead infrastructure development in MDL target countries for export. The brochures, translites, standees, product leaflets will be distributed at MDL stall towards this end.

MDL is also organising a half day seminar with the theme transformation in Ship Design and Construction with participation from the Indian Navy, Captains of the industry, Shipyards, Private vendors, academia and DPSUs. This seminar is envisaged to service as a platform for also having an interaction in some of the above aspects.

As regards partnership and collaboration, MDL will be signing three (3) MoUs in the MoU event slated for February 7, 2020. The MoUs are pertaining to casting, spare parts supply and also with an umbrella organisation for facilitating vendor development in UP defence corridor.

As regards specific products, MDL is launching three (3) AI enabled products as follows:

- AI enabled Radiography inspection of weld for Shipbuilding application
- AI enabled Ultrasonic Non-destructive inspection of weld for Shipbuilding application
- AI enabled Remotely Operated Vehicles (ROV) that can carry out functionalities of underwater imaging, underwater thickness measurement of Ship's hull and underwater cleaning of Ship's hull.

Two of the product will be launched from the India Pavilion on February 6, 2020 and one product will be launched from the central pavilion. Apart from the above, a hand change over switch and electrical panels developed in-house by MDL is also being showcased.

Q: In which areas is MDL seeking partnerships with domestic industry? What are its expectations from Defence Industrial ecosystem in India?

A: MDL is seeking win-win partnership from the domestic ancillary industry for sourcing critical equipment/components for Shipbuilding in commercial and defence sectors. Further, MDL is also seeking for partnership especially from Micro, Small and Medium Enterprise (MSME) industries in the country for supply of large numbers of Commercial Off-The-Shelf (COTS) items. In case of Warship building, the product requirement falls into four (4) categories viz. 'Fight' (weapons and sensors), 'Move' (propulsion system, communication and navigation systems), 'Float' (ship's hull) and 'Habitability' (hotel functions). MDL is open for partnership for equipment belonging to all the three (3) categories except 'Float' from the Indian industry in general and Pacific partnership for items/systems belonging to 'Fight' components. For the 'Fight' components, the defence industrial ecosystem is yet to mature.



(TOP) SECOND OF THE SIX SCORPENE-CLASS SUBMARINE KHANDERI, DELIVERED TO INDIAN NAVY; (ABOVE) GUIDED MISSILE DESTROYER IMPHAL LAUNCHED AT MDL, MUMBAI

Q: What are the technologies and capabilities required for Indian shipyards to be self-reliant in future submarine building programmes?

A: Design:

1. Acquire design capabilities starting from concept design, basic design and detailed design for production purpose.
2. Form Joint ventures with R&D organisations like DRDO, NSTL, NMRL, etc, institutions like IITs and Industry Organisations for Hydrodynamic and variety of other technologies such as propulsion, acoustic and stealth.
3. Creation of new testing facilities such as cavitation tunnels, signature measurement chambers, hyperbaric chambers, large scaled unmanned models and acoustic ranging basins.
4. Develop technical specifications for procurement of equipment, machineries and raw materials.

Procurement:

Qualification of vendors for design, manufacturing, testing and commissioning of main equipment's such as propulsion motor, diesel engines, HP air compressors, pumps and shafting, batteries, hull steel and combat system equipments.

Construction and Trials:

Submarine construction and trials requires huge infrastructure in terms of machineries, cranes, workshops, dry-docks, application software's, work stations and highly skilled manpower.

Q: What are your plans/view on autonomous vessels?

A: MDL intends to develop an autonomous underwater vehicle (AUV) for which already global expressions of interest has been floated. This autonomous vehicle is expected to perform specific military missions like mine hunting and mine neutralization at envisaged operating depth of 300 metres. This will be designed for operational endurance of approximately 12 hours.

Q: What are the major initiatives taken up in the last few years and what are your modernisation plans?

A: ● Development of Artificial Intelligence (AI) enabled products: Three products are being developed in collaboration with IIT Madras.

● International marketing team has been constituted and an export policy being firmed up with exports target and concerted efforts are being made for realizing exports.

● Two components of Industry 4.0 standards namely Project Life Cycle Management (PLM) & Virtual Reality (VR) Lab are already being implemented in live projects at MDL.

● An innovation cell has been created for infusing a culture of innovation along with an incentive scheme for innovation.

● R&D initiatives have been kick started in the MDL with approved policy in R&D and number of projects is being undertaken in this regard.

● An indigenous department has been formed which is spearheading all activities pertaining to indigenisation. ●

MDL is seeking win-win partnership from the domestic ancillary industry for sourcing critical equipment/components for Shipbuilding in commercial and defence sectors.



“WE PROVIDE THE OPPORTUNITY TO PROFESSIONALS AND THE INDUSTRY FOR DEVELOPING MILITARY INDUSTRIAL ENTERPRISES”
 —AVANISH KUMAR AWASTHI,
 CEO OF UTTAR PRADESH EXPRESSWAY INDUSTRIAL DEVELOPMENT AUTHORITY (UPEIDA)

Uttar Pradesh Expressways Industrial Development Authority (UPEIDA) was set up by the State Government for development of Expressways in Uttar Pradesh. This is a newly established Organisation and happens to be the nodal agency for the Defence Expo 2020 currently being organised in Lucknow from February 5 to 9, 2020.

The Government of UP has nominated UPEIDA as the Nodal Agency for land acquisition related works for Defence Corridor and execution, implementation and proprietorship of the Defence Corridor. Other plans of action have IIT Kanpur and IIT Kashi Hindu University Varanasi approved by Government of Uttar Pradesh for establishment of Centre of Excellence related with Defence Corridor. Technical institutes have started working for CoE and Utility Certificate has also been made available by above mentioned institutes. A proposal to establish the defence park as a joint venture of UPEIDA and IIT, Kanpur on 30 acre land proposed in Shivli near the IIT Kanpur has been forwarded to Department of Industrial Development by UPEIDA. Also, Uttar Pradesh Aerospace and Employment Promotion Policy have been published by Government of Uttar Pradesh with the objective of attracting investments in U.P. Defence Industrial Corridor. Swift action is being taken by UPEIDA regarding publishing of a policy related with allotment of land to the investors in U.P. Defence Industrial Corridor.

Talking to Senior Journalist Sanjay Bhatnagar about the DefExpo 20 event and the issues related to it, Avanish Kumar Awasthi, CEO of Uttar Pradesh Expressway Industrial Development Authority (UPEIDA) said “Prime Minister Narendra Modi had announced to have Defence Corridor in Uttar Pradesh at the UP Investors Summit in Lucknow in February 2018. We immediately launched the ground work for Corridor and created the one. After that, our Chief Minister Yogi Adityanath Ji thought to properly showcase it hence the Defence Expo”. Elaborating further, he added “There is no denying the fact that UP is the largest in terms of land bank, cheap and skilled manpower. In fact, we have a well-defined state policy to provide the opportunity to professionals and the industry to find new meeting grounds for developing military industrial enterprises. When the announcement of the Corridor was made about two years ago, it took us all this long to first complete the logistics of Defence Corridor and then get prepared for the Expo event in consultation with Prime Minister Office and Ministry of Defence on regular basis. As you know UP Chief Minister Yogi Adityanath ji always believed in proper systems and processes. We also moved about cautiously to create a conducive atmosphere first, then aspire for major investment in the sector.” On the aspect of how the state will benefit, Awasthi, who is also the Additional Chief Secretary (Home), said “Let us not forget that defence units don’t necessarily manufacture defence and war machinery. The idea is to move with times. We have radar systems, drone technology, cyberspace items and IT safety gadgets as well which can be manufactured here. Don’t forget that we have the largest police force in the country which can be helped by setting up units of small calibre weaponry. The special foods and modern war-fare clothes are also some of the areas we can embark upon. We are hoping to get investment worth Rs One Lakh crore. We have over one thousand companies from all over world registered in the Expo. We are also in talks with some big foreign players to ink at least 15 G2G MoUs”.

At the show, UPEIDA is showcasing Expressway highways, the defence corridor nodes, knowledge partners and Centres of Excellence (IIT-K and IIT-BHU), interactive arena for investors beside existing defence industries, commercial banks and UP police. ●

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INDIA, US MOVING AHEAD ON ISTAR UNDER DTTI

Talks on for cooperation in Air-launched UAS and Lightweight Small Arms Technology, Captain Daniel Fillion, Chief of the Office of Defense Cooperation at the US Embassy in New Delhi tells Vishal Thapar of SP's Team

SP's Team (SP's): What is the focus of the US presence at DefExpo 2020?

Captain Daniel Fillion (Fillion): US-India defence and security cooperation is rapidly expanding as part of our deepening strategic partnership. The focus this year at DefExpo is on supporting the US defence industry as it seeks to do more business here in India, and interacting with Indian defence manufacturers who are looking to be part of the global defence supply chain. US foreign military sales yield significant benefits to both India's national security and American and Indian workers, and we are optimistic that our countries will be able to build off of the progress already made.

SP's: What are the three big 'Make in India' success stories in Defence production which enjoy US support?

Fillion: BAE is delivering M777 Howitzers that were assembled at the BAE-Mahindra assembly, integration, and testing facility. Previously this has only been accomplished in the US and the United Kingdom. Boeing has partnered with Tata to build all AH-64 Apache fuselages at a joint facility in Hyderabad and Lockheed Martin has partnered with Tata to build all C-130 tails in Hyderabad. Knowledge that Indian engineers, tradesmen, and factory workers gain in these initiatives is helping to build the defence industry ecosystem here in India.

SP's: Could you identify some collaborations between US entities and Indian



BAE M777 ULTRA LIGHT HOWITZER

MSMEs which illustrate capability building for a Defence Industrial ecosystem in India and partnerships which American OEMs are looking for?

Fillion: We are looking forward to participating in upcoming Strategic Partnership Procurement Model cases, such as the Naval Utility Helicopter and Indian Air Force Fighter competitions. In these procurements, American firms will have to team with Indian partner firms to fulfill the Ministry of Defence's requirements.

SP's: What is the progress in the Lightweight Small Arms Technology project identified under the DTTI in 2019?

Fillion: We are looking at formalising our industry interactions on this project, identifying bilateral requirements, and defining the left and right limits of the scope of the case in terms of timelines, pricing, among other issues.

SP's: What is the update on the other two near-term projects under the DTTI: Air-launched Unmanned Aerial Systems and ISTAR? What is the progress in identifying partners?

Fillion: We are still in the requirements clarification stage for both of these projects. ISTAR (Intelligence, Surveillance, Target Acquisition, Reconnaissance) is moving forward a bit more quickly as we are coordinating closely with DRDO and the Indian Air Force on the co-development aspects of this important programme. ●

GSL: A MODERN YARD IN SERVICE OF NATION



"Modernisation in the Shipyard, besides other large scale measures undertaken in last 10 years played a major role in enabling Shipyard to scale newer heights in shipbuilding domain. This programme will be a driver for execution of advanced platforms such as Missile Frigates and Mine Counter Measure Vessels, adding another shipyard to the list who can construct weapon intensive warships."

— Cmdr Bharat Bhushan Nagpal, CMD, GSL

GSL has undertaken a massive modernisation drive in the last few years to increase its capacity multifold and setup infrastructure for indigenous construction of technologically advanced Vessels for the Nation's security requirements. With consistent yearly CAPEX in excess of ₹100 crore (approx), the Shipyard has created an enviable modern infrastructure boasting of 6000 T shiplift, dry berths, outfitting jetties, outfitting workshops and storage facilities, besides unique specialised facility for construction of advanced Mine Counter Measure Vessels (MCMVs) constructed with niche FRP technology. It's the only Shipyard in South Asia to have this unique capability of construction hulls for MCMVs in FRP. To GSL's credit, the entire modernisation drive has been executed without affecting the production schedule of Shipyard, in fact the production of the shipyard has seen an exponential increase. Immediate fallout of upgraded infrastructure has been selection of the Yard to execute shipbuilding Programme for construction of two Advanced Missile Frigates in collaboration with Russia, the production for which would commence in early 2020. With an eye on future technologies, the Yard has been instrumental in getting niche technologies to GSL with modern upgrades and through collaborations and tie-ups, thereby driving the GoI agenda of 'Make in India'. As the modernisation phase nears completion, GSL, on strength of technology adoption in recent years, is ready to take challenges in Shipbuilding and thereby keeping the Indian Defence ahead of its rivals. ●



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INNOVATIONS FOR DEFENCE EXCELLENCE (iDEX)

Innovations for Defence Excellence (iDEX) launched by the Government in April 2018, primarily aims 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 & academia, and provide them grants/funding and other support to carry out R&D which has good potential for future adoption for Indian defence and aerospace needs.

iDEX is funded and managed by a 'Defence Innovation Organisation (DIO)' which has been formed as a 'not for profit' company for this purpose by the two founder members i.e. Defence Public Sector Undertakings (DPSUs) - HAL & BEL. iDEX functions as the executive arm of DIO, carrying out all the required activities while DIO provides high level policy guidance to iDEX. This is the third and final part of a 3-part series detailing the objectives and activities of iDEX.

IPR MANAGEMENT

The ownership of IPR generated under the programme shall be owned by the company/institution/individual innovators who develop the IPR. However, the Government may put restrictions on transfer/licensing of technology/IPR developed under the programme on considerations of national security or other strategic reasons.

Government has Government Purpose Rights (GPRs) which are non-exclusive, non-transferable irrevocable license to use the intellectual property for internal consumption or manufacture. The Government may use this right to manufacture either directly or through sub-contractor. The Government shall be liable to pay license fee/ royalty fee for use of GPRs in intellectual property/technology/product. A royalty up to 2 per cent on each manufactured unit with a cap on total maximum royalty payable is included in the contract with innovator, if Government or its sub-contractor uses the intellectual property generated for defence manufacturing. The cap on total maximum royalty payable to the innovator shall be decided on a case-to-case basis.

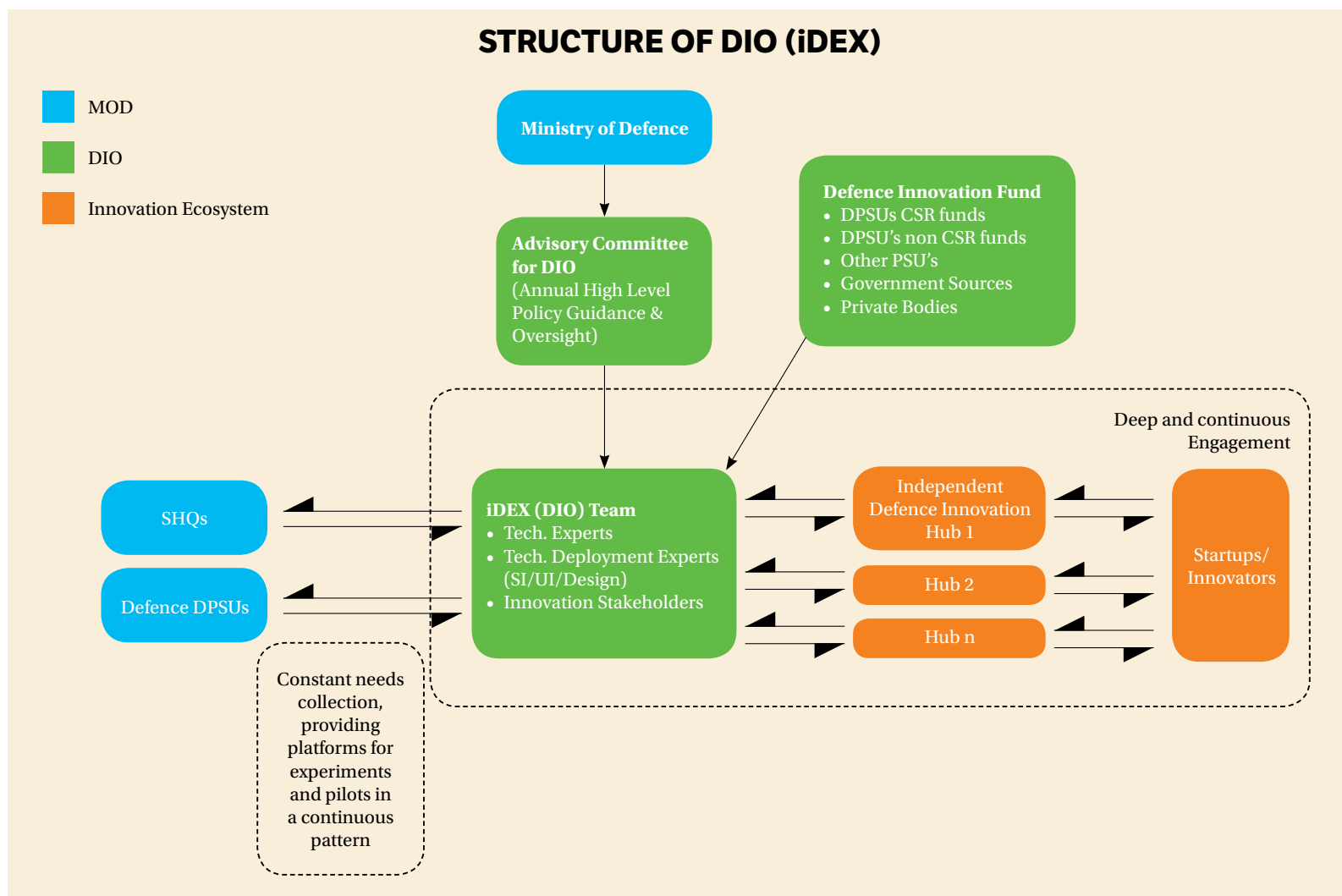
The Government has "March-In" rights for all items covered under its

GPRs for reasons of national security and other strategic reasons. "March-In" Rights shall include the right to work the patent, either by itself or by another entity on behalf of the Government, in cases where (i) the company/institution fails to work the patent on its own within a specified and reasonable period of time (ii) the effective management and control of the company/institution is taken over by a foreign company without the approval of the Government. The march in rights of the Government shall be subject to the payment of acquisition cost/licence fee/royalty fee by the Government or the concerned production agency.

The ownership of any rights by the contractor (entity receiving grants) does not include an absolute right to transfer of any software, product or documentation; and such transfer, including export thereof, shall continue to be governed by and be subjected to the export policy, export guidelines and all applicable laws, rules, regulations, orders and the instruction of the Government of India. Transfers and exports which require prior and explicit approval of the Ministry of Defence would require such approval to be taken.

In case of collaborative project, the ownership rights in the IP generated under

STRUCTURE OF DIO (iDEX)





PRIME MINISTER NARENDRA MODI LAUNCHING THE IDEX (INNOVATIONS FOR DEFENCE EXCELLENCE) SCHEME AT MAHABALIPURAM, TAMIL NADU ON APRIL 12, 2018.

project, upon dissolution of the collaboration, shall vest amongst the partners as per their agreement on the subject, without Government rights being adversely affected in any manner.

The company/institution/innovator (entity receiving support) shall be responsible for protecting and maintaining the IPs generated in the project. The Government and the company/institution/innovator shall set aside a certain amount of royalty or the licence fee, payable by the government for utilisation by the DIO in order to keep a track of the production out of the IPRs generated in the project. This royalty is finalised on a case-to-case basis and is part of contract with innovator. Export control regulations of Ministry of Defence apply to the export of technology or product developed in the project.

UTILISATION CERTIFICATE & ACCOUNTS

The entity receiving grant under this scheme is required to maintain proper

accounts and submit Utilisation Certificate, which shall be subject to verification/audit by the DIO appointed agency.

IDEX - CULTURE AND LEADERSHIP

It is important to point out the differentiating factor of iDEX, in terms of the significant cultural and leadership paradigm shift that makes it work effectively. iDEX works with minimal hierarchical control, embodying a flat structure and fostering a collaborative culture amongst the various stakeholders. The Defence innovation hubs would have to be given operational autonomy to enable the deployment of defence innovation in a timely manner. This autonomy also allows for the "Fail Fast, Recover Faster" policy - engage in multiple experiments, trying out existing and emerging platforms. Failures from these are identified and weeded out early in the cycle, winnowing the successful pilots towards faster scaling up.

This attitude is established by visionary leadership for DIO (iDEX). The leaders of iDEX have a fiercely independent mindset with the willingness to take on rigid bureaucracies to keep true to the vision of iDEX's role in making India's defence production establishment self-sufficient. They need core technology adoption/commercialisation experience from across sectors. Direct access and support from the MoD is crucial for taking on high-return risky projects which require extensive discretion in decision making. Finally, the leaders will need to work with a startup mindset, initiating multiple pilot projects early and shutting down the failures without hesitation.

ACTIVITIES WHICH CANNOT BE FUNDED

- **Cost overruns:** The entity shall bear the additional cost in case of cost overruns.
- Cost of land and buildings
- Establishment of new R&D centers
- Writing of books or reports or collection of statistics or service
- Interest
- Bad debts
- Contributions or donations
- Fines and penalties
- Advocacy and business development
- Loss of other contracts
- Expenditure incurred by applicant before the approval of the project
- Re-financing
- Entertainment ●

NAVAL GROUP PRESENTS ITS LEADING TECHNOLOGIES AT DEFEXPO

From February 5-9, 2020, Naval Group is participating in the eleventh edition of DefExpo, the land, naval and internal homeland security systems exhibition of India. Naval Group is showcasing its successful efforts in building industrial partnerships with Indian industry and shipyards and presenting the state-of-the-art innovations created for modern navies at their booth, demonstrating its capabilities in modern ship and submarine building and servicing along with high tech naval solutions.

Naval Group's cutting-edge technologies include:

SMX 3.0: With a displacement of 3,000 tonnes, SMX 3.0 integrates the latest digital technologies for strengthened operational efficiency and significant versatility of use. Naval Group and Dassault Systèmes are partnering on this project to design a ship tailored to improve the level of comfort for the women and men onboard. The on-board data systems are now completely interconnected, robust, secure, fast and upgradeable.

Scorpene: This submarine is capable of carrying out all types of missions, such as anti-surface vessel warfare, anti-submarine warfare, long-range strikes, special operations or intelligence gathering. It is extremely stealthy and fast, and is equipped with weapon launching tubes, and various weapons (torpedoes, missiles, mines). Over 14 Scorpene submarines were sold by Naval Group internationally.

Belh@rra: This combat and crisis management frigate empowers modern navies, who seek to adapt to the digitisation of the warfare. Ensuring naval supremacy, this compact all-digital frigate performs all the operations conducted by large surface vessels with increased precision and high level anti-air, anti-surface, anti-submarine and anti-asymmetric warfare capabilities.

F21 Heavy Weight Torpedo: The French navy's heavy weight torpedo offers advanced selfguided mode, shallow and confined water capabilities. The alumin-



INS KHANDERI AT SEA

ium silver oxide technology which allows the torpedo to enjoy higher range and maximum available speed, making it a much more lethal weapon than other available torpedoes. The F21 offers maximum safety, as it is designed to never explode on-board a submarine even in case of fire on the platform or accidental firing. Naval Group as a manufacturer, integrator as well as developer of the advanced combat management systems of these torpedoes also undertakes the complex task of seamless integration of this torpedo on-board the Scorpene submarines.

Naval XPlore: Naval Group innovates by introducing the Naval XPlore for the 50th edition of the exhibition. To respond to the needs of customers, Naval Group created an interactive digital environ-

ment to present its customer-specific offers in immersive settings to the navies coming to DefExpo.

A long-lasting industrial cooperation by Naval Group India created in 2008 as 100 per cent owned subsidiary of the group is dedicated to create sustainable and sovereign industrial partnership in naval defence in India. Having established for more than a decade the Indian subsidiary with dedicated support from the French headquarters, have paved the way for many successful project milestones synced with the 'Make in India' policy of the Indian Government. The P75 program is an illustration of the successful indigenisation process wherein, the fourth made-in-India Scorpene class submarine, the Vela, was launched in Mumbai on May 6, 2019, and INS Khanderi, the second of P75 Scorpene class submarine was commissioned on September 28 last year in the hands of Raksha Mantri Rajnath Singh. ●

—Rear Admiral R.K. Shrawat (Retd), CMD, Naval Group India



A STRONG AND COMMITTED PARTNER TO THE 'MAKE IN INDIA' VISION

SP's Team interacts with **G.S. Selwyn**, Managing Director, MTU India, in the background of DefExpo 2020

SP's Team (SP's): What are you showcasing at the DefExpo?

G.S. Selwyn (Selwyn): Our focus at the DefExpo 2020 is to showcase our capabilities to partner India in both land and naval defence. From our Rolls-Royce Power Systems portfolio, we hope to familiarise our Indian defense customers with the MTU Marine Automation EM 50-2 Integrated Bridge System. We would also like to highlight the MTU 8V199 engine suitable for tracked and wheeled military vehicles. It is a highly compact, turbocharged and water-cooled machine which can be easily adapted to the customer demands. We remain committed to serving India's defence needs through our vast portfolio of technologically advanced products, as well as through collaboration for co-development initiatives.

SP's: How are you supporting 'Make in India'?

Selwyn: Rolls-Royce has been a proponent of the 'Make in India' vision for over 60 years, having pioneered the manufacturing partnership model for our engines to be 'Made in India' under license by HAL in 1956.

Today, Rolls-Royce continues to be a strong and committed partner to the 'Make in India' vision of the Indian government. Rolls-Royce Power Systems enjoys a strong presence in India with its Pune-based MTU business that has been supporting sales and servicing of MTU engines. We have formed a joint venture with automaker Force Motors named Force MTU Power Systems. As part

of the joint-venture, Rolls-Royce Power Systems will move the manufacturing of its entire line of 1,600 series MTU engines from Germany to the manufacturing facility near Pune by 2020. In addition, our engineering centre in Pune delivers excellent solutions to the Marine and Power Systems businesses. Our talent pool of high-skilled engineers, support research and development programmes. Our training centre in Pune also provides classroom training and hands-on learning experience on various Engines and Controls. We are also proud that MTU engines power India's indigenously built Arjun Main Battle tank and will remain keen to support such programmes.

SP's: What are the opportunities you see in the Indian Naval market?

Selwyn: We are looking at the DefExpo as a significant platform as India continues to re-evaluate its military needs and pursues modernisation of its warfare technologies. We already power several vessels of the Indian Navy and Coast Guard. Our latest offering is the MTU Marine Automation EM 50-2 Integrated Bridge System. Looking to the future, our 'Propulsion System Integration' (PSI) capability will further help in offering of complete drive-line integrated system solutions to naval customers across the world. Rolls-Royce is firmly committed to serve the needs of the Indian Navy and is keen to customise its advanced technology products to best serve the Navy's power needs. ●

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TATRA TRUCKS is one of the world's oldest automotive company with a manufacturing tradition reaching back 168 years. TATRA all-wheel drive off-road vehicles with a unique chassis concept, which is based on a backbone tube and independent swinging half axles made in drive configurations ranging from 4x4 to 16x16, are the key element in the equipment of the Army of the Czech Republic while also being used by armed forces all around the world. 80% of the production of the company is exported and aside from standard model ranges, customized trucks are also tailor-made for customers. ●



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TACTICAL HERON JOINS IAI/MALAT'S UAS STABLES

IAI's MALAT has extended the Heron Family of Unmanned Aerial Systems (UAS), adding a lighter weight variant optimised for tactical operations. The new tactical Heron offers the Heron capabilities customers have already become accustomed to, in terms of size, weight, robustness, and operational flexibility matching tactical operations.

The T-Heron can fly at a maximum speed of 120 kmph, climb to a maximum altitude of 24,000 feet and remain on a mission for 24 hours. With a maximum takeoff weight of 600 kg, less than half the weight of the Heron I, the T-Heron can carry a useful weight of 180 kg, supporting multiple sensors for reconnaissance and intelligence surveillance and ongoing surveillance missions. On each mission, T-Heron can carry few payloads, including radars, EO/IR, SIGINT, COMINT, along with broadband datalinks, operating in line-of-sight and over a satellite terminal, supporting the simultaneous download of information from all payloads. Maintaining a cruising altitude of 21,000 ft, the T-Heron can use long-range EO/IR payloads looking 100 km deep across borders. This capability is unique to the T-Heron of all tactical UAS, providing valuable intelligence while remaining at standoff range from the enemy's air defence.

IFF/TCAS for identification and collision avoidance.

The T-Heron is designed to operate in extreme environmental conditions, including high altitude, a temperature range of -40 to +55°C, crosswinds of 20 knots, and rain flow of 50mm per hour.

IAI's standard iUCS mission control systems are used to conduct the mission from the ground. The iUCS supports all mission phases, platform, and payloads. The modular iUCS supports different configurations for tactical deployment in armored vehicles or shelters, maritime, and airborne platforms. The system is designed to operate with a single crewmember or stack several iUCS to support larger crews on more complex missions. The T-Heron's payloads can also be controlled from portable terminals, using the two-way remote terminal (RVT).

Built to operate from short, unpaved surfaces, T-Heron relies on integral brakes, power, and cooling, and is independent of specialised ground support equipment such as arresting cable, power and cooling carts. The system is stored and transported in two standard 20-foot ISO air-deployable containers, requiring two vehicles for field operation. On tactical deployment, the system can minimise the support crew, utilising the Heron family 'Long Runner' remote operation feature, forward-deployed



T-HERON OF ALL TACTICAL UAS, PROVIDE VALUABLE INTELLIGENCE WHILE REMAINING AT STANDOFF RANGE FROM THE ENEMY'S AIR DEFENCE

The platform features a highly efficient design for tactical ISR missions. The retractable forward landing gear clears the view for the EO/IR and radar sensors, while placements for COMINT/SIGINT antennae are located on the wing-tips and booms to minimise obstruction and maximize antennae separation for optimal performance. Wing-mounted pods carry additional electronic sensors or expendable payloads such as markers or lifeboats on search and rescue missions.

The T-Heron uses a 70 per cent downscaled Heron I design. With 10-metre wingspan and low center of gravity placed well within the large, rectangular payload bay, the T-Heron provides a robust, flexible platform carrying internal and external payloads to meet different payload configurations supporting various missions. The wings are reinforced and fitted with hardpoints supporting external carriage. The new variant is designed and built as a certifiable UAS, in compliance with STANAG 4671 standard. Addressing all the Standard's criteria, T-Heron uses a FAR33 certified Rotax 912iSC aviation engine, and fully redundant safety-critical systems including power distribution, flight control, and communications. The aircraft has an integral 'pilot window,' using a tail-mounted panoramic camera and provisions for deicing ensuring flight safety at high altitude and in icing conditions. To enable sharing the airspace with civilian aircraft, T-Heron also carries

T-Heron can be controlled remotely from a control center, performing all functions, including takeoff, landing, and taxiing without relying on local support teams. IAI offers customers a full logistics package, providing flight line, intermediate and depot level (D level) maintenance and support, ensuring complete independence.

The T-Heron joins the successful, combat-proven Heron Family, the leader of IAI MALAT's Unmanned Aerial Systems stables. Boasting more than 17,00,000 operational flight hours in the service of 50 countries worldwide, IAI's Heron Family now includes four variants. These variants perform missions spanning 24 hours and more, carry payloads of 180 kg to 1 tonne, support Intelligence, Reconnaissance and Surveillance (ISR) operations in strategic, operational, tactical missions, as well as Homeland Security (HLS), Search and Rescue (SAR), Maritime Patrol, and Anti-Submarine (MP/AS) missions. ●

IAI is a world leader in both the defense and commercial markets, delivering state-of-the-art technologies and systems. To learn about the wide range of IAI's capabilities and the innovative solutions in Space, Air, Land, Naval Cyber and HLS domains, you are invited to visit us at Booth R33, DefExpo India 2020 Exhibition.

—Lital Ben Ari, Corporate Communications, IAI



AMPL: SUPPORTING INDIA'S AEROSPACE & DEFENCE SECTOR

The large scale modernisation of India's defence forces is on the anvil, and the next decade is likely to see an exponential growth in the strategic electronics sector. Emerging technologies are going to reshape modern warfare by harnessing the power of electronics. This, in turn, will make the Indian strategic electronics (SE) sector, mainly comprising Aerospace and Defence, a vibrant industry. India is the seventh largest aerospace and defence (A&D) market globally.

Astra Microwave Products Ltd has been spearheading the Design, Development and Manufacturing of RF and Microwave components, Super components and related technologies to Aerospace & Defence sectors. AMPL is playing a major role in developing complex and strategic systems within the country. The following are the area in which AMPL has focussed to be a leader to take up the IDDM products.

RESEARCH & DEVELOPMENT

The first & foremost requirement for achieving self-reliance under IDDM is to invest in R&D. Astra, has a well-established team of senior R&D professionals who have decade-plus experience with government research organisations such as DRDO and ISRO. It has good relationship with many domestic and global OEMs. The promoters of the company are Technocrats with 20-25 years of R&D experience and have previously worked with these organisations. A strong technical team and relationship with key customers have helped Astra successfully develop new products/sub-systems for defence/space related programmes.

During the Global restrictions on supply of some of the key components to the Defence & Space departments, AMPL has risen to the need of the hour with unflagging enthusiasm and a capacity to rapidly absorb new technological breakthrough into the scheme of operations. This has in turn enhanced the capability to deal with a growing market with ever changing technological requirements. Sensing this need, a Component Design Centre along with Backend processing of the wafers for Monolithic Microwave Integrated Circuits (MMIC), was established. This comprehensive facility has been able to turnout a chain of MMIC components indigenously.



ATE ATS FACILITY

AMPL has recently started a new R&D centre in Bengaluru which will focus on developing complete systems.

MASS MANUFACTURING

AMPL believe that the finished product is only as good as the manufacturing facility, which is why AMPL ensure that every item of equipment used meets the most demanding global standards of precision and performance. This in turn ensures the matchless quality of every product that leaves the premises.

AMPL has already made huge investment on infrastructure, facilities and trained manpower for mass manufacturing of RF & Microwave components, Super components and subsystems, for both the Indian market as well as the export market based on the Offset programme fulfilment.

ELABORATE & COMPREHENSIVE TEST & MEASUREMENT FACILITY

Test and Measurement is the foundation on which all successful designs are built. The exhaustive Test facility includes, RF & Digital test equipment for testing at component, subsystem levels as well as during the bulk manufacturing. Automated test Equipment for testing of very large numbers of Transmit/Receive modules for both domestic market and export market has also been created. Military and Space qualification is another major requirement met with the facilities like the Environmental tests, HAL/HAS and the EMI/EMC facility. This combined with high end facilities that includes Hermetic and Laser Sealing equipment combined with gross and fine leak testing ensures that products meet stringent requirements of hermetic sealing.

SYSTEM INTEGRATION & TESTING

AMPL Bengaluru Unit has created System Integration and Test facility like the Near Field Test Range (NFTR) for calibration and collimation of Active Phased Array Radars, & System Assembly Hall with built-in 10 tonne EOT crane and a host of most modern assembly tools and fixtures. These facilities are useful and are mandatory for Design Development and Manufacturing of Radar systems & EW systems. ●

UPGRADE TO THE FUTURE BY L&T

Typical life span of any military equipment is of the order of 20-25 years. However, it seldom happens that the equipment is retired after 20-25 years, but it continues to be exploited further. As the equipment ages, it finds several challenges. Many a times, user runs out of spares stocked, the Original Equipment Manufacturer (OEM) would have shut his shop, stopped manufacturing the spares or the equipment itself, or the OEM company would have changed hands through many owners, where the product is no more relevant or important for the company. There can be geopolitical alignments, which would have prevented the user from approaching the OEM for further help. Meanwhile the technology would have moved ahead leaps and bounds and the equipment and its performance would look lacklustre compared to contemporary products, or even the threat scenario would have changed, say from symmetric to unsymmetrical, making it hard for the equipment to cope up with the current requirements.

With 20-25 years of age of the equipment, the user is already in a strategic dilemma. On one hand he has an equipment, which had served him in the times of crisis, his men are well trained with the equipment, he has most of the logistic chain in place, he has invested significantly to acquire, maintain and sustain the equipment over the years, while on the other hand he already knows that the equipment is becoming obsolete, becoming difficult to maintain, the performance is degrading and the new contemporary, state of the art equipment is looking very promising. With the funds available for such capital procurement, many of the times it is challenging to replace the complete inventory in one shot, more over induction of new equipment in significant quantities takes time. Thus, many times it is a practical choice for the user to replace part of the inventory with new state of the art equipment, while the rest of the equipment can be upgraded at a fractional cost to extend the life of the equipment as well as enhance the performance to be comparable with the new equipment.

However upgrading the legacy equipment has its own challenge. Most of the time the design data or documentation is not available. The access to the equipment itself is limited. Generally, the equipment need to be upgraded at



BMP-II UPGRADE

site with limited infrastructure, in the user country, since it is in active service and can not be simply taken out for upgrade. Thus upgrading a legacy equipment requires very strong innovation and research & development capabilities, in order to effectively address these challenges.

L&T with its long legacy of research & development and product development background in defence products, has been able to take up many such upgrade challenges and deliver effectively cost-effective solutions to the armed forces. L&T has already successfully developed Air Defence Guns upgrades for the 1960s vintage L70 and Zu-23 guns. L&T has successfully upgraded the Indian Grad BM-21 launchers. L&T

has developed firepower upgrade and mobility upgrade for Armoured Fighting Vehicles like the BMP-2 and T-72 and has successfully upgraded Light Armoured Vehicles for a friendly foreign country.

These upgrade solutions are modular in nature, and can be customised, based on the available systems and operational tactics & strategy.

The upgrades possibilities typically include:

- Night Fighting capability using state of the art Thermal Imager, Day Camera & Laser Range Finder
- Effective Engagement using Digital Fire Control System – capable of calculating firing solutions in real time, on the move
- Automatic target tracking – enabling the gunner to track and engage multiple targets effectively
- Automated operations using Electro-mechanical laying system & stabilisation systems, etc
- New Mobility Systems addressing the obsolescence & maintenance issues
- Repowering with new generation Powerpacks
- Rugged and reliable digital electronics & power supply Systems
- Ergonomic man-machine interface

Thus in today's changing geopolitics, changing threat scenarios and with limited budgets, effective equipment upgrades offers a new hope to increase performance, add life and sustain existing equipment in a more cost-effective way. ●



DEFENCE MINSITER RAJNATH SINGH WITH DR VIVEK LALL
AT LOCKHEED MARTIN'S STALL AT DEFEXPO 20

COMMITTED TO BUILDING, TRUST, TECHNOLOGY DEVELOPMENT AND STRATEGIC COLLABORATION WITH INDIA

William L. Blair, Vice President & Chief Executive, Lockheed Martin India in conversation with **SP's Team**

SP's Team (SP's): What kind of a supplier ecosystem has Lockheed Martin created over the past three decades of your presence in India? To what extent is it a part of your global supply chain?



William L. Blair (Blair): We have been committed to building, trust, technology development and strategic collaboration with India. We have two state-of-the-art manufacturing joint ventures in Hyderabad, India with Tata Advanced Systems [Tata Lockheed Martin Aerostructures Ltd (TLMAL); Tata Sikorsky Aerospace Ltd. (TSAL)]. This partnership with TASL also includes an on-the-job training element that supports the broader "Skills India" initiative. In early 2019, TLMAL delivered the 100th C-130J Super Hercules empennage from its manufacturing facility located near Hyderabad. The delivery milestone highlights the success of Lockheed Martin's 'Make in India' partnership with Tata.

Our joint venture in Hyderabad between Tata and Sikorsky Aircraft Corporation manufactures components for the S-92 commercial helicopter. The facility is also fully integrated into the global supply chain and bears testimony to our contribution to the development of Indo-US defence industrial partnership. Lockheed Martin's Sikorsky partnership with Tata Advanced Systems Limited (TASL) on the S-92 programme has positively impacted India's defence economy. Lockheed Martin's Sikorsky partnership with Tata Advanced Systems Limited (TASL) has positively impacted India's defence economy, and the contributions of Hyderabad have helped the S-92 aircraft surpass more than 1.6 million flight hours, to date. Programmes like these create opportunities for knowledge-sharing and strategic technology and strengthen the industries of all involved.

We see tremendous strength and opportunity in India's defence industry - both private and public. We are committed to fostering growth of India's defence industry well into the future and actively looking for strategic Indian industry partners across the country - Indian companies of all sizes, including large, Micro, Small & Medium Enterprises (MSMEs) and startups throughout India.

SP's: What are the programmes that you have supported to create an environment of capacity-building in India?

Blair: The India Innovation Growth Programme (IIGP) 2.0 is a unique

tri-partite initiative of the Department of Science and Technology (DST), Government of India, Lockheed Martin and Tata Trusts. Supporting the Government of India's missions of Start-up India and 'Make in India', IIGP 2.0 enhances the Indian innovation ecosystem by enabling innovators and entrepreneurs through the stages of ideation and innovation to develop technology-based solutions for tomorrow.

Launched in 2007, India Innovation Growth Programme (IIGP) has been one of India's longest standing public-private partnerships.

Aimed at developing entrepreneurship in India, IIGP 2.0 is the only public-private partnership of its kind in India that spawns indigenous innovation by training budding innovators in world-class strategies, promoting and providing incubation and acceleration support, and assisting in business development.

The programme is designed to accelerate the launch of early-stage Indian technologies into the global marketplace.

The first 10 years of the programme focused on building an innovation pipeline and best practices in India by offering training and mentoring support to entrepreneurs.

Based on the learnings of implementing the program for over a decade, the IIGP Version 2.0 was launched in 2017 to address specific gaps like lack of risk capital for high-technology based start-ups and lack of market opportunities for emerging start-ups.

So far, 400 business agreements have been reached through this programme and generated almost \$1 billion for the Indian Economy.

SP's: What are the cutting-edge technologies that Lockheed Martin is bringing to India as a part of its offset requirement?

Blair: Lockheed Martin has been diligently discharging its offset obligations in India since 2009. This has delivered extensive economic benefits through investment, skills training, transfer of technology and exports. Our two successful joint ventures in Hyderabad have been a key part of helping India achieve its goal of developing an aerospace and defense supplier ecosystem, promote indigenous manufacturing and participating in the global supply chain, contributing to 'Make in India' initiatives.

The investments related have contributed in manufacturing equipment, tooling, intellectual property and non-recurring engineering; and contributed to the private Indian industry revenues and exports. They have also resulted in the training and employment of over 1,500 individuals in aerospace engineering, manufacturing and management jobs in India. ●



SIKORSKY'S MH-60R HELICOPTER



रक्षा क्षेत्र के राष्ट्रीय और अंतर्राष्ट्रीय विशेषज्ञ हुए शामिल

डेफएक्सपो 20 के दौरान "इंडिया- द इमर्जिंग डिफेंस मैनुफैक्चरिंग हब" विषय पर कई अंतर्राष्ट्रीय सेमिनारों का आयोजन हुआ। इस बार एक्सपो में रक्षा क्षेत्र में डिजिटल परिवर्तन पर ध्यान केंद्रित किया गया। सेमिनार के दौरान रक्षा उद्योग को डिजिटल के हिसाब से आधुनिक बनाने पर बल दिया गया। इसका उद्देश्य इस परिवर्तन के पुरोधाओं को एक मंच प्रदान करना भी था। ये आयोजन डेफएक्सपो परिसर स्थित मीडिया कन्वेंशन सेंटर में विभिन्न सेमिनार और कॉन्फ्रेंस हॉल में हुए जिसमें कि इंडस्ट्री फोरम, इंटरनेशनल फोरम, थिंक टैंक्स, मीडिया हाउस, डी.पी.एस.यू., डी.जी.क्यू.ए./एमओडी आदि शामिल हुए। इन सेमिनारों में एन.एस.डी.सी./मिनिस्ट्री ऑफ स्किल डेवलपमेंट के अलावा उत्तर प्रदेश, तमिलनाडु, तेलंगाना और आंध्र प्रदेश की सरकारों ने भी भाग लिया। अलग-अलग देशों की विशेष सेमिनारों के अलावा थीम आधारित सेमिनारों का भी आयोजन किया गया, जिनमें भारत-अमेरिका, भारत-इजरायल, भारत-कोरिया और भारत-फ्रांस रक्षा सहयोग अभियान शामिल हैं। रक्षा क्षेत्र के राष्ट्रीय और अंतर्राष्ट्रीय विशेषज्ञों को विभिन्न सेमिनारों के लिए वक्ताओं के रूप में आमंत्रित किया गया था।

इन सेमिनार की विस्तृत जानकारी डेफएक्सपो-20 की वेबसाइट (<https://defexpo.gov.in>) और डेफएक्सपो-20 मोबाइल ऐप पर उपलब्ध है।

डेफएक्सपो-20: वेबिनार की श्रृंखला में विशेषज्ञों ने रखे विचार

रक्षा मंत्रालय ने डिफेंस एक्सपो 20 को लेकर 10 दिसंबर, 2019 से वेब आधारित सेमिनार (वेबिनार) की एक श्रृंखला का आयोजन किया था। वेबिनार का नेतृत्व विभिन्न क्षेत्रों के विशेषज्ञों ने किया, जिनमें भारत सरकार के प्रमुख वैज्ञानिक सलाहकार प्रोफेसर के. विजय राघवन, डी.आर.डी.ओ. के अध्यक्ष डॉ. सतीश रेड्डी, डॉ. हरिनारायण, भारत फोर्ज लिमिटेड के चेयरमैन व एम.डी. बाबा कल्याणी, सिनर्जिया फाउंडेशन के संस्थापक व अध्यक्ष साइमन, आई.आई.टी. मिलाई के निदेशक व रक्षा के लिए आर्टिफिशियल इंटेलिजेंस टास्क फोर्स के सदस्य डॉ. रजत मूना आदि ने किया। वेबिनार के विषय शैक्षणिक रुचि के अलावा रक्षा, एयरोस्पेस व सुरक्षा उद्योग आदि थे। प्रत्येक सत्र में एक-एक प्रतिभागी को सर्वश्रेष्ठ प्रश्न पूछने के लिए विजेता के रूप में चुना गया था। वेबिनार को यू-ट्यूब चैनल पर लाइव भी किया गया था।

वेबिनार से जुड़ी रिकॉर्डिंग डेफएक्सपो-20 की वेबसाइट <https://defexpo.gov.in> और यू-ट्यूब पर उपलब्ध हैं।

भारत का घरेलू रक्षा क्षेत्र रक्षा विनिर्माण केंद्र के रूप में उभरा है



एमबीटी अर्जुन

भारत का घरेलू रक्षा क्षेत्र पिछले पांच वर्षों में कुल रक्षा उत्पादन में 80 प्रतिशत की वृद्धि के साथ रक्षा विनिर्माण हब के रूप में उभरा है। साथ ही निजी क्षेत्र भी बड़े पैमाने पर रक्षा और एयरोस्पेस प्रौद्योगिकियों को अपना रहा है, जिससे देश की रक्षा क्षमताएं लगातार बढ़ रही हैं। पिछले दशक में, अंतर्राष्ट्रीय प्रणाली में भारतीय की स्थिति में एक गंभीर परिवर्तन देखा गया है। भारत एक ऐसा देश है, जिसकी 7,517 किलोमीटर की तटरेखा और 15,000 किलोमीटर की भूमि सीमा है, जो पांच देशों के साथ जुड़ा हुआ है। इसके अतिरिक्त, देश के सशस्त्र बलों (दुनिया में दूसरा सबसे बड़ा) के जवान रेगिस्तान में 50 डिग्री सेल्सियस से अधिक और सियाचिन में -40 डिग्री सेल्सियस तक तापमान में मुस्तैद हैं। वरिष्ठ निवेश विशेषज्ञ जयंत सिंह ने डेफएक्सपो 20 को लेकर आयोजित एक वेबिनार में उल्लेख किया कि यह एक हद तक भारत की रक्षा उत्पादन आवश्यकताओं को निर्धारित करता है। हाल के वर्षों में देखा गया है कि भारत में रक्षा उत्पादन और निर्यात क्षमताओं में महत्वपूर्ण सुधार हुआ है। कुल मिलाकर रक्षा उत्पादन में पिछले पांच

वर्षों में 80 प्रतिशत की वृद्धि देखी गई है। इसी अवधि में रक्षा निर्यात में भी वृद्धि देखी गई है। भारत में 41 आयुध कारखाने और नौ डी.पी.एस.यू. (रक्षा सार्वजनिक क्षेत्र की इकाईयां) हैं जो रक्षा विनिर्माण पर ध्यान देती हैं। इनसे राष्ट्र एक मजबूत रक्षा औद्योगिक आधार के रूप में अपनी उपस्थिति दर्ज करता है। वेबिनार में भारत के निजी क्षेत्र के बारे में भी प्रकाश डाला गया, जिसमें रक्षा और एयरोस्पेस क्षेत्र में तकनीकों को अपनाने और विकसित करने की विशिष्टताएं दिखाई गईं। 2019 में रक्षा विनिर्माण के लिए निजी क्षेत्र को कुल 442 औद्योगिक लाइसेंस जारी किए गए। भारतीय कंपनियां संयुक्त उद्यम भागीदार कंपनियों के लिए भी भरोसेमंद साबित हुई हैं। इससे आउटसोर्सिंग के अवसरों में वृद्धि हुई है, जिसके माध्यम से भारतीय कंपनियां विदेशी ओ.ई.एम. (मूल उत्पाद निर्माता) की वैश्विक आपूर्ति श्रृंखला में सफलतापूर्वक खुद को एकीकृत करने में सक्षम हुई हैं। निजी क्षेत्र के विनिर्माण ने पहले ही 2.4 बिलियन डॉलर का आंकड़ा छू लिया है और भारतीय कंपनियों के निर्यात बाजार में आने के बाद, यह संख्या अगले कुछ वर्षों में काफी बढ़ने का अनुमान है। निजी क्षेत्र में उत्पाद की श्रेणी में इलेक्ट्रॉनिक वॉरफेयर सिस्टम, रडार व एवियोनिक्स सिस्टम, कम्प्यूटेशन सिस्टम, नेविगेशनल इंस्ट्रुमेंट्स, नाइट विजन डिवाइस, लॉजिस्टिक व्हीकल, रॉकेट लांचर, सेंसर, सिमुलेटर, एम्यूनिशन हार्डवेयर, मैकेनिकल पयूज, प्रोटेक्शन इक्विपमेंट्स, बैलिस्टिक प्रॉडक्ट आदि शामिल हैं।

भारत का लक्ष्य 2027 तक 70 प्रतिशत आत्मनिर्भर रक्षा विनिर्माण देश होना है



धनुष तोप

साल 2024 तक भारत को 5 ट्रिलियन डॉलर की अर्थव्यवस्था बनाने के लिए "मेक इन इंडिया" अभियान के तहत रक्षा को सबसे प्रतिष्ठित क्षेत्र के रूप में मान्यता दी गई। ऐसे में रक्षा उद्योग को आत्मनिर्भर बनाना प्राथमिक उद्देश्य बन गया है। कई मौकों पर निकट भविष्य में आत्मनिर्भर रक्षा उद्योग बनाने के महत्व और हथियारों के आयात पर निर्भरता कम करने की आवश्यकता पर बल दिया गया है। भारत को एक प्रमुख रक्षा विनिर्माण केंद्र और रक्षा निर्यातक बनाने के लिए "मेक इन इंडिया" (एम.आई.ए.) के तहत कई कदम उठाए गए हैं। साल 2024 तक भारत को 5 ट्रिलियन डॉलर की अर्थव्यवस्था बनाने के लिए एम.आई.ए. के तहत रक्षा क्षेत्र को सबसे प्रमुख क्षेत्रों में से एक के रूप में विशेष रूप से प्रदर्शित किया जा रहा है। वरिष्ठ निवेश विशेषज्ञ जयंत सिंह ने "डेफएक्सपो 2020 और रक्षा क्षेत्र में निवेश के अवसर" विषय पर पूर्व में आयोजित एक वेबिनार में कहा था, रक्षा क्षेत्र में भारत की आत्मनिर्भरता के लिए थल सेना ने पिछले एक दशक में अपनी क्षमताओं को आधुनिक और गुणात्मक रूप से उन्नत करने के लिए एक व्यापक योजना तैयार की है। भारत की योजना तीनों सेनाओं को उन्नत करने पर 150 बिलियन डॉलर खर्च करने की है। सरकार स्वदेशी रक्षा विनिर्माण के माध्यम से इस आधुनिकीकरण अभियान को पूरा करने के लिए प्रतिबद्ध है। पिछले साल रक्षा मंत्री ने यह भी उल्लेख किया था कि रक्षा विनिर्माण क्षेत्र को आत्मनिर्भर बनाने के लिए कदम उठाए जा रहे हैं। नई प्रौद्योगिकी हस्तांतरण (टी.ओ.टी.) नीति की प्रक्रिया चल रही है, जो डी.आर.डी.ओ. (रक्षा अनुसंधान और विकास संगठन) विकसित प्रौद्योगिकियों को उद्योग में स्थानांतरित करने का मार्ग प्रशस्त करेगा। उन्होंने यह भी उल्लेख किया कि सितंबर 2019 तक 900 से अधिक टी.ओ.टी. लाइसेंसिंग समझौतों पर उद्योग के साथ हस्ताक्षर हो चुके हैं, जो रक्षा निर्माण क्षेत्र को आत्मनिर्भर बनाने की दिशा में एक बड़ा कदम है। जयंत सिंह ने कहा, भारतीय सेना के कुल अधिग्रहण आदेश का 75 प्रतिशत भारतीय फर्मों के पास है। सरकार ने साल 2027 तक रक्षा विनिर्माण में 70 प्रतिशत आत्मनिर्भरता लक्ष्य भी निर्धारित किया है। हर तरह से संकेत है कि हम इस लक्ष्य को आराम से प्राप्त कर पाएंगे। •



दर्शकों को मंत्रमुग्ध करता सशस्त्र बलों का प्रदर्शन

लखनऊ में चल रही एशिया की सबसे बड़ी रक्षा प्रदर्शनी में सैन्य बलों का लाइव डेमो आकर्षण का केंद्र बना हुआ है। इसमें जहां टैंक, लड़ाकू विमान जैसे रक्षा उत्पादों की विशेषताएं दिखाई जा रही हैं, वहीं युद्धभूमि का एहसास और जवानों का शौर्य दर्शकों को रोमांचित कर रहा है। यहां भारतीय सशस्त्र बलों द्वारा लाइव डेमॉन्स्ट्रेशन नियमित रूप से दिया जा रहा है।

लाइव डेमो के दौरान सशस्त्र बलों का साहस और रोमांच देखने लायक होता है। भारतीय सेना की टीम बाइक पर विभिन्न रोमांचक और खतरनाक स्टंट करती है तो दर्शक दातों तले उंगली दबा देते हैं। पैराट्रूपर्स तो दर्शकों को अपना सिर उठाने के लिए मजबूर कर देते हैं। आसमान में उड़ते रंग-बिरंगे गुब्बारों के साथ पैराट्रूपर्स

तिरंगा बनाते हैं तो यह दृश्य निहारने को मजबूर कर देता है और लोग देशभक्ति की भावना से ओतप्रोत हो जाते हैं। जब कई विमान एक साथ उड़ान भरते हैं तो आसमान की तस्वीर बदल जाती है। हवाई प्रदर्शन के दौरान दिखाई जाने वाली अलग-अलग संरचनाएं दर्शकों को मंत्रमुग्ध कर देती हैं। यहां प्रदर्शन क्षेत्र को एक युद्धभूमि का स्वरूप दिया गया है, जहां सैन्य बल दिखाते हैं कि जब दुश्मन देश की सीमा में आक्रमण करते हैं तो वे किस तरह हालात का सामना करते हैं। प्रदर्शनी में एक अस्थायी पुल, हेलिकॉप्टर, पैदल सेना के साथ-साथ टैंक और तोपखाने भी शामिल किए गए हैं। सेना के लाइव डेमॉन्स्ट्रेशन से दर्शक अपने जवानों के शौर्य और रक्षा क्षेत्र की समृद्ध तकनीकी से रूबरू होते हैं। •





RFP IN \$6.3 BILLION INDIAN NAVY SUBMARINE PROGRAMME SOON: DEFENCE SECRETARY

India will soon issue an RFP in the \$6.3 billion programme to build a new line of six diesel-electric submarines under Project 75(I), Defence Secretary Ajay Kumar declared on February 6 at a DefExpo seminar, 'Indian Shipyards Going Global: Shipbuilding & MRO'.

"We're proceeding ahead on the Strategic Partnership (SP) Model. Very shortly, we will be going ahead with the RFP to identify a Strategic Partner," the Defence Secretary said in his keynote address.

The new SP Model involves first shortlisting Indian companies and foreign OEMs in separate but parallel processes. The short-listed Indian companies are to bid in collaboration with the OEM, which will be required to deliver deep transfer of technology.

"The Government is keen to open up the shipbuilding sector and provide a level playing field for the public and private sector. This approach has increased efficiency in our shipbuilding system. It's a healthy trend," Dr Kumar said.

"A large number of RFPs have been issued in the last 12 months after capacity verification guidelines," he added. "The new policy is to give long term orders (to a shipyard) for up to 10 years," the Defence Secretary said.

A representative of the private sector Larsen & Toubro called for a collaborative approach through Public Private Partnership to boost exports of ships. "This would create the right environment for Indian shipbuilding going global," said Commodore Mukesh Bhargava, executive director L&T Defence.

On promotion of exports in India's shipbuilding Industry, Defence Secretary



Kumar said shipyards should make use of the Line of Credit facility provided by India as development assistance to friendly foreign countries to push exports. "Industry should make use of the Line of Credit to realise its export potential," he urged. Indian companies are given preference in providing equipment, infrastructure or services to these countries under the Line of Credit.

The Defence Secretary suggested that the Shipbuilding Industry prepare a roadmap for indigenizing imports. "Scale of orders is important. The Government is happy to help," he said. He also urged Industry to work on standardization of parts, systems and aggregates

for military and commercial ships. "This will lead to reduction in costs and less build time," he said, suggesting that such measures would improve competitiveness.

Defence Secretary Kumar, while observing that shortcomings need to be addressed for the shipbuilding industry to fully realise its potential, also took note of the achievements. "India's first indigenous aircraft carrier will be sailing shortly. We are one of the few countries with that capability," he said.

A session was also devoted to discussing the 'Future of Aircraft Carriers'. It was moderated by Rear Admiral DM Sudan (Retd). The panelists included Rear Admiral Mukul Asthana, Assistant Chief of Naval Staff (Air) and representatives from General Atomics of the US and the UK Defence and Security Organisation. The seminar was organized by the PHD Chambers of Commerce. ●

—Vishal Thapar

MAKE IN INDIA GETS A BOOST DURING DEFEXPO



AN MOU EXCHANGED BETWEEN DHANANJAY MISHRA, CMD YEOMAN AND DR VOLKER BEHRENS, MANAGING DIRECTOR, SCHOENROCK GERMANY

Yeoman Marine Services Pvt Ltd. (YMSPL) is one of the largest and leading shipbuilding sub contractor company in SME sector, in India. It has a major presence in marine construction/repair field with officers and state-of-the-art facilities all across the Indian peninsula throughout all the three sea fronts. Recently, taking the advantages of 'Make in India' policy of Government of India, the company has also entered into defence manufacturing.

During DefExpo 20, Yeoman has signed an MoU for transfer of high end technology from IMS group, Norway for their marine products. IMS is the holding group for NAVINT, Italy and Schoenrock, Germany. They are world leading companies for specialised marine doors such as Radar Suppression Doors, Helo hanger doors and Marine Elevators for the warships. Under the MoU, IMS will invest 60 per cent and Yeoman will take remaining share of 40 per cent in formation of Navint Naval Systems Pvt Ltd. This new Indian company of IMS will have ToT from NAVINT Italy and Schoenrock Germany towards manufacturing their high end products in India for Indian Armed Forces. ●

MDL RECEIVES AWARD FOR OUTSTANDING CONTRIBUTION IN NAVAL SYSTEMS

Mazagon Dock Shipbuilders Limited (MDL) has been conferred with Defence & Aerospace Awards 2020 for 'Outstanding Contribution In Naval Systems'. Rear Admiral A.K. Saxena, Director (Shipbuilding) of MDL received the award from Lt General Satish Dua in a function held at the at Hotel Piccadilly, Lucknow on February 6, 2020.

MDL for the past seven decades have been a key player in strengthening the maritime defence of our nation. Country's first indigenously built frigates, destroyers and conventional submarines were constructed and delivered by MDL. ●

MAZAGON DOCK SHIPBUILDERS LIMITED, MUMBAI, IS ONE OF THE LEADING SHIPBUILDING YARD IN INDIA





INDIAN NAVY DISPLAYING INDIGENOUS DEVELOPMENTS

Indian Navy, along with DPSUs, large industry partners and MSMEs are displaying some of the innovations and Indigenous products developed by them at DefExpo. The display has been arranged in a Naval Pavilion in Hall No. 2 of DefExpo 20. The naval pavilion showcases a wide range of products and technologies from Armament and Weapons components, Advanced Electronics and Fire Control Systems and scaled models, Test and Repair console developed for testing advanced electronics, Indigenous components developed for Naval Aircrafts, Advanced designed and developed components for steam turbines, Different type of heat exchangers etc.

In addition to the above a small section of the pavilion has been dedicated to showcase the aspects of 'Enterprise-wide Net Centric Solutions' developed for the Navy. The section showcases Indian Navy's capability in technological domains of platform integration, design and development of Combat Management Systems, Tactical Communications & Networks and IT Security solutions through functional system hardware.

Indian Navy's quest for self-reliance through innovation and indigenisation goes back six decades. Starting from the first small ship built for Indian Navy by GRSE in 1961, Indian Navy has never looked back. From a humble beginning Indian Navy over the years has fortified its indigenisation programmes and the result is that, today we are not only building our own ships and submarines but also Aircraft carriers which is a capability that very few nations in the world can boast of. This journey has been long and arduous one, however the vision of Indian Navy and the dedicated and focused approach to ensure self-reliance in all aspects of shipbuilding and supportability for the assets built, has ensured rich dividends. The journey of self-reliance has been traversed by Indian Navy with exceptional contributions from DPSU/PSUs including Shipyards, DRDO, Large Industry partners and countless MSMEs. It is this industrial strength that enabled Indian Navy to dream and achieve big.

While a lot of path has been travelled, there is no time for resting on the laurels of the past. Therefore, Indian Navy has been constantly striving towards development of innovative technologies and indigenisation of equipment, subsystems and components as import substitutes to achieve technological self-reliance in close association with Indian industry. Indian Navy has also been at the forefront of using the recent schemes launched by the GoI towards 'Make in India'. In



Make-II scheme, Indian Navy has issued Project Sanction Orders for four projects so far and prototype for the first project is ready for trials. In addition Indian Navy has launched six problem statements for start-ups and small industry under iDEX scheme and 18 industry and start-ups are working on five problem statements in close coordination with Naval Nodal officers. More have been shortlisted for providing solution to the sixth problem statement.

The close association with industry and ensured Indian Navy quick and time bound development of the planned projects. ●

INDIAN ARMY DISPLAYS AT DEFEXPO 20



An experience gained in real time always stays longer with us, and the Indian Army is caching exactly on this, becoming the centre of attraction for people visiting the 11th edition of the DefExpo 20. The Indian army at the exhibition is letting you experience its essentials at your proximity. Situated centrally in the open area, the army pavilion has a camouflage set-up done for the visitors to travel through the narrow paths and learn how the ene-



mies are deceived. Army men dressed as camouflage for the snow set-up as in our Siachen border and the mountain set-up are also present. The giant tanks like BMP-2 and T-90 along with Mahindra Defence vehicles guarded by our soldiers are also placed beside the DRDO area which displays the Advanced Towed Artillery Gun System (TAGS) along with some other army entities on static display. ●



IAF PUBLICITY PAVILION AT DEFEXPO 20

The Indian Air Force has set up a publicity pavilion in DefExpo 20 with a view to optimise the opportunity and propagate induction publicity amongst the visitors of the DefExpo 20, especially the target group youth and their parents.

The pavilion is made on a “look and feel” theme wherein the target youth get an opportunity to visit it, look at the exhibits and/or get “hands on” experience of elements displayed therein.

The stall, has the following elements, all laid down in an appealing manner so as to fascinate the target youth and sow a seed in their minds to choose iaf as a career option in due course:

Career counselling section: This section has assessors from IAF selection boards, who facilitate one-on-one career counselling to the youth giving them an insight in to the manifold career opportunities available in the iaf, the pre-requisites and the selection process.

IAF movie hall: This hall has a huge LED screen which plays IAF videos relating to induction, motivational videos, experiences of pilots, etc.

Flying simulator: An advanced simulator at the pavilion enables visitors to have hands on flying experience on different aircraft available in the IAF. The motion seat of the simulator gives a 4D effect, adding to its dynamics.

Mobile gaming room: The IAF had developed a mobile game application “Indian Air Force: A Cut Above” to motivate



the tech savvy youth towards IAF in a gaming format. The mobile gaming room at the pavilion allows the players to play this game “one-on-one” with any person located anywhere across the globe, whilst concurrently providing the induction related information.

Display area: The display area has miniature models of iaf aircraft including LCA, Apache, Chinook, Su-30, MiG-21, etc; mannequins depicting pilot in a G-suit, officers in combat (field) dress and summer uniform. It also has posters of Air Force hierarchy, career prospects, history of the Indian Air Force, etc.

Selfie point: Another attraction at the pavilion is a selfie point which is a cut model of a pilot in flying uniform in foreground wherein the individual can super impose his/her face and replicate themselves as a pilot in uniform.

MiG-21 air frame: An air frame of MiG-21 aircraft alongwith complete set of ammunition is kept alongside the pavilion as part of static display.

Induction publicity exhibition vehicle (IPEV): The IAF customised bus called the IPEV is also placed in the pavilion. This gives a replica of a visit to an airbase with aircraft models, flying simulator, pilot models, touch screen kiosks, etc. Laid on a movable platform so that it can be conveniently displayed at any location in india.

The pavilion was visited by Chief of the Air Staff Air Chief Marshal R.K.S. Bhaduria and visitors in large number including dignitaries from various countries. ●

DGAQA OUTREACH AT DEFEXPO-20

To realize the dream of self-reliance in the defence aerospace sector, Government of India is putting special thrust on defence aerospace for enhancing the participation of private industries under its flagship programme i.e ‘Make in India’.

DGAQA stipulate the Quality Assurance requirement for the defence aerospace industry. DGAQA is the Government designated Quality Assurance Regulatory Authority for Military Aviation store since 1954. Product certification and compliance to the QA requirement are paramount in the field of military aviation. Generating awareness about these requirements for the growing industrial Diaspora of this sector is to be focused.

DGAQA is showcasing products under its QA coverage as well as various schemes available to the aerospace industry under the umbrella of ‘Make in India’ programme. Various activities are also planned during the DefExpo 20 such as on the spot events/quiz with an objective to outreach for the industry, create awareness on the quality and certification requirements as well as MoD schemes for promotion of indigenous defence manufacturing. A facilitation desk is available at DGAQA stall to address all the queries of MSMEs and Private manufacturers.

EVENT HIGHLIGHTS

Major foreign and indigenous aerospace firms like Collins Aerospace, Elbit Systems, Safran, Rafale



International, Korea Aerospace Industries visited the DGAQA stall and were apprised of various schemes for Utilization of DGAQA Test Facilities, Third Party Inspection, Registration of firms, Quality rating of Firms & Certification of Aviation Product by DGAQA for Promotion of Defence Export.

Senior official of DGAQA proactively visited various Indian LSIs, MSMEs like Oriental Weaving & Processing Mills Pvt Ltd, Agra, Tech Era Engineering (I) Pvt Ltd, Pune, MKU Limited, New Delhi, Nucon Alkan Aerospace Pvt Ltd, Hyderabad, Keela Tactical Solutions (India) Pvt Ltd, New Delhi, Ajay Sensors & Instruments, Bengaluru, and informed them on various DGAQA provisions.

APPROVAL OF TEST LABORATORIES AND PROVIDING AVAILABLE TEST FACILITIES OF DGAQA

In accordance with the theme of the day, two conferences were held to inform various private test labs on procedure for obtaining approval of DGAQA to achieve competence in providing testing and calibration facilities to various indigenous aerospace product manufacturers. The Director General AQA A.K. Bhatte and ADG (North & Central Zone) informed that major aviation manufacturers will be provided DGAQA test facilities through an easy single window process to meet their testing requirements. ●

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