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Indian Civil Aviation on the Upswing

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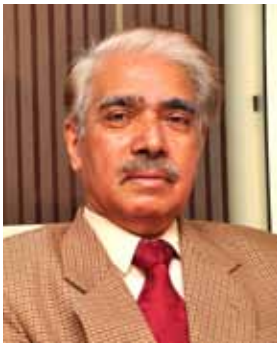
EDITORIAL



India boasts of the third biggest Civil Aviation sector in the world, but stakeholders face a host of issues. For instance, several private airlines, including two major operators, have grounded their entire fleet over the last few years. Operating costs of the airlines have steadily gone up while taxation issues related to Maintenance, Repair and Overhaul (MRO) of aircraft are unaddressed. The cost of aircraft fuel is the highest in our country which is adversely affecting the domestic airlines. These needs to be addressed and domestic airlines have to become economically more viable for growth of air traffic in the country and bring benefits to the Nation. In fact, the MRO industry in the country is still in a nascent stage, despite the huge potential. Opportunities for manufacture under ToT as well as design & development of commercial aircraft are lost in the past.

Government of India has launched a number of programmes to boost the sector. One such initiative aimed at expanding the air network is the Regional Connectivity Scheme (RCS-UDAN). Under the scheme, new airports are developed in rural and un-served areas of the country. As a result, the number of operational airports in India has crossed 100. The Government has also released the National Civil Aviation Policy (NCAP) in 2016.

Offset Clause in the Defense Procurement Policy was also been made available to the Indian industries for supply of goods and services to civil aircraft manufacturing OEMs. This has encouraged the Indian public and private sector industries to enhance their capability in manufacture of components, equipments and structures for civil aircraft and bagged export orders from major foreign OEMs manufacturing commercial aircraft. The design and manufacturing technology readiness level by the Indian industries have taken a leap, thanks to the efforts of the large private industries like HAL and number of large private industry corporates, National Aerospace Laboratories (NAL) and DRDO Labs. A number of initiatives are being taken up by NAL & HAL to design India's own commercial aircraft for Regional Transport. However these require considerable funding, participation of private industries/foreign OEMs and support has to come from government. While we are boasting of importing several hundreds of aircraft into the country for domestic airlines, we have not taken any initiative from Civil Aviation to support the domestic industry to indigenously design and develop commercial aircraft. Even with respect to aircraft MRO industry, the country is in the infant stage, despite the huge potential.

Total estimated import of commercial aircraft to India as per the Vision-2040 document of MOCA is approximately 2400 aircrafts upto year 2040 costing approximately 300 Billion US Dollars. If we can introduce Offset as done in the Defense Procurement Policy, the Civil Aviation Ministry will receive an offset credit of approximately 98 Billion US Dollars @ 30% value of the import. It is important to note that some countries like China, Japan & Korea have implemented upto 50% of Import value as 'Offset' and made it mandatory to make the aircraft in their country. 'Offset' can be used to stimulate both Indian public and private sector industries to set up facilities or as Joint Venture with strategic alliance for manufacture of commercial aircraft in India as well as design and development of commercial aircraft in India. It will also provide for large investments in the commercial aircraft MRO generating an income of billions of Dollars. This will provide great growth for commercial aircraft manufacture and MRO industry creating huge amount of employment and wealth in the country. This will be the biggest contribution of the Ministry of Civil Aviation to realise 'Make in India' vision of the Prime Minister and for the country.

Dr C G Krishnadas Nair
Honorary President, SIATI

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$5 trillion target through private participation in defence manufacturing: Rajnath Singh

Defence Minister Rajnath Singh has called for an increased participation of the private sector in defence manufacturing to realise the Government's vision of making India a $5 trillion economy by 2024. In his address at the Global Business Summit ,Defence Minister said, the manufacturing sector has the potential to reach $1 trillion by 2025 and the Government is striving to achieve the goal by implementing key flagship programmes like 'Make in India', besides building policies relevant to the digital-economy and fostering human-capital.

Urging the defence industry to make best use of the emerging opportunities, the minister said, a slew of structural reforms has been taken by the Government to create increased synergy between the industry and the public sector to overcome the challenges of private investment in defence. He listed out several steps taken under the 'Make in India' initiative, including greater scope for domestic industry in defence tenders, simplification of the industrial licensing process, hike in FDI cap, making defence export less stringent, streamlining the defence offset policy, opening the government-owned trial and testing facilities for the private sector; setting up of two defence industrial corridors and promotion of innovation through participation of start-ups and small and medium enterprises.

"In our envisaged Defence Production Policy, we have clearly spelt out our goal to achieve a turnover of $26 billion in aerospace and defence goods & services by 2025. This will have huge implications for India's endeavours to promote R&D, innovation and its efforts to secure a place in global supply chains," Rajnath Singh said. He added that the necessity of becoming internationally competitive, globally innovative and structurally efficient demands that the private sector plays a crucial role in defence production.

Rajnath Singh underlined that while the primary aim of Defence production is to cater to the needs of the Armed Forces, thrust is also being given for enhancing exports. He said, Defence Public

Defence Minister Rajnath Singh visiting the Light Combat Helicopter Final Assembly Hangar, at Hindustan Aeronautics Limited (HAL) Complex, in Bengaluru. R. Madhavan, CMD, HAL, also seen.

Sector Undertakings have been encouraged to increase their export portfolio to 25 per cent of their turnover and the Government is willing to extend Lines of Credit and grants to friendly foreign countries over the next five years. "The government aims to achieve exports of defence goods & services to the tune of $5 billion in next five years. All possible support would be extended to the private sector so that they can contribute significantly to enable us to achieve the said target," he added.

Highlighting the Government's decision to enhance foreign equity cap from earlier 26 per cent to 49 per cent under the automatic route and beyond 49 per cent to up to 100 per cent under the government approval route, the minister said, the increase in FDI cap has begun to show results. "Till December 2019, the defence and aerospace sector has received inflows of over Rs 3,155 crore. Of this, Rs 1,834 crore have received since 2014. I am sure that the volume of investment will increase many-fold when some of the major programmes, which are in the pipeline, move into the execution phase," he added.

Rajnath Singh stressed that the intention of the government is not just limited to bringing reforms but to act as an incubator, catalyst and facilitator for promoting investment and achieving self-reliance in defence manufacturing. "We understand that Defence R&D in private sector will take time to establish itself. To give a boost to this process, we have opened opportunities through DRDO with a zero fee for Transfer of Technology (ToT), free access to over 450 patents, access to test facilities and an upfront funding of up to Rs 10 crore. More than 900 licensing agreements for ToT have been signed with industries," he said.

He also mentioned about the opportunities being provided by the Government for the manufacture of mega defence programmes including fighter aircraft, helicopters, tanks and submarines through the Strategic Partnership Model that will allow private companies to grow in stature and become global giants in the coming years.

Rajnath Singh said, Buy (Indian–IDDM) [Indigenously Designed Developed and Manufactured], Buy (Indian), and Buy & Make (Indian), are the three most preferred categories for procurement for Ministry of Defence. "By prioritising these categories over direct import, we want to provide greater scope to the local industry, including the private sector, to participate in defence contracts and contribute to the self-reliance and employment generation," he added. The minister expressed appreciation that during the last five years, Government accorded approval to more than 200 proposals worth Rs four lakh crore in which Indian Industry would be engaged in defence manufacturing either directly or in collaboration with foreign Original Equipment Manufacturers.

Describing the Micro, Small and Medium Enterprises (MSMEs) as silent performers, he said, efforts are being made to double the active their base in defence and aerospace from 8,000 to 16,000. He added that Innovations for Defence Excellence (iDEX) was formulated with the objective to bring startups to innovate, develop technologies and solve problems related to Defence and Aerospace.

Rajnath Singh voiced the Government's aim to double the size of Aeronautics Industry from Rs 30,000 crore to Rs 60,000 crore by 2024 and provide increased opportunities to global aerospace industry to become supplier of Aero□components. He said, several major platforms are envisaged in defence aerospace sector including India's 90-seater civil aircraft, developing civil helicopter industry of $5 billion in PPP model, and New Aero Engine Complex in Defence Corridor with industry participation.

The Government has prepared a road map for Artificial Intelligence in national security to make India a significant power in defence. He said, there is a plan to develop at least 25 Defence specific Artificial Intelligence products by 2024.

Rajnath Singh assured the industry that the Government is open to new ideas and committed to fully harness the energies, entrepreneurship spirit and enterprise of private sector in the defence sector. He expressed confidence that the industry will contribute even more to the Government's efforts towards indigenisation of defence production.

Indian Civil Aviation on the upswing

India's civil aviation industry has witnessed plenty of action during recent years. Rise in passengers, new airports and novel government programmes have made India the third biggest civil aviation player in the world.

India is the third biggest and one among the fastest growing civil aviation markets in the world. To meet the demand of the rising air traffic, the Government of India is increasing the number of airports in the country. As per official data, India has 103 operational airports as of March 2019 and it is planned to raise this figure to 190-200 by financial year 2040.

The increase in passengers has also witnessed additions to the aircraft fleet. As of July 2018, around 620 aircraft were being operated by scheduled airline operators in India and number was expected to grow to 1,100 planes by 2027.

According to the Department of Industrial Policy and Promotion (DIPP), FDI inflows in India's air transport sector reached US Dollars 1,904.37 million between April 2000 and June 2019. India's aviation industry is expected to witness an investment of Rs 35,000 crore (US dollars 4.99 billion) in the next four years. The Indian government also has plans to invest US Dollars 1.83 billion for development of airport infrastructure along with aviation navigation services by 2026.

India's aviation industry has witnessed a lot of action during the recent years. For instance, in December 2019, France-based Safran Group said it was considering an investment of US Dollar 150 million in a new aircraft engine maintenance, repair and overhaul (MRO) unit in India to cater to its airline customers.

In November 2019, the Competition Commission of India (CCI) approved the acquisition of shareholdings in Mumbai International Airport Limited (MIAL) by Adani Properties Private Limited

Hardeep Singh Puri
Civil Aviation Minister of India

(APPL). Meanwhile, the UK group said it will invest Rs 950 crore (US Dollars 135.9 million) in Turbo Aviation's new airline TruStar. The Airports Authority of India (AAI) also said it would be investing Rs 15,000 crore (US Dollars 2.32 billion) for expanding existing terminals and constructing 15 new ones.

Indian aircraft Manufacture, Repair and Overhaul (MRO) service providers were exempted completely from customs and countervailing duties.

The Government of India also introduced various measures to boost civil aviation in the country. According to the Union Budget 2019-20, the government will promote aircraft financing and leasing activities to make India's aviation market self-reliant.

In February 2019, the Government of India sanctioned the development of a new Greenfield airport in Hirasar, Gujarat, with an estimated investment of Rs 1,405 crore (US Dollars 194.73 million).

In January 2019, the government organised the Global Aviation Summit in Mumbai which witnessed participation of over 1,200 delegates from 83 countries. The same month, the Government of India's released the National Air Cargo Policy Outline 2019 which envisages making Indian air cargo and logistics the most efficient, seamless and cost and time effective globally by the end of the next decade.

Yet another significant step has been the launch of the Regional Connectivity Scheme (RCS). Under RCS-Udan scheme, approximately 34,74,000 passengers were flown, and 335 routes awarded during the year 2019 covering 33 airports (20 unserved, 3 underserved and 10 water aerodromes).

Marking a milestone, the number of Operational Airports crossed 100 in the financial year 2019. In September 2018 Pakyong Airport in Sikkim was inaugurated. It is Sikkim's first ever airport and AAI's first Greenfield airport construction. In December 2018, Kannur International Airport was inaugurated making Kerala the only state in India to have four international airports. Due to rise in demand in air travel, India will need 2,380 new commercial airplanes by 2038.

Air India is India's national flag carrier. It merged with Indian in 2011 and plays a major role in connecting India with the rest of the world. IndiGo, Air India, Spicejet, GoAir, Vistara and AirAsia India are the major carriers. These airlines connect more than 80 cities across India and also operate overseas routes after the liberalisation of Indian aviation. Several other foreign airlines connect Indian cities with other major cities across the globe. Meanwhile, the Mumbai–Delhi air corridor is ranked the world's third-busiest route.

Thrust from Govt. needed to make civil aviation sector soar

India boasts of the third biggest civil aviation sector in the world, but stakeholders face a host of issues. For instance, several private airlines, including two major operators, have grounded their entire fleet over the last few years.

Meanwhile, the Government of India has been launching a number of programmes to boost the sector. One such initiative which is aimed at expanding the air network is the Regional Connectivity Scheme (RCS-UDAN). Under the scheme, new airports are developed in rural and unserved areas of the country. As a result, the number of operational airports in India has crossed 100. The Government also released the National Civil Aviation Policy (NCAP) in 2016.

Despite all these initiatives, problems still persist in the sector. Operating costs of the airlines have steadily gone up while taxation issues related to Maintenance, Repair and Overhaul (MRO) of aircraft are unaddressed. In fact, the MRO industry in the country is still in a nascent stage, despite the huge potential. Add to this the loss of jobs.

This calls for urgent action not only from the aircraft operators but also the government. While operators have to introduce measures to reduce expenses, the government needs to introduce earnest and effective measures to solve the problems faced by the sector. Unless this is done, the civil aviation sector in India would continue to face turbulent weather, even as the number of passengers is steadily growing.

The beginning

Modern civil Aviation in India traces back to 18 February 1911, when the first commercial civil aviation flight took off from Allahabad for Naini over a distance of 6 miles (9.7 km). Incidentally, it was the world's first official airmail service. On October 15, 1932, J.R.D. Tata flew a consignment of mail from Karachi to Juhu Airport. His airline later became Air India.

In March 1953, the Indian Parliament passed the Air Corporations Act. India's airline industry was nationalised and the eight domestic airlines operating independently at that time – Deccan Airways, Airways India, Bharat Airways, Himalayan Aviation, Kalinga Airlines, Indian National Airways, Air India and Air Services of India – were merged into two government-owned entities. Indian Airlines focused on domestic routes and Air India International on international services. The International Airports Authority of India (IAAI) was constituted in 1972 while the National Airports Authority

was constituted in 1986. The Bureau of Civil Aviation Security was established in 1987 following the crash of Air India Flight 182.

East-West Airlines was the first national-level private airline to operate in the country after the government de-regularised the civil aviation sector in 1991. The government allowed private airlines to operate charter and non-scheduled services under the 'Air Taxi' Scheme until 1994. That year, the Air Corporation Act was repealed and private airlines could now operate scheduled services.

More than half a dozen low-cost carriers entered the Indian market in 2004–05. But Indian aviation industry struggled due to economic slowdown, rising fuel and operation costs. This led to consolidation, takeovers and discontinuations.

To increase the number of operational airports, number of operational airports with scheduled flights, number of routes, number of flyers and to reduce the cost of flying, the Government of India launched UDAN-RCS scheme from 2016.

With a view to aid in modernization of the existing airports to establish a high standard and help ease the pressure on the existing airports, 100% FDI under automatic route has now been allowed in Brownfield Airport projects.

Vision 2040

The Ministry of Civil Aviation released a report titled 'Vision 2040' on January 15, 2019 outlining a roadmap for the future of civil aviation in India. The report projects that air passenger traffic will increase sixfold to 1.1 billion by 2040 including 821 million domestic and 303 million international passengers. The report estimates that a total of 2,359 aircraft would be required to serve passengers in March 2040. The government expects air cargo movement to quadruple to 17 million tonnes in 2040. The Ministry projected that the number of airports in India would rise from 101 in January 2019 to around 190–200 by March 2040 and an estimated 150,000 acres of land and US Dollars 40–50 billion of capital would be required for construction. The government proposed creating a US Dollars 2 billion fund to help support low-traffic airports. The report also targets establishing an aircraft manufacturing base in India by 2040.

National Civil Aviation Policy 2016

The Government of India released the National Civil Aviation Policy (NCAP) on June 16, 2016. The NCAP 2016 covers the broad policy areas, such as Regional connectivity, Safety, Air Transport Operations, 5/20 Requirement for International Operations, Bilateral traffic rights, Fiscal Support, Maintenance, Repair and Overhaul, Air-cargo, Aeronautical 'Make in India'.

Pradeep Singh Kharola
Civil Aviation Secretary

Saving the environment

The world's first airport fully powered by solar energy is at Kochi. Indira Gandhi International Airport at Delhi is a 'carbon neutral' airport. New constructions in some of the airports such as Chandigarh and Vadodara have adopted green building features.

Government agencies

The Ministry of Civil Aviation (MoCA) of Government of India is the nodal Ministry responsible for the formulation of national policies and programmes for development and regulation of civilian aviation, and for devising and implementing schemes for the smooth growth and expansion of civilian air transport. Its functions extend to overseeing airport facilities, air traffic services and carriage of passengers and goods by air. The Ministry also administers implementation of the 1934 Aircraft Act.

The ministry controls aviation-related autonomous organisations like the Airports Authority of India (AAI), Bureau of Civil Aviation Security (BCAS), Indira Gandhi Rashtriya Uran Akademi and public sector undertakings including Air India, Pawan Hans Helicopters Limited and Hindustan Aeronautics Limited.

Meanwhile, the Directorate General of Civil Aviation (DGCA) is the national regulatory body for civil aviation under the Ministry of Civil Aviation. This directorate investigates aviation accidents

and incidents. In order to give a fillip to infrastructure, several Integrated aviation-industrial parks, for aerospace training, research, manufacturing, Maintenance, repair, and operations (MRO) and Fixed-base Operations (FBO) integrated international aviation hub and aerospace industrial hub, are in the process of being set up, such as in Hisar and Gujarat.

While there are 346 civilian airfields in India – 253 with paved runways and 93 with unpaved runways, only 132 were classified as 'airports'. Of these, the airports in Delhi, Mumbai, Chennai, Bangalore, Kolkata, Hyderabad, Kochi, Ahmedabad, Jaipur and Pune handle most of the traffic. The operations of the major airports in India have been privatised over the past five years and this has resulted in better equipped and cleaner airports. India also has 33 'ghost airports,' which were built in an effort to make air travel more accessible for those in remote regions but are now non-operational due to a lack of demand.

There are 45 Helicopters in India. India also has the world's highest helipad at the Siachen Glacier a height of 6400 metres above mean sea level. Pawan Hans Helicopters Limited is a public sector company that provides helicopter services to ONGC to its off-shore locations, and also to various State Governments in India, particularly in North-east India.

AAI was formed on April 1, 1995 by merging the International Airports Authority of India and the National Airports Authority with a view to accelerate the integrated development, expansion, and modernization of the operational, terminal and cargo facilities at the airports in the country conforming to international standards.

Rajiv Gandhi National Aviation University is India's first National Aviation University established under Act of Parliament in 2013. The University campus is fully operational at Fursatganj Airfield under the direct administrative control Ministry of Civil Aviation.

Meanwhile, AAI is implementing the GAGAN project in technological collaboration with the Indian Space Research Organization (ISRO), where the satellite-based system will be used for navigation. The navigation signals thus received from the GPS will be augmented to meet the navigational requirements of aircraft.

MRO

The Indian Maintenance, Repair and Overhaul (MRO) industry is estimated to be

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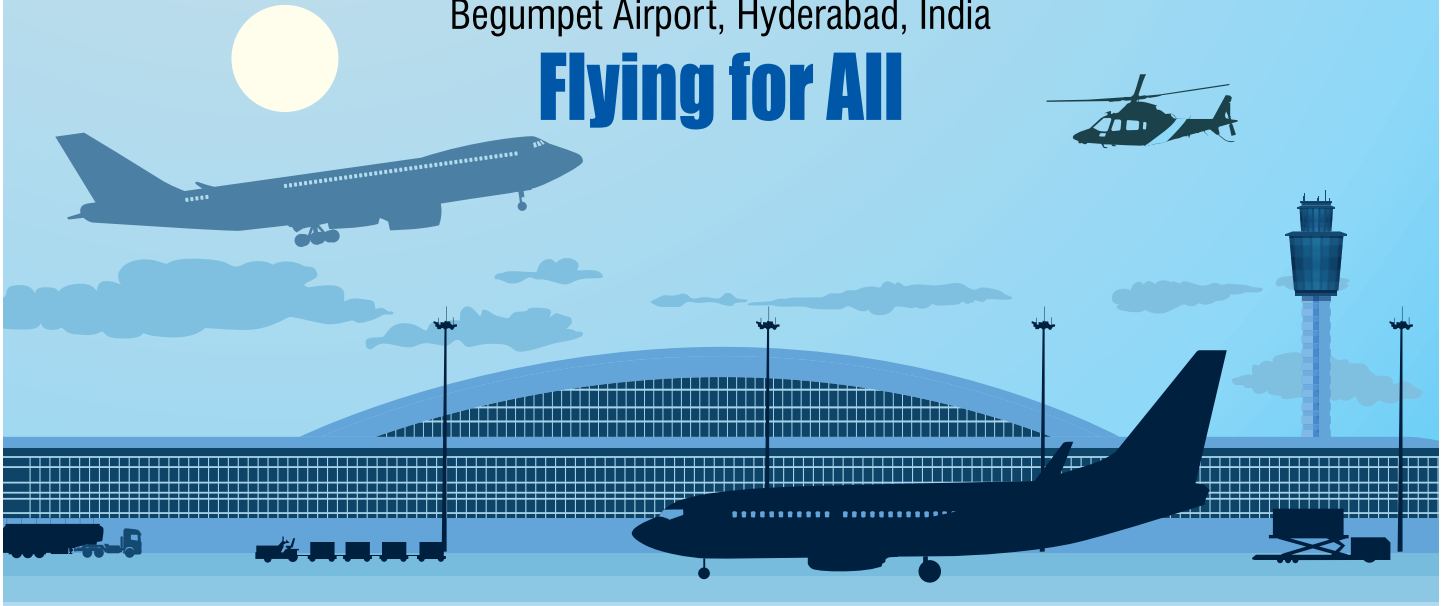

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worth USD 1.5 billion. However, currently India constitutes only one per cent of the global MRO market. The Indian government's measures for an open sky policy, increase in military, civil and business aircraft fleet in the country, the growing preference for air travel by India's middle class, and the focus by industry to optimise cost of aircraft operations, provides a strong foundation for the Indian MRO industry to strengthen its capability to meet global standards of excellence. Setting up an MRO is highly capital intensive with a long break-even time. Operating a credible MRO is highly dependent on investing in the right manpower which is regularly trained and optimally utilised with a strong focus on quality and turnaround time. It also requires continuous investment in tooling, certification from safety regulators such as the Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA) and global OEMs such as Airbus, Bell Helicopter, Boeing, Bombardier Aerospace, Dassault Aviation, Gulfstream Aerospace, Honeywell and others, in addition to certification from the local regulator.

Airlines in India spend about 13–15 per cent of their revenues towards maintenance, the second-highest cost item for airlines after fuel. India has only one fully operational independent third-party provider MRO, Air Works, with an EASA-certified facility in Hosur, near Bengaluru. Air Works provides heavy maintenance capability for Airbus A320, ATR 42/72 and Boeing 737/NG family of aircraft. GMR has set up in partnership with MAS an operational facility meeting EASA standards at Hyderabad.

Earlier, in the absence of quality infrastructure, airlines carried out maintenance outside India at the nearest available MRO location (South East Asia, Middle East or Europe) incurring a ferry flight, logistics costs and engine and component hours.

A significant percentage of the business aviation fleet in India gets heavy maintenance and modifications done at OEM approved facilities in Europe, UK and the US. Another challenge which is faced by the industry is non-availability of spare parts in the region which leads to frequent grounding of aircraft for lack of spares.

Defence MRO in India is largely captive with the Army, Navy and Air Force supported to an extent by HAL (Hindustan Aeronautics Limited). The revised Defence Procurement Procedure (DPP) outlines key changes which provides establishment of public private partnerships as well as qualification of MRO under offset guidelines.

Challenges

One of the biggest challenges faced by civil aviation is air safety. In the past few years, there have been a number of fatal accidents. Many of these accidents could have been avoided if as the planners, managers and regulators had a better understanding of the dynamics of the man-machine interface. The next most important issue is one of finance.

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Govt policies boost defence startups in India

Initiatives of the Central Government like iDEX, Policy for indigenization, liberal licensing and Technology Development Fund have helped startups dealing with defence production and indigenisation to thrive in India over the last three years.

India has witnessed a surge in startups dealing with defence production and indigenisation of imported equipment during the last three years. This is the result of several initiatives launched by the Central Government to remove entry barriers for private industry, including startups in the defence domain. Details in this regard were provided by Minister of State for Defence Shripad Naik in a written reply to Vijay Goel in the Rajya Sabha. Some of these initiatives are:

Innovations for Defence Excellence (iDEX) framework was launched by the Prime Minister in April 2018, with the aim for achieving self-reliance and to foster innovation and technology development in Defence and Aerospace by engaging Industries including MSMEs, startups, individual innovators, R&D institutes and academia. Under iDEX, the projects or problem statements are identified based on the requirements projected by the Armed Forces, OFB & DPSUs. The selected applicants are eligible for grants up to Rs 1.5 crore for development of the prototype.

Similarly, in Make-I category (Government funded) of development of prototype of defence products/ platforms, projects not exceeding development cost of Rs 10 crore are reserved for MSMEs / startups. Similarly, under Make-II category of development of prototype of defence products/platforms, projects not exceeding development cost of Rs. 3 crore are reserved for MSMEs/Start-ups.

The 'Make-II' procedure has been simplified to encourage wider participation of Indian industry, with impetus for MSME / startups sector and timely induction of equipment into the Indian Armed Forces. The 'startups' recognized by the Department for Promotion of Industry and Internal Trade (DPIIT) from time to time, are eligible to participate under 'Make-II' procedure. In addition, the framework for implementation of 'Make-II' at OFB and DPSU level has also been notified. More than 2,500 items have been notified by OFB and DPSUs for development under 'Make-II'.

Along the same lines, the Department of Defence Production has notified 127 items under Public Procurement Order 2017 issued by Department for Promotion of Industry and Internal Trade (DPIIT).

The Government has also notified a 'Policy for indigenisation of components and spares used in Defence Platforms' in March 2019 with the objective of creating a domestic industry ecosystem.

Yet another initiative is the liberalization of the industrial

licensing regime for Indian manufacturers. This has reduced entry barriers for new entrants in defence sector, particularly SMEs.

The Indian Government has revised the FDI Policy and under the revised policy, Foreign Investment up to 49 per cent is allowed through automatic route and above 49 per cent under the Government route.

Another important decision involves the Defence Research & Development Organisation (DRDO), which has evolved a new industry-friendly ToT policy for transfer of technologies developed by it to industries. DRDO has also promulgated a new patent policy to facilitate Indian industries to get free access to use DRDO patents.

The DRDO has also launched a programme termed 'Technology Development Fund' (TDF) for meeting the requirements of Tri-Services, Defence Production and DRDO. The scheme has been established to promote self-reliance in Defence Technology as part of the 'Make in India' initiative by encouraging participation of public/private industries, especially MSMEs.

A Defence Investor Cell (DIC) was set up by the Department of Defence Production (DDP) in January 2018 to provide help, support and guidance to defence industry, MSMEs and start-ups.

During 2017-18, DDP notified 275 items which were previously exclusively sourced from OFB, for sourcing from open industry and 141 items have been placed on Government e-Marketplace.

The test facilities/ infrastructure available with various Government agencies (OFB, DPSUs, DRDO, DGQA, DGAQA & SHQs) have been made available to private sector with the objective of assisting them in design & development of defence systems. The details of test facilities, procedure and other terms & conditions are available on websites of respective Government agencies.

Third Party Inspection

To align with the Government of India initiative to promote 'Ease of Doing Business' for MSMEs and private sector and achieve the national vision of 'Make in India', the Department has formulated a policy document on 'Utilisation of Third Party Inspection Services' for effective administration of inspection function of out-sourced work with involvement of third parties for inspection services.

'Mission Raksha Gyanshakti'

The Government has also launched 'Mission Raksha Gyanshakti' with the objective of encouraging IPR for self-reliance in defence. IPR is the key enabler for developing an ecosystem of innovation and indigenization. As part of the Mission, an IPR Division has been constituted in DDP.

Pratt & Whitney: Engines that spur India's aviation success story

GO BEYOND

Ashmita Sethi
Managing Director
Pratt & Whitney India

Pratt & Whitney has been offering aviation engine solutions worldwide for 95 years and its presence in India dates back to the 1940s. The company has exciting plans for India, including supporting national programmes such as UDAN/Regional Connectivity, 'Skill India' and 'Make in India'. Ms. Ashmita Sethi, the new Managing Director of Pratt & Whitney India, elaborates on these initiatives as well as other aspects related to the company's business in the country.

After taking over as Managing Director of Pratt & Whitney's India operations, what are your immediate priorities?

My focus in this role is to serve Pratt & Whitney's commercial, government and general aviation customers, to ensure our engines and services are helping them achieve their missions dependably every day. This includes the communities served by our products, and supporting national programmes such as UDAN/Regional Connectivity, 'Skill India' and 'Make in India'. We have exciting plans for Pratt & Whitney's future in India that will benefit young students today thinking about a career in aviation.

You had a distinguished track record with Boeing as well as Rolls-Royce. Could you tell us how would that experience help you in the present position?

I think you will be hard-pressed to find anyone in aviation who doesn't absolutely love this industry. We help connect communities and families, we are a major force in growing economies, and we help save lives and support the defence of nations all around the world. Pratt & Whitney is very much the future of aviation, and it's part of the solution to climate change, with the most advanced engines powering regional and commercial aviation.

India has one of the fastest growing civil aviation sectors in the world. What are Pratt & Whitney's plans to utilize this opportunity to boost the company's business?

The Indian civil aviation sector is set to become the third busiest aviation market in the world in the coming five to seven years, with a capability of sustaining at least 1.5 billion trips out of eight billion trips globally. It is also one of the world's fastest growing aviation markets.

As a company offering engine solutions for 95 years, Pratt & Whitney has played a significant role in India's aviation growth story. India is an important strategic market for Pratt & Whitney, and we continue to build on our long-standing partnership with the country. We have and will continue to make substantial investments in shaping the future of India's civil aviation sector.

We are committed to serving the growing demands of our customers with a futuristic approach to improving jet engine technology, which will power the industry for decades to come. The Pratt & Whitney GTF™ engine will power this growth while reducing the impact of flying on the environment. We are part of making it possible to reap the rewards of growing commercial aviation with a lower carbon footprint.

Could you give us details of the major customers of the company's aircraft engines in India?

Pratt & Whitney has a longstanding presence in India spanning more than seven decades. Our association with the country goes back to the 1940s, when our Wasp engines powered several Douglas DC-3 aircraft in country. Then, in 1960, Air India took delivery of its first Boeing 707 with our JT3D engine.

Pratt & Whitney is committed to supporting more than 1,250 engines in service in the region. These include commercial aircraft powered by GTF™, V2500 and PW100 engines, F117-powered C-17 transports and PT6A-powered PC-7 trainers used by the Indian Air Force, and many small jets, helicopters and turboprops flown by governments, businesses and individuals throughout the country. We are proud to say that we are powering growth in India.

Nearly 300 Pratt & Whitney GTF-powered A320neo family aircraft have been ordered by Indian airlines IndiGo and GoAir. These two airlines currently operate about 150 GTF-powered aircraft of this type, which is 25 per cent of the world's GTF-powered A320neo fleet. Our V2500 operators in India include IndiGo and Vistara.

Apart from aircraft engines, Pratt & Whitney also manufactures auxiliary power units. Provide us with an overview of the market for this product in India?

Since 1925, Pratt & Whitney

has been a global leader in the design, manufacture and service of aircraft engines, auxiliary and ground power units, small turbojet propulsion products, and industrial gas turbines. We are an industry leader in the design, manufacture and maintenance of auxiliary power units (APUs). This capability has been built from our foundation as a major supplier of gas turbine engines for a wide range of turboprop, turbofan and turboshaft aircraft.

Pratt & Whitney APUs include the APS5000 for the Boeing 787 Dreamliner, the APS3200 for the Airbus A320 family, the APS2600 for the Embraer E-Jets E2 family, and the PW900 family for the Airbus A380 and Boeing 747, among others.

Could you elaborate on the company's service centres in the country?

We recently announced that Air India Engineering Services Limited (AIESL) will provide maintenance, repair and overhaul (MRO) services in support of Pratt & Whitney GTF™ engines and its customers in the region. AIESL will service PW1100G-JM engines at its facility in Mumbai. Pratt & Whitney also has a number of field offices across India, focused on providing hands on, real-time support to our customers.

We have also recently appointed Taj Air as a designated maintenance facility for the line maintenance of PW308C engines for Dassault Falcon 2000 business jets.

Pratt & Whitney has a dedicated services brand called EngineWise™. It encompasses all the initiatives we have launched to help customers keep their fleets running smoothly. We are investing in new technologies including predictive analytics, developing new service offerings and improving communication channels to support customers. The advantage of EngineWise comes in our commitment to integrate our engine expertise and fleet intelligence into services that allow customers to optimize engine performance. We see the aftermarket as an extension of our commitment to customers.

Globally, Pratt & Whitney has supplied engines to military aircraft of various countries. Are there any plans in this regard in India?

Pratt & Whitney has more than 7,000 military engines in service with 34 armed forces around the world, powering tactical, strategic, mobility and rotary aircraft. This includes the Indian Air Force's C-17 Globemaster III transport aircraft, powered by our F117 engine, and its Pilatus PC-7 trainer fleet, powered by our legendary PT6A turboprop engine.

In terms of future opportunities, the Indian Air Force and Navy are in the process of renewing several of their fleets. In consideration are the PW100-powered Airbus C295 light transport for the Air Force and the PW210-powered Sikorsky S-76D for the Navy Utility Helicopter programme.

Recently, the company was in the news in connection with a directive issued by India's Director General of Civil Aviation (DGCA) to some airlines carrying out operations with A320neo aircraft powered by Pratt & Whitney engines. Has the issue been sorted out?

As an organization with seven decades of history in India, we continue to work closely with our customers to support their operations while retrofitting the GTF engine fleet to the latest configuration. With more than 150 GTF-powered A320neo family aircraft delivered to airline operators in India (IndiGo and GoAir) to date, we have achieved significant strides in the past year. Early engine durability issues are being resolved. We are fully committed to complying with the DGCA directive on upgrading the engines and are making rapid progress towards that goal. ■

Big plans for Avi-Oil in civil aviation, automotive-industrial sectors

Launched as a joint venture between PSUs Indian Oil Corporation Ltd. and Balmer Lawrie along with Nyco of France with the aim of manufacturing and supplying aviation and allied lubricants for India's Defence Services, Avi-Oil India (P) Ltd. has come a long way. With the company now focusing on new high-growth areas such as civil aviation, its CEO V K Mathew speaks at length on the performance so far and plans for the future.

V K Mathew
CEO, Avi-Oil

AVI-OIL
Solutions ahead

The main objective of setting up Avi-Oil back in 1993 was to achieve self-reliance in lubricants for the defence forces. Could you tell us how far this plan has been successful?

Our stated mission is to ensure the nation's self-reliance in the strategic area of Aviation Lubricants. Towards this objective, we are proud to have set up the first (and probably still only) Aviation Lubricants plant in India. The plant, located at Faridabad includes a blending unit for aviation oils, an ester manufacturing unit for production of synthetic base-stocks, Quality Assurance, filling and packaging facilities.

While indigenously manufacturing these products in India, Avi-Oil has always laid emphasis on the quality of its products. To achieve this, we have established a modern state-of-the art laboratory for Quality Assurance. The Quality Management System of AVI-OIL is certified to comply with the International Standards ISO 9001:2015 and SAE AS 9100:2016. The company provides technical support to customers for evaluation and re-inspection of the products and assists the Defence forces and other customers on lubricant applications and its usage.

At the time of its inception, the knowledge levels within the Defence forces on Aviation Lubricants was at best rudimentary. Avi-Oil has played a major part in disseminating its knowledge on Aviation Lubricants and its usage for the various aircrafts operated by the Defence. Avi-Oil was key in developing the entire Lubricants Approval process and procedures within the existing eco-system of the Defence forces and the regulatory bodies.

Avi-Oil has also indigenously developed a few products for specialty applications. Today more than 90% of the products we supply are manufactured at our plant.

Looking back at the last quarter of a century, if not for Avi-Oil, these strategic products would have had to be imported. Hence, we can proudly say that we have been contributing highly to the country's quest for indigenisation of these highly sophisticated products.

At present, Avi-Oil is giving much importance to lubricants in civil aviation. Please elaborate on the latest initiatives in this regard.

The Civil Aviation sector is witnessing major growth. In this sector, India has already become the third largest market in the world having the potential to become the second largest by 2020.

We have traditionally focussed on the military sector and acknowledge that this is the ideal opportunity for us to focus on the Civil Aviation sector. We already have most of the products / approvals in place. Now it is a question of projecting ourselves as an ideal partner for the commercial airlines with a superior customer value proposition. However, we expect this to take a little time as changing existing Supply Chains for commercial airlines include high level decisions.

AVI-OIL offers a comprehensive range of Turbine oils, hydraulic fluids, multi-purpose greases and lubricants for helicopters, business jets and aircraft. We offer high performance products as well as cost-effective, customized solutions to meet the needs of our customers.

Our products are approved by major OEMs like Safran, CFM, GE, Rolls Royce, Pratt & Whitney, and Pratt & Whitney Canada etc. and air framers like Airbus, Boeing, Bombardier, ATR, Eurocoptor, Dasault Aviation, Embraer and many others.

In India, AVI-OIL is approved by the Directorate General of Civil

Aviation (DGCA) under Section 2, Category 'E' of CAR.

Lubricants for gas turbines are also a part of Avi-Oil's product line-up. Could you give us details?

AVI-OIL provides tried and tested products for the efficient lubrication of marine and industrial aero-derivative ground gas turbines. These high performance turbine oils are dedicated to aero-derivative gas turbine performance, with excellent thermal oxidation stability, engine cleanliness and superior lubricity. Our aero-derivative gas turbine oils, Turbonycoil 600 and Turbonycoil 640 cover the gamut of operations in the Power Generation (simple and combined cycle, cogeneration etc.), oil & gas applications and marine propulsion.

Turbonycoil 600 is the standard grade turbine oil used for GE LM series, Avon & RB 211 engines.

Turbonycoil 640 is designed for high temperature equipment.

We also have in our portfolio Turbonycoil 321 which is an analogue of MS-8p for the majority of Russian designed gas turbines (Mashproekt) and Turbonycoil 210 A which an analogue of the Russian type IPM-10

Avi-Oil is involved in providing several automotive and industrial applications. Could you elaborate?

Our strategy for the Automotive and industrial applications is clear. We manufacture a range of products with various ester technologies having a primary focus on polyol and complex esters that we promote to the oil companies for their synthetic formulations for automotive or Industrial applications.

In the Automotive & Industry sectors, there is a growing interest for high-performance lubricants driven by extending drain intervals and longer life, better resistance to ageing, improved energy efficiency and fuel economy. Consideration of environmental impact is also gaining ground. Conventional mineral oil based lubricants have certain limitations in achieving these. Hence new technologies like synthetic oils (including esters) are preferred.

On the Industry side also, we have developed a few finished lubricants which are safe in nature, bio-degradable and environmentally friendly e.g. our Nycodiel range of Synthetic Bio-degradable Fire-Resistant Transformer oils. We will continue to develop niche products which are safe and Bio-degradable.

What are your future plans for the company?

While our initial objective of ensuring the nation's self-reliance in the strategic area of Aviation Lubricants has largely been met, we have to now look forward to the future. In this dynamic scenario, while our mission continues to ensure the Defence forces requirement of Aviation Lubricants are met locally, we have other sectors opening up as well

Our thrust for growth in the future will focus on the Civil Aviation and the Industrial & Automotive segments.

Our short term plans are to consolidate our existing business with the Defence forces in India and drive up the financial indicators of Turnover and profitability. In the medium term we hope to become a bigger player in the Civil Aviation market and in the long term we hope to become a major player in the Industrial & Automotive sector making us one of the leading synthetic players in the country.

At our plant in Faridabad we have a lubes blending plant and an ester manufacturing facility which are adequate to meet our current marketing plans. We still have spare capacity for the present and remain flexible to add capacity as and when the need arises especially if the Industrial sector booms.

Does Avi-Oil exports its products? Tell us about the company's major customers.

Avi-Oil's mandate beyond India extends to the countries of Sri Lanka, Nepal and Bhutan. All these markets are relatively small compared to India. However, we do export aviation products to the military and commercial segments in these countries. We are now looking at promoting industrial lubricants and esters also in these markets.

Rostec to start deliveries of the Ansat Aurus helicopter

Russian Helicopters Holding (part of Rostec State Corporation) received the approval from Rosaviatsiya to start producing the Ansat helicopters equipped with the Aurus brand comfortable cabin. This will allow to start mass production and deliveries of this Ansat modification.

Certification testing of Ansat Aurus Design was successfully completed in early February 2020. The certification tests were aimed at assessing performance of equipment in the cabin of the helicopter and electromagnetic compatibility with avionics.

The cabin layout consists of two seats for VIP passengers and three seats for accompanying persons. To achieve optimum ergonomic design, the cabin was developed using both computer modeling and testing with people of various anthropometric measurements. The Ansat helicopter has the largest cabin in its class. Combined with the design, this provides maximum passenger comfort.

IMTEX Forming & Tooltech 2020 Attracted 47,944 business visitors

The 6th edition of Asia's largest exhibition on metal forming, 'IMTEX FORMING 2020 & Tooltech 2020', organized by Indian Machine Tool Manufacturers' Association (IMTMA) at Bangalore International Exhibition Centre (BIEC), was a huge success.

The feedback from the exhibitors was impressive and many were satisfied with the business orders and enquiries that they generated. Several domestic and foreign business visitors sourced machines for their production units. Visitors connected with latest innovations in 3D printing and Industry 4.0, which are vital for moving the Indian exhibition industry forward. A live demo on implementing Industry 4.0 in manufacturing was organized at IMTMA Technology Centre during the show.

International Buyer-Seller Meet attracted 15 delegates from 8 countries. Delegates from Egypt, France, Guatemala, Kenya, Russian Federation, Sri Lanka, United Arab Emirates, and Uzbekistan participated in the buyer seller meet resulting in exploring business possibilities. The i2 Academia Pavilion (a platform for academic institutions to showcase their research for the industry) featured 52 institutions including IITs. The first prize was awarded to MIT Art, Design and Technology University, Pune.

To further the cause of making Indian exhibitions 'Green', IMTMA constituted the Eco Design Awards in 2019 and continued this initiative in IMTEX FORMING 2020 as well with 63 contestants. The award participation increased by 50% in comparison to 2019 due to the active support from the exhibitors and stand contractors.

Trade delegations had a strong presence at the show with 158 trade delegations attending the exhibition. Delegations from public sector undertakings such as Bharat Electronics Limited, Bharat Earth Movers Limited, COFMOW, Rail Wheel Factory, Indian Space Research Organisation, Defence Research and Development Organisation, Hindustan Aeronautics Limited, Ordnance Factory Board, etc. visited the show. ■

Navy Gets New Flag Officer Sea Training

Rear Admiral Rajesh Pendharkar, AVSM, VSM has assumed charge as the Flag Officer Sea Training (FOST). He is an alumnus of the National Defence Academy and was commissioned into the Indian Navy in Jan 1987.The officer is a graduate of the Defence Services Staff College, Wellington, Naval War College, Karanja, and Naval Command College, Newport, Rhode Island, USA. He holds a Master's Degree in Defence and Strategic Studies.

An Anti-Submarine Warfare (ASW) specialist, the Flag Officer has held various challenging staff and command assignments during his distinguished naval career such as commissioning crew of the Off Shore Patrol Vessel INS Subhadra at Masan, South Korea, Flag Lieutenant to the Flag Officer Commanding Maharashtra Naval Area and instructor at the National Defence Academy, besides assignments such as ASW Officer of Indian Naval ships Dunagiri and Ganga, and Analysis Officer in Weapons Analysis Unit. His other tenures at sea include those as Executive Officer of missile corvette INS Kirpan and missile destroyer INS Mysore, Commanding Officer of missile corvette INS Kora, stealth frigate INS Shivalik and the aircraft carrier INS Viraat.

The Admiral has also held the appointments of the Assistant Chief of Integrated Defence Staff at Defence Intelligence Agency, New Delhi, and subsequently as the Chief Staff Officer (Operations) in Headquarters, Western Naval Command and as the Flag Officer Commanding Maharashtra Naval Area. ■

Safran opens new CAP 2020 industrial campus in Tarnos

Safran Helicopter Engines has opened CAP 2020, its new industrial campus in Tarnos, southwest France in the presence of French Minister of the Armed Forces, Florence Parly.

Tarnos is mainly dedicated to the support of in-service helicopter engines and MRO (Maintenance Repair & Overhaul) activities. CAP 2020 will act as the hub for the company's global support network, confirming its continuing commitment to customer satisfaction.

Through optimizing processes and with new industrial capabilities in place, Safran Helicopter Engines expects to reduce MRO cycles by 30%.CAP 2020 forms the backbone of the MCO (Maintien en Conditions Opérationnelles) support contract for helicopter engines operated by the French government. For 12 years now, Safran Helicopter Engines have delivered 100% serviceability for 1,600 engines operated by France's armed forces and parapublic services, operating both at home and abroad. ■

Dhanush and Sarang weapon systems successfully tested

Dhanush and Sarang weapon systems were successfully tested simultaneously at long proof range (LPR) Khamaria in Jabalpur. The range is managed by Directorate General of Quality Assurance (DGQA), ministry of defence.

"Successful firing of Dhanush and Sarang simultaneously is a culmination of a long-drawn process that spanned over a year since its conceptualization by LPR, Khamaria in Nov 2018 and subsequent planning and execution by officers of DGQA at various levels," said an official statement.

"The proof firing of Sarang weapon system began on January 21, 2020 and since then a total of eight Sarang guns have been successfully tested at LPR Khamaria. Simultaneous proof firing of Sarang and Dhanush has been carried out for the first time to showcase the capability of DGQA towards defence preparedness of the country.

DG, DGQA, Lt General Sanjay Chauhan speaking on the occasion said, "With this achievement, Jabalpur would now become a prominent defence hub in the country to promote make in India initiative of the government of India. It will contribute immensely in saving annually an estimated Rs 100 crore in defence budget and also save time in delivering high calibre guns to the armed forces." ■

Dr. Zach Glikman appointed as head of R&D division of RAFAEL

RAFAEL Advanced Defense Systems Ltd. appointed EVP Dr. Zach Glikman as head of its R&D and Engineering division. Glikman replaced EVP Dr. Ran Gozali who has recently been appointed as head of the company's Land and Naval Systems division.

Dr. Glikman holds BSc, MSc and PhD degrees in mechanical engineering from Israel's Technion. He joined RAFAEL in 1996 and has served in a variety of senior managerial and technological roles.

RAFAEL's R&D and Engineering division is made up of some 3000 engineers, researchers and scientists from a variety of disciplines, including computer software, image processing, mechanics, electronics, aeronautics and more. RAFAEL's President and CEO, Maj. Gen. (Ret.) Yoav Har-Even stated that Glikman's experience and managerial skills will lead the division forward in reaching its goals and in continuing to give RAFAEL the technological leadership necessary to achieve its business objectives and provide its users with an operational advantage. ■

HAL Hands Over 50th Set of L-40 Stage of GSLV-MKII to ISRO

Hindustan Aeronautics Limited has handed over the 50th L-40 stage of Geo Synchronous Launch Vehicle (GSLV-MKII) to Indian space Research Organisation at a special function.

This L-40 stage is meant for GSLV MKII-F12 Flight planned by ISRO in August 2020. The Aerospace Division of HAL has so far integrated and supplied L-40 stages for 12 flights of GSLV MKII including the GSLV MKII -F10 flight in the first week of March. Apart from the Integrated L-40 stages, HAL is manufacturing the riveted structures, propellant tanks, feedlines of PSLV, GSLV MKII and GSLV MKIII launch vehicles and structures of various satellites for ISRO. HAL is one of the most reliable partners of ISRO for the past three decades and has contributed and participated in almost all of ISRO's ambitious projects namely Chandrayaan-I, Chandrayaan-II, Mangalyaan and upcoming projects like Gaganyaan.

Rear Admiral Krishna D Swaminathan taken over as Chief of Western Command

The Western Fleet, known as the 'Sword Arm' of the Indian Navy, witnessed a change of helm.

The event was held at sea onboard the aircraft carrier INS Vikramaditya. The baton of the Flag Officer Commanding Western Fleet was handed over by Rear Admiral Sanjay Jasjit Singh, AVSM, NM to the new Fleet Commander, Rear Admiral Krishna D Swaminathan, VSM. The new Fleet Commander is an alumnus of the National Defence Academy (NDA), a specialist in Communications and Electronic Warfare and has commanded frontline warships such as INS Vidyut, INS Vinash, INS Kulish, INS Mysore and aircraft carrier INS Vikramaditya.

The Western Fleet has been at the forefront of all naval operations across the Arabian Sea and Indian Ocean Region since its inception, consistently executing the military, diplomatic, constabulary and benign roles of the Indian Navy. The Fleet has grown in capacity and capability over the years and presently include the aircraft carrier, multi-role destroyers and frigates, fleet tankers, three air squadrons and integral flights.

Lincad wins additional contract from Team Leidos

Lincad, UK designer and manufacturer of specialist batteries and charging systems, has won a significant new contract from Team Leidos to supply a range of cells and batteries for ultimate use by British armed forces.

In addition to its own bespoke products, Lincad supplies cells and batteries of various chemistries from other manufacturers, using its extensive in-house testing facilities to approve products and to demonstrate continued product performance over time. This is critical where products are used for mission-critical environments, with many requiring approval to UK Defence Standards.

Lincad will also be employing its capacity to package and label supplied products for all modes of transport, including full adherence with the stringent IATA regulations. The company's own Dangerous Goods Safety Adviser (DGSA) supports all aspects of product supply.

Peter Slade, Lincad's Joint Managing Director, commented, "We're pleased to have won an additional contract from Team Leidos. We have been supplying products to military customers, including the UK MOD, for more than 30 years. This win highlights the confidence that defence customers have in Lincad to supply high performance product, often in very large volumes, at a competitive price."

Defence Minister inaugurates new LCH Production Hangar at HAL

Government has adopted Prime Minister Narendra Modi's mantra of "Make in India', for India and the world" to build strong defence and security infrastructure in the country, said Defence Minister Rajnath Sing. He was inaugurating the new Light Combat Helicopter Production Hangar at Helicopter Division in Hindustan Aeronautics Limited (HAL) Complex at Bengaluru.He said, in the last five years, India has made significant progress towards manufacturing military equipment indigenously under the 'Make in India' initiative.

Stressing that defence industry plays a major role in the economic development of the country, the minister lauded the significant contribution of organisations like HAL - a Defence Public Sector Undertaking (DPSU) that has helped India leapfrog six places to become the fifth largest economy in the world. He added that there has been increase in defence exports that have crossed Rs 17,000 crore in the last two years. Highlighting the Rs 35,000 crore exports target set for the coming years, the minister expressed confidence that HAL, through its various platforms, will contribute significantly in achieving this milestone.

Rajnath Singh commended HAL for being the backbone of the Indian Air Force and meeting the requirements of the Armed Forces. "The HAL has excelled both in operations and finance in the last five years. It has achieved operational clearance on seven platforms, including Light Combat Aircraft and Light Combat Helicopter, and overhauled platforms like Hawk and SU 30 MKI," he said. He also appreciated that HAL had a turnover of Rs 19,705 crore till March 2019 and it gave shareholders a healthy dividend of 198 percent.

Noting that HAL is now facing stiff competition from private defence industries, the minister urged the DPSU to take this changing environment as a challenge and grab the opportunities to increase their competitiveness in the international market.

Speaking on the occasion, Chairman and Managing Director R. Madhavan said, LCH is completely ready for operational induction and the Helicopter Complex is fully geared up for its production. He added that the new production hangar will augment the LCH production capacity to reach a peak production of 30 helicopters per year.

HAL also apprised the minister on the progress of new design and development programme of indigenous Indian Multi Role Helicopter (IMRH). The full-scale mock-up was showcased to Shri Rajnath Singh. The IMRH is proposed as replacement to the existing medium lift helicopters such as Mi17's, Kamovs and Seakings which will phase out in the next eight to ten years.

LCH is a 5.5-tonne class combat helicopter designed and developed by HAL.

Rear Admiral Sanjay Vatsayan takes over as Eastern Fleet Commander

The command of the Eastern Fleet was handed over to Rear Admiral Sanjay Vatsayan, NM by Rear Admiral Suraj Berry, AVSM, NM, VSM at Visakhapatnam. The Eastern Fleet comprising of frontline warships of the Indian Navy are deployed across the indo-pacific region to safeguard the nation's maritime interest.

Rear Admiral Sanjay Vatsayan is a Gunnery & Missile systems specialist, has vast experience at sea and ashore. He has commanded missile vessels Vibhuti and Nashak, the guided-missile corvette Kuthar and has also been the commissioning Commanding Officer the indigenously constructed state-of-the-art stealth frigate Sahyadri.

Offshore Patrol Vessel (OPV) YARD 45005 ICGS VARAD commissioned

Indian Coast Guard Ship `Varad', the fifth in the series of seven Offshore Patrol Vessels (OPVs) constructed by M/s Larsen & Toubro Ltd., was commissioned at Chennai by Mansukh Mandaviya, Minister of State for Shipping (Independent Charge) in the presence of Director General Krishnaswamy Natarajan, PTM, TM, Director General Indian Coast Guard and other senior dignitaries of the Central and State Government.

This 98 meter OPV has been designed and built by M/s Larsen & Toubro Ltd at Kattupalli, Chennai and is fitted with state-of-the-art navigation and communication equipment, sensors and machinery. She will be equipped with 30mm and 12.7mm guns with FCS for enhancing the fighting efficiency. The other special features onboard are Integrated Bridge System (IBS), Integrated Platform Management System (IPMS), Automated Power Management System (APMS) and High Power External Fire-Fighting system. The ship is designed to carry one twin engine helicopter and four high speed boats including two rigid hull inflatable boats for swift boarding operations, Search and Rescue, Law Enforcement and Maritime Patrol. The ship is also capable of carrying Pollution Response equipment for oil spill response at sea.

The ship draws approx 2100 tons (GRT) and is propelled by two 9100kw diesel engines and attains a maximum speed of 26 knots, with an endurance of 5000 nautical miles. The sustenance and reach, coupled with the latest and modern equipment and systems, provides her the capability to perform the role of a Command platform to accomplish the Coast Guard Charter of Duties.

The ship, on joining the Coast Guard North Eastern fleet, will be deployed extensively for EEZ surveillance and other duties as enshrined in the Coast Guard Charter, to safeguard the maritime interests of India. The Indian Coast Guard with this ship joining the fleet will have 147 ships & boats and 62 aircraft. Further, 58 ships are at various stages of construction at different Shipyards in India and 16 aircraft (ALH) are under production by M/s HAL, Bengaluru.

ICGS Varad is commanded by Commandant Pintu Bag and has a compliment of 11 officers and 91 men.

IDSA renamed as Manohar Parrikar Institute for Defence Studies and Analyses

The Government has renamed 'The Institute for Defence Studies and Analyses' (IDSA) as 'Manohar Parrikar Institute for Defence Studies and Analyses'. The decision has been taken to honour the commitment and legacy of late Manohar Parrikar. It will align the vision and aspiration of the premier defence Institute with the contribution of the former defence minister and Padma Bhushan awardee.

When Manohar Parrikar was defence minister, India witnessed a series of decisions that enhanced India's security capacities, boosted indigenous defence production and bettered the lives of ex-servicemen. His biggest contribution was towards the implementation of long-standing One Rank One Pension (OROP) demand for the Armed Forces. He initiated major military reforms with the objective of having better teeth-to-tail ratio by setting up an expert committee under Lt Gen (Retd) DB Shekatkar for enhancing combat capability and rebalancing defence expenditure.

An autonomous body under Ministry of Defence, IDSA was established as a registered society in New Delhi in 1965, dedicated to objective research and policy relevant studies on all aspects of defence and security.

The IDSA has a well-qualified multi-disciplinary research faculty drawn from academia, defence forces etc., representing a diversity of views. Research at the Institute is driven by a comprehensive agenda and the need to provide impartial analyses and policy recommendations.

Mi-171A2 reaches record speed at the Baikal Mile festival

Mi-171A2 helicopter by Russian Helicopters holding company (part of Rostec State Corporation) established a Russian record: it reached a maximum speed at a limited distance of 1.6 kilometers. During the "Baikal Mile" festival the civilian helicopter operated by the crew of the Ulan-Ude Aviation Plant (U-UAZ) reached the speed of 268 kph at a minimum altitude of 20 meters.

"Mi-171A2 has the best features of the world-famous Mi-8 type rotorcraft. The rotorcraft was tested in extreme environmental conditions: these helicopters can be operated in temperatures from -50 to +50 degrees Celsius. At the Baikal Mile festival the rotorcraft demonstrated its best features once again: speed, control, manoeuvrability, and stability. The record set at the short distance and at the limited altitude confirmed the great performance of the helicopter," said Executive Director of Rostec State Corporation Oleg Yevtushenko.

The helicopter is equipped with VK-2500PS-03 engines (the civilian version of the military helicopter Mi-28 engines) with a digital control system. The helicopter can be used for a wider range of purposes due to upgraded piloting and navigation equipment and avionics. Mi-171□2 may be effectively operated in high mountains, at low and high temperatures, high humidity, and overwater. The piloting and navigation equipment allow using the helicopter around the clock, in normal and difficult weather conditions.

The Ulan-Ude Aviation Plant is one of the manufacturing facilities owned by Russian Helicopters holding company. The Ulan-Ude Aviation Plant's current industrial and technological potential allows swiftly arranging production of new aircraft types and combining prototype construction with mass production. During the 80 years of operation, more than 8,500 aircraft have been built at the plant. Currently, the plant specialises in the production of Mi-8AMT (Mi-171E), Mi-171, □i-171□2, and Mi-8AMTSh (Mi-171Sh) helicopters. ■

Rostec delivers the first serial produced Mi-38

Russian Helicopters Holding Company delivered the first serial produced Mi-38 helicopter with a highly comfortable cabin to its client, Gazprombank Leasing company. The helicopter, built by Kazan Helicopters, will be operated by Russian Helicopter Systems (RHS).

"The newest Mi-38 is a multi-purpose helicopter that will fill the empty niche between medium Mi-8 and heavy Mi-26 models. It can be used for transportation of cargo and passengers, search and rescue operations, and as a flying hospital or an offshore helicopter for delivering specialists to oil production platforms at sea. The first serial produced machine will be used for business class transportation. We have already demonstrated this helicopter with highly comfortable cabin to the leaders of Russia and foreign countries. The superior flight performance characteristics and competitive price will guarantee that Mi-38 will find its place in the helicopter fleet of Russia, our partners in the Middle East, Southeast Asia, Latin America and other regions," said the Industrial Director of Rostec Aviation Cluster Anatoly Serdyukov.

"The delivery of the first serial Mi-38 is an important step, confirming that Kazan Helicopters is ready to serial delivery of this type of machine for both commercial operators and governments. The demand forecast of potential buyers for Mi-38 by 2030 is more than 100 aircraft," said the Director General of Russian Helicopters Andrei Boginsky.

The Director General of Kazan Helicopters Yuri Pustovgarov handed a symbolic key of the new Mi-38 helicopter to the CEO of RHS Mikhail Kazachkov. The helicopter is designed to carry up to 10 people. Mi-38 is equipped with modern navigation system. ■

Defence Minister Exhorts Shipyards to strive to be world class entities

Defence Minister Rajnath Singh reviewed the performance of four Defence Public Sector Undertakings (DPSUs) engaged in shipbuilding - Garden Reach Shipbuilders & Engineers Limited (GRSE), Goa Shipyard Limited (GSL), Mazagon Dock Shipbuilders Limited (MDL) and Hindustan Shipyard Limited (HSL).

Senior officials of the shipyards gave presentations in separate meetings with the minister and apprised him about their current activities and future programmes.

Defence Minister appreciated the improvements brought about by these DPSUs in their performance over the years and urged them to further strive to become world class and compete at international level. Appreciating the indigenization levels achieved by these DPSUs, Rajnath Singh urged them to explore further avenues in the push for 'Make in India'. He also called for full capacity utilisation and exploring new modes of business models to increase exports.

The GRSE has a significant presence in the segment of Bailey Bridges, with Border Roads Organisation (BRO), Indian Army and civil sectors being the prime customers. GRSE is exporting such bridges to friendly neighbouring countries like Bhutan, Nepal, Myanmar and Bangladesh. GRSE has the distinction of delivering more than 100 warships to the Indian Navy and Indian Coast Guard. The last ship of P-28 project namely Kavaratti is scheduled for delivery to the Indian Navy shortly. With excellent track record in ship deliveries, GRSE delivered 11 warships within the last 32 months.

The GSL has made significant inroads into global market with export of diverse vessels to Indian Ocean Region (IOR) Countries. Till date, the shipyard has exported 36 vessels and a Damage Control Simulator to friendly foreign countries. These projects were delivered ahead of schedule. The Company's superior quality ships received accolades at the highest levels. Its dominance in exports is evident from 15 overseas deliveries made in the last four years including two large Offshore Petrol Vessels to Sri Lanka, Mauritius and Myanmar. The GSL has also got into understandings with various organisations as part of expanding its operations and scope. MoUs have been signed with NBCC in the field of Project Management Consultancy, with L&T to jointly produce Defence Equipment for both domestic as well as export market, with BEL in the field of Composites and exports of Defence Products.

Collins Aerospace and Lufthansa Technik sign A320neo nacelle MRO license agreement

Collins Aerospace Systems, a unit of United Technologies Corporation and Lufthansa Technik AG announced a licensing agreement for nacelle Maintenance Repair & Overhaul (MRO) services on A320neo aircraft. Collins Aerospace, the original equipment manufacturer for the A320neo PW1100G nacelle, has more than 1,100 nacelles in service on this aircraft platform.

The agreement, which continues the collaboration between Collins Aerospace and Lufthansa Technik, calls for Collins Aerospace to provide Lufthansa Technik with technical and repair process information, access to OEM tooling, and routable asset pools to support a full suite of A320neo nacelle MRO services. Building upon Collins Aerospace's eight strategically located nacelle MRO facilities, the agreement now opens A320neo operators to LHT's expansive MRO network around the world.

Collins Aerospace

Access to this expanded MRO network together with in-region asset presence and the enhanced ability to conduct on-site repairs around the world will reduce aircraft downtime, passenger delays, and transportation costs incurred by the airline.

"As a result of this agreement A320neo operators now have access to multiple high-quality repair center locations for nacelle MRO services," said Marc Duvall, president of Aerowstructures at Collins Aerospace. "The collaborative relationship between Lufthansa Technik and Collins Aerospace, which also includes the 787 and A350XWB nacelles, ensures a high standard of quality while meeting the demands of airlines with full confidence."

Michael Kirstein, head of Aircraft Systems / ARC (airframe related components) at Lufthansa Technik, said that they are expanding the network of support to the growing A320neo customer base of over 100 airlines.

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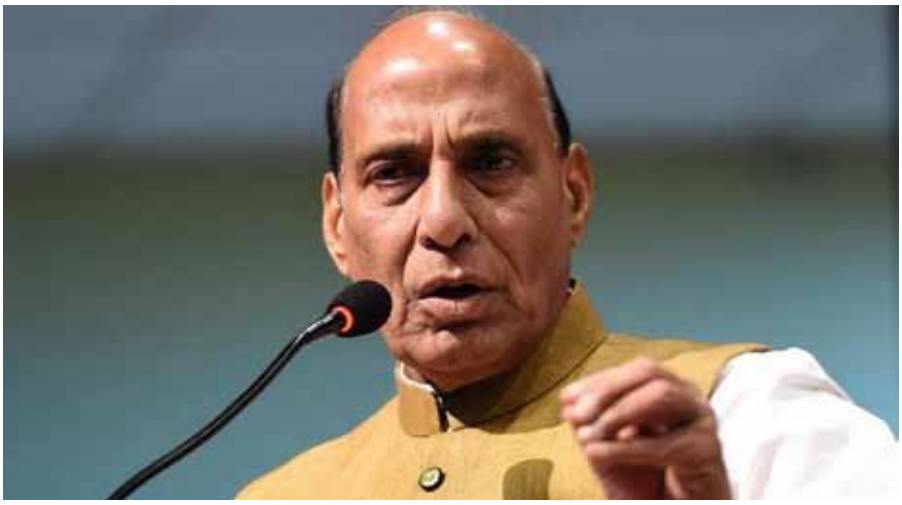
For more information and latest updates: www.segma.co/maps2020

Amitabh Bhatt is the New CEO(BC) at HAL

Amitabh Bhatt has taken over as Chief Executive Officer (CEO) of HAL's Bangalore Complex. Earlier, he was heading the LUH project in HAL as Executive Director.

Bhatt is a Post Graduate in Management and earlier served in SKF India Limited for 15 years before joining HAL. With his 32 years of professional experience, he spear-headed marketing, planning and projects. He led the team as Chief of Projects(LUH), played a key role in setting-up an integrated new Helicopter Factory, a 3000 Cr greenfield project. He is a Director on Board of HAL's Joint Venture, 'Indo Russian Helicopters Limited', formed to build Kamov KA-226T Helicopters for Defence Services. During his stint at Helicopter Division, helicopters were delivered to ONGC, Geological Survey of India and Government of Jharkhand and exported to Nepal, Surinam, Mauritius and Ecuador.

US-India Defence Relationship transforming to a collaborative one: Rajnath Singh



Defence minister Rajnath Singh, sought to synchronise the export capability of US defense sector with the ever-expanding opportunities in the defence manufacturing sector available in India to take the relationship between the two countries towards a collaborative approach from traditional 'Buyer-Seller'.

Speaking at a seminar organized during ongoing DefExpo2020 in Lucknow by the US-India business Council (USIBC), Rajnath Singh referred to several key agreements signed in 2 + 2 Dialogue during his recent trip to USA and said "Indo-US relationship will move towards collaboration approach from traditional 'Buyer-Seller'. I am confident that this relationship will be more dynamic and vibrant in future".

He added "the U.S. is one of the largest defense exporters for India and the world. At the same time, the defence manufacturing sector in India is growing at rapid pace. In such a situation, our collaboration can prove to be the biggest collaboration of this century".

While assuring the businesses that the reforms that have been made, would continue, he urged the business community to take maximum advantage of them and invest in India.

He appreciated the role played by the USIBC in improving trade relationship between the two countries.

While appreciating the support extended by the UP state government in organizing DefExpo at such a huge scale, he hoped that the investment opportunities would increase in the state with the establishment of defence corridor in Uttar Pradesh. He said that, the Prime Minister's aim of taking Indian economy to 5 $ trillion required focussed approach and that Uttar Pradesh being the largest state of the country had a major role to play, in terms of its economic contribution.

Jamuna Progresses joint Hydrographic Operations off Sri Lanka

Indian Navy's Sandhayak class Hydrographic Survey Ship, INS Jamuna (J16), commanded by Captain HA Hardas, arrived in Colombo, to carry out Joint Hydrographic Survey off the South West Coast of Sri Lanka.

The Commanding Officer called on Rear Admiral Sisira Jayakody, Chief Hydrographer of Sri Lanka Navy and Rear Admiral SA Weerasinghe, Commander Western Naval Area.

Over the two months deployment period, the ship will carry out detailed hydrographic surveys and several shore-based survey activities. Sri Lanka Navy personnel will embark the ship during the conduct of the Joint Survey. Additionally Sri Lanka Navy personnel will also be provided 'hands on' survey training during every operational turn around in port.

As a precursor to the survey operations at sea, several shore-based survey activities were progressed during the ship's stay in Colombo harbour including familiarization visit of Sri Lankan personnel onboard, briefing on capabilities of the ship , and a Harbour Training Program for the SLN sailors.

Rajnath Singh lays foundation stone for Thal Sena Bhawan at Delhi Cantt

The Union Minister for Defence, Rajnath Singh performing Bhoomi Pujan during the ground breaking ceremony of Thal Sena Bhawan, at Delhi Cantt., New Delhi.

Defence Minister Rajnath Singh laid the foundation stone of new Army Headquarters 'Thal Sena Bhawan' at Delhi Cantt. Addressing soldiers Rajnath Singh said that all the departments of the Army as well as the Department of Military Affairs would come under one roof and collectively contribute towards national security, besides effectively dealing with defence-related issues. He also added that the new building will play a significant role in saving valuable resources and contribute to administrative efficiency. The minister termed the foundation stone of the new building as a 'source of inspiration that will remind the people of the country about the sacrifices made by our soldiers'.

Rajnath Singh credited the Armed Forces personnel for making an invaluable contribution towards nation building, saying that India has emerged as one of the most powerful nations due to the sacrifices made by the soldiers. He hoped that the new building will not just be an edifice of Army personnel and civilian defence staff, but will inspire the people to achieve new goals with renewed passion and enthusiasm.

The new building, proposed in an area of 39 acres, has been conceptualised as a multi-storey green building, adopting Green Rating for Integrated Habitat Assessment (GRIHA) norms. Approx. 7.5 lakh square meters of area will be constructed to house the office complex and parking.

The building, expected to be constructed in five years, will house offices, residential complex for security personnel with basic amenities. More than 1,700 officers both military & civilian and 1,300 sub staff will be accommodated in the new building.

Bell and Pratt & Whitney Make Signing Up for Maintenance Programs Easier

GO BEYOND

Pratt & Whitney, a division of United Technologies Corp. announced that Bell 212, 412, 427 and 429 helicopter customers now benefit from a single point of contact to learn about and enroll in aircraft and engine maintenance plans.

When enrolling an aircraft into Bell's Customer Advantage Plan (CAP), customers will also have the option to sign up for a Pratt & Whitney Eagle Service™ Plan (ESP™) for their engine maintenance needs.

Bell is fully equipped and authorized to detail the benefits of Pratt & Whitney's pay-per-hour ESP™ to helicopter owners and can simultaneously register customers for CAP and ESP™. Bell 427 and 429 helicopter owners can choose ESP™ Platinum or Gold coverage for their PW207 engines, and Bell 212 and 412 helicopter owners can select ESP™ Gold or Gold Lite for their PT6T Twin-Pac® engines.

Pratt & Whitney has built one of the industry's largest customer service networks around the world that offers personalized and local solutions in all our market segments. To best serve our customers, we have more than 40 owned and designated facilities, two Customer First (CFirst) Centres in Montreal and Singapore for 24/7/365 support, seven parts distribution centres and more than 100 field support representatives and mobile repair teams situated around the globe.

Defence Minister Rajnath Singh receiving an interim dividend cheque of Rs.100.518 crore from the CMD, Bharat Dynamics Limited, Commodore Siddharth Mishra (Retd.), in New Delhi . Secretary (Defence Production), Raj Kumar is also seen.

BDL pays interim dividend

Defence Minister Rajnath Singh received a cheque for Rs 100.518 crore as the interim dividend from Defence Public Sector Undertaking (DPSU) Bharat Dynamics Limited (BDL) . Commodore Siddharth Mishra (Retd) , Chairman and Managing Director of BDL presented the cheque to the minister.

The Hyderabad-based DPSU has declared interim dividend of Rs 6.25 per share of Rs 10/- each for the financial year 2019-20. It pertains to the Government holding in the DPSU. The interim dividend declared by the Company works out to 62.5 per cent of the paid-up share capital ofRs 183.28 crore.

Secretary (Defence Production) Raj Kumar and other senior officials from Ministry of Defence &BDL were also present on the occasion.

Vertis Aviation launches VA Footprints as it pledges to offset carbon for all customers

Vertis Aviation – getting its ducks in a row for carbon-offsetting with the launch of VA Footprints.

Vertis Aviation, the Switzerland-based boutique charter company, is introducing a new carbon offset programme which commits to offsetting 100% of carbon emissions generated by charter flights it arranges. The programme, named VA Footprints, ensures that customers on each charter flight, no matter its route or distance, will have the associated greenhouse gas emissions offset at no expense to them. Vertis will pay the full carbon credit amount, on behalf of the customer, to demonstrate its commitment to a lower carbon aviation future, and the importance it gives to the growing climate crisis.

VA Footprints is launching at the beginning of March when all arranged charters will fall under the scheme. "We know the aviation industry is committed to reducing its carbon footprint but as concerns about climate change grow private aviation continues to garner attention for the amount of CO2 emissions it generates. We recognize we are part of the problem and want to take a step, albeit small, towards being part of the solution," said Catherine Buchanan, COO Vertis Aviation.

Vertis is taking an innovative approach by varying the organisations it will contribute funds to. "We have decided to choose a different project each month. This gives us the opportunity to make sure the donations are directed towards real issues that correlate to our client movements. For example, we often fly clients in and around South America and know that unimaginable amounts of the rain forest are currently being destroyed, so would select a Brazilian carbon offset project focused on reforestation. Our business has always been client driven, this is just an extension of that philosophy," explains Buchanan. "This is an essential time for the future of the planet, we cannot wait until every aircraft is flying SAF, or being electrically propelled. The problem is clear and present, and we want to do something immediately. We believe the issue is more important than just signing up to a carbon offsetting organisation and that funds should be directed to projects that are making a difference now," reiterates Buchanan.

Indian Navy Reviews Refit of Ships and Submarines and Infrastructure Buildup

Indian Navy's Annual Refit Conference (ARC) and Annual Infrastructure Conference (AIC) commenced at Headquarters Eastern Naval Command, Visakhapatnam on 18 Feb 20. The two-day conference chaired by Vice Admiral GS Pabby PVSM, AVSM, VSM, Chief of Materiel (COM), Integrated Headquarters, Ministry of Defence(Navy) is being attended by all the stakeholders representing the Naval Headquarters, three Naval Commands, the Tri-Services Andaman & Nicobar Command at Port Blair, Dockyards, Repair Yards and Material Organisations of the Navy. The delegates will deliberate upon refit plans for all ships and submarines of the Indian Navy and formulate plans for infrastructure augmentation to meet the growing requirements of the Indian Navy.

Delivering the inaugural address, Vice Admiral Atul Kumar Jain, PVSM, AVSM, VSM, Flag Officer Commanding-in-Chief, ENC welcomed the delegates and appreciated the dedicated efforts being put in by one and all in ensuring combat availability of Naval platforms. Role of the Naval Repair Yards towards the sustained operation of platforms at sea was lauded.

The Chief of Materiel (COM), during his address, complimented the forum for ensuring quality refits of ships and submarines, with a focus on the safety of personnel and material. During the course of the conference, technical and logistics aspects concerning refits were deliberated at length with a special emphasis on enhanced efficiency/ capability of sea-going units. He also urged all concerned to focus on greater indigenisation in keeping with the spirit of the 'Make in India' initiative.

The Annual Infrastructure Conference will be held on 19 Feb 20 to review progress towards modernisation and augmentation of repair and refitting infrastructure in order to maintain the lethal edge of combat assets of the Indian Navy.

Thyssenkrupp, Embraer and Atech sign contract for Brazilian Navy's Tamandaré Class Ships

Emgepron, an independent state company, linked to the Ministry of Defense through the Brazilian Navy Command, and Águas Azuis, a company created by thyssenkrupp Marine Systems, Embraer Defense & Security and Atech, signed a contract for building four state-of-the-art Tamandaré Class Ships, with deliveries scheduled between 2025 and 2028.

The construction will take place 100% in Brazil, in Itajaí, Santa Catarina State, and is expected to have local content rates above 30% for the first vessel and 40% for the others. thyssenkrupp will supply the naval technology of its proven MEKO® Class shipbuilding platform of defence vessels that is already in operation in 15 countries. Embraer will integrate sensors and weaponry into the combat system, bringing also to the program its 50 years' experience in systems technology solutions and in-service support.

Atech, an Embraer Group company, will be the supplier of the CMS (Combat Management System) and IPMS (Integrated Platform Management System, from L3 MAPPS), and the recipient of technology transfer in cooperation with ATLAS ELEKTRONIK, a thyssenkrupp Marine Systems subsidiary that produces the CMS and sonar systems.

"We are grateful to participate again in such important milestone in the history of Brazil's naval defence with the most advanced ships in their class. Looking back the great achievements we had since the construction of Tupi Class submarines in 1980s, it is a recognition of the technological excellence, reliability and longevity solutions we have offered for almost two centuries. The Tamandaré Class Programme will strengthen our ties by transferring technology and generating highly qualified jobs for the country", said Dr. Rolf Wirtz, CEO of thyssenkrupp Marine Systems

Atech, an Embraer subsidiary, develops innovative solutions for the air traffic control, command and control systems, cyber security, instrumentation and control systems, embedded systems, simulators and logistics areas.

Wings up for Singapore Airshow 2020

Dr Ng Eng Hen, Minister for Defence, and Khaw Boon Wan, Coordinating Minister for Infrastructure and Minister for Transport at the ribbon cutting ceremony of Singapore Airshow 2020.

Singapore Airshow 2020, considered Asia's largest aerospace and defence event unveils its curtain for its latest edition at Changi Exhibition Centre, Singapore.

An international marketplace strategically located in the heart of the thriving Asia Pacific region, the Singapore Airshow is Asia's largest and one of the most important aerospace and defence exhibitions in the world. The show has established itself as an important global marketplace and networking powerhouse for the world's aviation community. It consistently attracts more than 60 of the top 100 global aerospace companies to showcase their latest technologies, solutions and developments.

Vincent Chong,Chairman, Experia Events, at the opening ceremony of the show, said that they have implemented a range of precautionary measures and remain ready to introduce further measures as necessary, in close consultation with the health authorities.

"We are standing at the cusp of transformation. As we position ourselves for the decades ahead, we need to constantly challenge current mindsets to stay relevant and sustainable. The Singapore Airshow offers multiple ways to facilitate such discussions," he said.

MRF stall at Singapore Airshow. MRF is supplying tyres for Military Aircraft and Helicopters of Indian Airforce and also exporting to few other countries including Malaysian Airforce.

IAF Chief Air Chief Marshal Bhaduria visiting Brahmos stall.

AAI signs concession agreements for Lucknow, Ahmedabad & Mangaluru Airports

Arvind Singh, Chairman, AAI during signing of three concession agreements for Operations, Management and Development of Ahmedabad, Lucknow and Mangaluru airports by B.K. Mehrotra, Executive Director, Strategic Initiative Unit on behalf of AAI and Behnad Zandi, Chief Executive Officer - Airports Adani Enterprise Ltd

Airports Authority of India signed three Concession Agreements with Adani Group for Operations, Management and Development of Ahmedabad, Lucknow and Mangaluru airports through PPP mode with the Concessionaires i.e. Adani Ahmedabad International Airport Ltd, Adani Lucknow International Airport Ltd and Adani Mangaluru International Airport Ltd.

The agreements were signed by B.K. Mehrotra, Executive Director, Strategic Initiative Unit on behalf of AAI and Behnad Zandi, Chief Executive Officer - Airports Adani Enterprise Ltd. at Corporate Headquarters of AAI in the presence of Chairman, AAI, Board Members and other senior officials of AAI and Adani Enterprises Limited.

The concessionaires are required to take-over the Ahmedabad, Lucknow and Mangaluru airports after fulfilling certain conditions precedents within 180 days from 14th February, 2020 and will operate, manage and develop the airports for next 50 years, in accordance with the terms and conditions specified in the Concession Agreements

An International competitive bidding process for PPP transaction for six airports (viz. Ahmedabad, Lucknow, Mangaluru Guwahati, Jaipur and Thiruvananthapuram,) was initiated by AAI during December 2018 and Adani Enterprises Limited emerged highest bidder for these airports. During July 2019, the Central Government conveyed the approval for award of concession to the Highest Bidder for Ahmedabad, Lucknow and Mangaluru airports. In respect of remaining three airports, the approval of the Central Government is awaited.

The concessionaires shall pay AAI a per passenger domestic fee of Rs.177.00, Rs.171.00 and Rs.115.00 for Ahmedabad, Lucknow and Mangaluru Airports respectively (both embarking and disembarking passengers) and in case of international passengers, the Concessionaire will pay two times of per passenger domestic fee. Further, the per passenger fee will be revised annually taking into account of the variation in the CPI (IW).

The concession fee that AAI would receive will be utilized for the maintenance and development of other brownfield airports and also development of RCS – UDAN and other Greenfield airports across the country. ■

GRSE delivers the 4th Anti-Submarine Warfare Corvette, Yard 3020 (Kavaratti)

Defence Minister Rajnath Singh receiving the dividend cheque for Financial Year 2018-19 from the CMD of Garden Reach Shipbuilders & Engineers Limited (GRSE) Kolkata, Rear Admiral (Retd.) V. K. Saxena, in New Delhi.

Garden Reach Shipbuilders and Engineers Ltd., (GRSE), a leading Warship builder and Miniratna Category 1 Company under the administrative control of the Ministry of Defence delivered Yard 3020(Kavaratti), to the Indian Navy on 18 Feb 20.The ship is the 104th Warship built and delivered by GRSE since its inception in 1960 and is the Last in the Series of 04 Anti-Submarine Warfare Corvettes (ASWC) under the Project 28.

"Kavaratti" was handed over by Rear Admiral VK Saxena, IN (Retd.), Chairman & Managing Director, GRSE to Cdr. Sandeep Singh, Commanding Officer (Desig) of the ship, in the presence of Cmde. DK Goswami, CEO, Chairman, D448 Eastern Naval Command, Shri S S Dogra, Director (Finance), Cmde. Sanjeev Nayyar, IN (Retd), Director (Shipbuilding) and Cmde. P R Hari, IN (Retd), Director (Personnel) and other Senior Officials of Indian Navy and GRSE.

The first three ships of the series, INS Kamorta, INS Kadmatt & INS Kiltan were delivered earlier and now form an integral part of Eastern Fleet of the Indian Navy. The P 28 Class of ships strengthens the Indian Defence System and is the shining Armor in the "Make in India" programme.

The first 03 Anti-Submarine Warfare Corvettes built by GRSE have been creating waves across the world since their induction to the Indian Navy,having participated in several Overseas Operations and International Maritime

Exhibitions at Malaysia, Singapore and other countries including International Fleet Reviews. The 3rdAnti-Submarine Warfare Corvette, INS Kiltan recently participated in the prestigiousExercise Malabar 2019, an endeavor to strengthen India-Japan-US Naval Cooperation and enhance inter – operability. With 90% Indigenous Content, equipped to fight in Nuclear, Biological and Chemical Warfare conditions, featuring the integration of a host of weapons and sensors, the P 28 Class of ships is yet another milestone in the journey towards self – reliance and Make In India. These Anti-Submarine Warfare Corvettes have catapulted the Indian Navy into the Elite Club of building Stealth Ships. The "X" form of the Hull and Super Structure gives very Low Radar Cross Section and special design of propulsion system minimizes Radiated Underwater Noise. The Stealth features make the ships almost invisible to the enemy both above and below the sea surface.

The Kamorta class of Corvettes are designed to be equally effective in the littorals as well as in the deep oceans. These class of ships have been designed as an extremely versatile ASW Platform capable of neutralizing the enemy submarines using her indigenous weapons like Torpedoes, Rocket Launchers and integral Helicopter. The ship has a displacement of 3250 tonnes, length of 109 M and width of 12.8 M.The ship has a maximum speed of 25 Knots, with an endurance of over 3400 NM at 18 knots speed and can accommodate 17 officers and 106 sailors.

Some of the special features incorporated in these ships for the first time in the country include the following:-

(a) Special High Strength Warship Grade Steel Type DMR 249A Indigenously developed and has been used for shipbuilding for the first time in the country on these ships.

(b) Kavaratti and INS Kiltan are the first two major warships to have the unique feature of Superstructure made of Carbon Fiber Composite Material. It is for the first time in the country that such composite material is being integrated with steel hull of a ship and GRSE is the first shipyard in the country to have successfully achieved this task.

(c) Over 90% Indigenous Content and hence a major step towards achieving self-reliance in the state of the art warship design and construction.

The journey of delivering "Kora Class" Missile Corvettes way back in the 1990s to the delivery completion of the four Anti – Submarine Warfare Corvettes gives GRSE the exclusive edge in construction of these Frontline Corvettes for the Indian Navy.

GRSE currently has a strong order book position of over Rs 27, 000 crore under which there are a total of 18 warshipsat various stages of construction. GRSE touched a key milestone with the delivery of 06 warships in 12 months (Mar 19-Feb 20). With the delivery of Kavaratti, the company has Five Shipbuilding Projects that are under way viz., Four Projects of the Indian Navy and One of the Indian Coast Guard. GRSE is aggressively bidding for the new Request for Proposals (RFP) that have been issued by Ministry of Defence and is exploring possibilities for Export to friendly countries for its Warships and Pre-fabricated Steel Bridges.The shipyard has been recently awarded with the ICC PSE Excellence Award (2017-18) for "Operational Performance Excellence" and 16th National Award for "Excellence in Cost Management" in the category of Medium Public Sector Manufacturing Companies. In Jul 19, GRSE was also recognised as one of the "Next Fortune 500 Companies of India".

GRSE continues to sail on a growth trajectory with incorporation of latest technologies (Artificial Intelligence, Machine Learningand Data Analytics) in various areas of operations to improve internal efficiencies & profit margins.

Defence Minister holds talks with Qatar's Deputy PM

Defence Minister Rajnath Singh held delegation-level talks with Deputy Prime Minister and Minister of State for Defense Affairs of Qatar Dr Khalid bin Mohamed Al Attiyah. During the meeting, the two Ministers reiterated their commitment to strengthen the bilateral defence cooperation, including defence industry relationship.

Bay of Bengal offshore Sailing Expedition (BBSE)

Indian Naval Sailing Vessels Mhadei and Tarini set sail for the Bay of Bengal Offshore Sailing Expedition on 22 February 2020 from the Indian Naval Ocean Sailing Node at Goa. The expedition was flagged off by Rear Admiral SJ Singh, Commandant Naval War College, Goa. This would be the maiden major mixed crew sailing expedition of the Indian Navy with crew composition of five naval officers including two women officers in each boat, covering a total distance of 6,100 Nautical miles each and will be at sea for 55 days. Captain Vipul Meherishi, Skipper Tarini would be the Expedition Leader and Captain Atool Sinha would be Skipper Mhadei. The Skippers for the expedition are accomplished yachtsmen who have brought laurels to the navy and the country by winning medals, both at national and International level competitions.

The prolonged voyage of nearly three months during this expedition would showcase harnessing of renewal energy namely wind energy to propel the boats. The expedition is also in pursuance of the GOI mission of 'Nari Shakti' providing opportunity to women officers at par with men. The expedition also aims to enhance the level of cooperation and camaraderie between the littoral nations in the Bay of Bengal whilst exhibiting the IN expertise in the domain of ocean sailing. The sailing vessels as part of the expedition would make replenishment halts at ports of Phuket, Yangon, Chittagong and Colombo, wherein interaction with various state officials would be conducted including harbour sorties for visiting dignitaries.

Mhadei and Tarini inducted in the Indian Navy on 08 February 2009 and 18 February 2017 respectively have been the vessels of choice for the naval expeditioners in various sailing expeditions, including three circumnavigations and thus have thousands of miles tucked under their belt. Mhadei has successfully completed two circumnavigations, three Cape to Rio trans-Atlantic races and several other expeditions around various continents. The vessel has covered in excess of 1,36,000 nautical miles. Tarini created history in 2017-18 when six Indian Naval women officers sailed the vessel on maiden circumnavigation voyage titled Navika Sagar Parikrama. She thereafter also participated in mixed crew Kochi to Seychelles sail training expedition during 10th anniversary celebration of the IONS.

The Bay of Bengal Offshore Sailing Expedition will generate goodwill amongst the visiting nations and inspire participation in the forthcoming BIMSTEC Sailing Expedition being planned with mixed crew of member nations onboard Indian Naval Sailing Vessels. ■

Schiebel Camcopter® S-100 Impresses at Sulphur Sniffer Capability Test

Schiebel, together with partner Nordic Unmanned, successfully completed a two-day test of its sniffer capability on board the CAMCOPTER® S-100 UAS in the shipping lane outside Gniben, Denmark. Ships operating in Europe's busiest sea routes are permitted to emit exhaust fumes with a sulphur oxide content limited to no more than 0.1 percent.

Amongst other solutions that were put in place to enforce this International Maritime Organisation (IMO) 2020 regulation, one option is to use Unmanned Air Systems (UAS), such as the CAMCOPTER® S-100, equipped with a sulphur sniffer. The UAS flies through the ship's exhaust plume to measure the sulphur emissions and uses its Automatic Identification System (AIS) to identify the ships. The CAMCOPTER® S-100 performed two successful flights of about four hours during the trial and provided compliant measurements of sulphur emissions. The certified sniffer provides live readings of the sulphur level in the ship's exhaust plume. In addition to the sulphur sniffer and the AIS, the CAMCOPTER® S-100 was equipped with an L3 Harris Wescam MX-10 real-time Electro-Optical/Infra-Red (EO/IR) camera.

Knut Roar Wiig, CEO at Nordic Unmanned said: "Due to the extensive operational experience in the maritime area as well as its endurance and ease of deployment, the CAMCOPTER® S-100 is the ideal aircraft to sniff out the polluters. The measurement test scored 10 out of 10 points and we demonstrated our capability as an operator and ability to quickly get the required authorisations to deploy and fly the service. We really look forward to helping maritime authorities in Europe and other parts of the world to enforce the IMO 2020 regulation by deploying our crew and the CAMCOPTER® S-100 to conduct sulphur emission monitoring." ■

Radm Antony George, NM, VSM, CSO (Training)

Rear Admiral Antony George assumed charge as the Chief Staff Officer (Training) on 20 Feb 20 at Headquarters, Southern Naval Command.

A graduate from St. Stephen's College, the Flag Officer was commissioned into the Indian Navy on 01 July 1987. An Anti Submarine Warfare Specialist, he hails from the district of Alappuzha in Kerala.

During his illustrious career spanning over 32 years, the Flag Officer has tenanted several important appointments, both at sea and ashore. His major sea assignments include the Fleet ASW Officer of the Western Fleet, Commands of the Missile Corvette INS Khanjar and the Guided Missile Frigate INS Tarkash (which he commissioned in Kaliningrad, Russia).

Other important shore assignments tenanted by the Flag Officer include Command ASW Officer of the Eastern Naval Command, instructor at the prestigious Defence Services Staff College and Commodore Bureau of Sailors.

The Flag Officer has undergone the Advanced Command and Staff Course in UK and the Naval Higher Command Course at the Naval War College, Mumbai.

On promotion to Flag rank in October 17, he was appointed as the first Assistant Chief of the Naval Staff (Staff Requirements), the post which he tenanted for over two years.

The Flag Officer is the recipient of the Nao Sena Medal and the Vishisht Seva Medal. ■

President of India Presents Colour to INS Shivaji

President of India and the Supreme Commander of Indian Armed Forces, Ram Nath Kovind awarded the President's Colour to INS Shivaji, Lonavala, commanded by Commodore Ravnish Seth. The President's Colour is the highest honour that can be bestowed upon any military unit was received by Nishan Adhikari on behalf of INS Shivaji during an impressive parade comprising 130 officers and 630 Sailors of the Indian Navy, which included a 150 men Guard of Honour.

Bhagat Singh Koshyari, the Governor of Maharashtra, Admiral Karambir Singh, Chief of the Naval Staff, Vice Admiral AK Chawla, Flag Officer Commanding-in-Chief, Southern Naval Command along with senior defence and civilian dignitaries were present on the occasion and witnessed the ceremonial parade.

President congratulated the Officers and Sailors of INS Shivaji for their impeccable turnout, smart drill and impressive appearance of the establishment. He also congratulated the personnel of INS Shivaji both Past and Present for the great service rendered to the nation for the past 75 years in pursuance of their duties. The contribution of INS Shivaji in training of modern-day Marine Engineers was specially noted by the President.

INS Shivaji was established in 1945 and it is one of the premier training establishments of Indian Navy. The establishment has been entrusted with responsibility of imparting training to officers and sailors of the Indian Navy, Indian Coast Guard and friendly foreign navies in the domains of Marine Engineering. Nuclear, Biological and Chemical Defence including Damage Control and Fire Fighting, Main & Auxiliary Controls. Overall, the establishment conducts more than 500 courses for officers and sailors and has an annual training throughput of more than 2800 officers and 7800 sailors. Shivaji also has the proud privilege of imparting training to personnel from 20 countries worldwide with an annual throughput of over 250 international trainees on an average.

A Special Cover marking the Platinum Jubilee of INS Shivaji was also released by the President. The award of Presidents Colour marks a very important milestone in the history of INS Shivaji. The President's Colour shall be proudly displayed and carried at all ceremonial parades at INS Shivaji to motivate and inspire all future Marine Engineers of the Navy.

New UAV Turbine Engines From PBS

PBS turbojet engines have proven to be efficient propulsion units in hundreds of aerial targets, UAV and UCAV systems and piloted micro jets.

An excellent power-to-weight ratio, compact design, reliable operation, low fuel and oil consumption together with starting at high altitudes and at high speeds make PBS jet engines stand out among competing engines.

Latest development – Turbojet Engine PBS TJ150

With its in-house expertise in design, development, production and testing, the company PBS continually works on a new engine development in order to meet missile and UAV market requirements. Recently, the company PBS finalized the development of a new turbojet engine PBS TJ150.

Weighing just 19.6 kg and with a diameter of 272 mm, the engine offers 1,500 N thrust. It features an integrated starter-generator with 600 W electrical power output. Gearbox design offers the possibility to install an additional alternator with output power up to 1.5 kW. The engine is controlled through full-authority digital system FADEC.

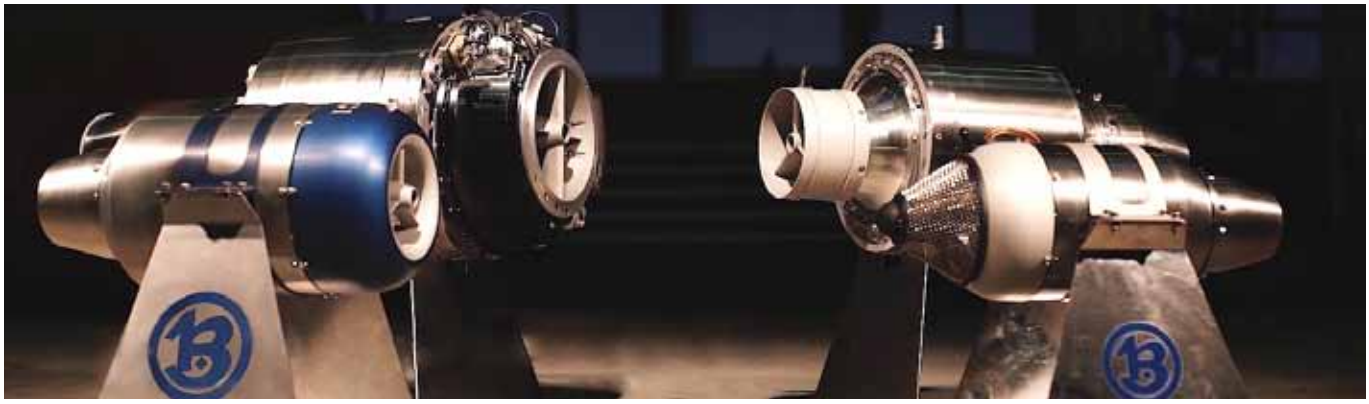
The PBS TJ150 can operate at a speed of up to 0.9 M, ambient temperature of -50

PBS Turboprop Engine TP100

Technical parameters		
Max. power	180 kW	241 HP
El. power output	720 W	
Dimensions and weight		
Length	891 mm	35.08 in
Weight	61.6 kg	135.8 lb
Operating range - engine operation		
Max. altitude	9,000 m	29,500 ft
Operating range - engine start		
Max. altitude	6,000 m	19,700 ft

PBS Turbojet Engine TJ150

Technical parameters		
Max. thrust	1,500 N	337 lbf
El. power output up to	1,500 W	
Dimensions and weight		
Outer diameter	272 mm	10.7 in
Weight	19.6 kg	43.2 lb
Operating range - engine operation		
Max. altitude	9,000 m	29,528 ft
Max. speed	0.9 M	
Operating range - engine start		
Max. altitude	4,000 m	13,123 ft
Max. speed	0.6 M	



°C to +45 °C and altitudes of up to 9,000 m. It has an ability of ground and in-flight restart of up to 4,000 m with maximum speed of 0.6 M.

The newly developed engine PBS TJ150 is based on the most commercially successful model PBS TJ100 turbojet engine (1,250 N thrust). It is a single-shaft engine composed by a starter generator integrated in the radial compressor impeller, one axial turbine, autonomous oil system and digital control system. To this day almost 1,000 units have been delivered to customers.

PBS Turboprop and Turboshaft Engines

PBS is also a manufacturer of turboprop and turboshaft engines designed for MALE UAVs, unmanned helicopters and small experimental aircraft. The PBS TP100 and TS100 develop max. power of 180 kW. Low weight, small installation dimensions, extended intervals between overhauls (TBO) and high efficiency at high altitudes are the competitive advantages of PBS turbine engines. They are able to achieve flight levels of 9,000 m with a maximum starting height of 6,000 m.

Auxiliary Power Units

Auxiliary Power Units (APU) which are used all around the world, both in defence and civil airplanes and helicopters is also one of the main product lines of PBS.

They operate as air generators for starting systems and as emergency power and hydraulic sources.

Their main advantages are simultaneous supply of electric power and compressed air, continuous operation for up to 6 hours, long service life and ability to start and operate in altitudes of up to 6,000 m.

SalamAir selects Commsoft's OASES

SalamAir has chosen Communication Software's OASES engineering and maintenance platform for its growing regional airline.

The deal, which was signed on New Year's Eve, was Commsoft's seventh new OASES contract in 2019. It will see the Oman-based airline using several OASES modules, all of which will be implemented onCommsoft's private cloud.

These include its core, airworthiness, planning, materials, line maintenance control and warranty modules.

The first low-cost carrier based in Oman, SalamAir was established in 2016 and now serves 27 destinations. Its current fleet comprises three Airbus A320-214 (CFM56 engines) and five Airbus A320-251Neo with a further A320Neo aircraft being planned. Implementation will start with the materials module in the next month and CAMO implementation will commence as new aircraft arrive.

The OASES implementation will start immediately with onsite implementation likely to commence in March 2020.

Nick Godwin, Commsoft's Managing Director, said:

"We are very pleased to be working with SalamAir, one of the fastest growing low-cost carriers in the Gulf region. We look forward to a rapid implementation and a long successful relationship."

47 Squadron of Indian Air Force Celebrates Diamond Jubilee

No. 47 Squadron of Indian Air Force currently stationed at AF Station, Adampur, completed 60 years of its glorious service to the nation. To commemorate the occasion, Diamond Jubilee celebrations were organised and the aerial display by the Surya Kiran Aerobatics Team, IAF vintage Flight, Air Devils and performance by the Air Warriors Drill Team enthralled the audience.

The Squadron was formed on 18 December 1959 at Air Force Station Halwara. It has operated Toofani, MiG-21 FL and MiG-29 fighter aircraft. The Squadron took part in both 1965 and 1971 Indo-Pak wars and won numerous accolades.

The Squadron continues to maintain its operational edge and has actively participated in Op Safed Sagar, Op Parakram and the operations post Balakot Strike in Northern sector.

RAFAEL's Drone Dome intercepts multiple maneuvering targets with LASER technology

The system achieved 100% success in all test scenarios.

In a recent demo conducted in Israel, RAFAEL's Drone Dome C-UAS system performed interceptions of multiple drones, including maneuvering targets, using its hard-kill LASER BEAM director. The system achieved 100% success in all test scenarios.

The stages of the interceptions included target detection, identification, and interception with a high-power LASER beam.

Drone Dome is an innovative end-to-end C-UAS solution for securing air space from hostile drones. Fully operational and deployed globally, Drone Dome offers a modular and robust infrastructure, comprised of electronic jammers and sensors, allowing effective detection, full identification and neutralization of multiple Micro and Mini UAV threats employing its unique algorithms.

One of Drone Dome's unique capabil1ities is integrating laser technology for hard-kill capabilities. When the C4I performs a positive identification, the system allocates the target to the laser effector, which locks and tracks the target and performs hard-kill.

Drone Dome is designed to address threats posed by hostile drones both in military and civilian sites, offering advanced solutions for maneuvering forces and military facilities, critical border protection, as well as civilian targets such as airports, public facilities, or any other sites that might be vulnerable to the increasing threat of both terror and criminal drones.

Drone Dome is a member of RAFAEL's family of active air and missile defense technologies, which includes the operational and combat-proven Iron Dome, David's Sling, and the SPYDER family. All together they make up a suite of multi-layered solutions against a variety of aerial threats.

IAI promotes Collaboration with Intelligence and Remote Sensing Startups

• IAI's ELTA subsidiary to offer the participating startups to hold their proof of concept on ELTA's operational intelligence and radar systems, and will facilitate their access to global customers and markets.

• The program targets startups developing high-frequency sensors, quantum computing, photonics, acoustics, ultrasonic, and other disruptive sensory or data fusion technology.

ELTA Systems, a division of Israel Aerospace Industries (IAI), is partnering with the international accelerator MassChallenge office in Israel in offering a acceleration program of a unique Future Sensing companies. The program targets startups that develop high-frequency sensors, quantum computing, photonics, acoustics, ultrasonic, and other disruptive sensory or sensory data fusion technologies. ELTA offers the participating startups significant support, including access to customers and global markets in which ELTA is present, and the option to be integrated with ELTA's airborne intelligence, cyber, ground and air defense, and space systems. This first-of-its-kind collaboration embodies IAI's strategy to expand its global innovation partnerships with startups involved in sensory technologies.

Yoav Turgeman, IAI VP and CEO of ELTA, said, "Under the collaboration with MassChallenge, ELTA will be part of the selection processof the startups that will participate in the Future Sensing program and review the startups that already joined MassChallenge. The identification of innovative technologies that are relevant for IAI needs will contribute considerably to our future growth engines. The accelerator program includes mentoring, joint development, and business collaborations. The participating startups will be chosen with ELTA to develop technologies that meet pre-defined criteria to promote innovation, expand our business operations, and preserve ELTA's technological superiority.

Yonit Serkin, managing director of MassChallenge Israel, said, "Our collaboration with IAI is growing closer, providing MassChallenge with a strategic partner for creating a high-quality infrastructure for startups that seek to transform their innovation into trailblazing products for the global market. ELTA's local and global capabilities infuse excellence into MassChallenge's international network of collaborations with global corporations and high-profile investors."

GRSE Receives Governance Now PSU Awards 2019

GRSE has been awarded Governance Now PSU Awards 2019 in the categories of "Communication Outreach", "Digital PSU" & "CSR Commitment."

Arjun Ram Meghwal, Minister of State, Ministry of Heavy Industries & Public Enterprises, Government of India graced the occasion as the Chief Guest and Shailesh Lodha, actor and writer, famously known as Taarak Mehta as a special guest, felicitated the Public Sector Enterprises.

Director (Personnel), GRSE, Cmde P Hari, IN(Retd.) received the Awards.

Rear Admiral Puruvir Das, NM assumes charge as FOGNA

Rear Admiral Puruvir Das, Nau Sena Medal took over the reins of the Gujarat, Daman and Diu Naval Area from Rear Admiral Sanjay Roye, Vishisht Seva Medal as its fourth Flag Officer Commanding at a ceremonial parade held at Headquarters Gujarat, Daman and Diu Naval Area.

In a career spanning 30 years, the Admiral, an alumnus of the NDA has held numerous specialists, staff and operational appointments; both afloat and ashore. The officer has commanded Indian Naval ships Kozhikode, Kora, Shivalik and the aircraft carrier Vikramaditya. The Navy gives very high priority to the frontline state of Gujarat, due to its strategic location, vast coastline and economic importance for India. The FOGNA is responsible to the Flag Officer Commanding-in-Chief, Western Naval Command for all Naval operations in Gujarat, Daman and Diu Naval Area. ■

Rear Admiral Sanjay J Singh Takes Over As Commandant, NWC GOA

Rear Admiral Sanjay Jasjit Singh AVSM, NM took over as the Commandant of the prestigious Naval War College, Goa on 18 Feb 20. He has held a wide range of operational, training and staff appointments over the past three decades. Prior to this appointment, he was the Flag Officer Commanding, Western Fleet. The lead drafter of the Indian Navy's Maritime Doctrine, 2009; Strategic Guidance to Transformation, 2015; and the Indian Maritime Security Strategy, 2015, he has completed several post graduate study programmes including MSc and MPhil in Defence and Strategic Studies from Madras University; MA in Defence Studies from Kings College, London and MA (History), MPhil (Pol) and PhD (Arts) from the University of Mumbai. ■

Ultra continues support of tracking systems for the UK Royal Navy

Ultra will continue to support the Electro-optical tracking system as part of Babcock's UK Royal Navy Type 45 Destroyer 'Gun System, Automation '(GSA9) in service support contract with the UK Ministry of Defence. The three-year contract, with the option for a two-year extension, will provide support for all aspects of the electro-optical tracking system for GSA9.

Featuring high resolution video performance with extensive levels of automation requiring minimal operator intervention, the system simplifies operations throughout all stages of surveillance, detection, acquisition, tracking and engagement.

Ultra's electro-optical tracking systems operate in all regions and climatic conditions, from arctic to tropical waters and are installed on all classes of vessel, from small patrol boats operating in coastal, offshore and EEZ patrol operations to major naval surface combatants, aircraft carriers and auxiliaries operating in littoral and blue water environments.

Mike Williams, Managing Director, Ultra CSS said: "Ultra is pleased to be engaged with Babcock in supporting this important frontline system and looks forward to delivering high levels of availability and service throughout the contract" ■

Banwarilal Purohit, Governor of Tamil Nadu is releasing the souvenir during the 70th Annual General Meeting of the Aeronautical Society of India at Chennai. Dr. Anand Jacob Verghese, Vice President of AeSI, Chairman of AeSI, Chennai Branch and Director & CEO of Hindustan Group of Institutions, Dr. K. Sivan. Chairman, ISRO, Dr. R. K. Tyagi, President, AeSI , Dr .V .K. Saraswat, Member NITI, Aayog , Dr. Lalit Gupta, Secretary General, AeSI, Dr. R. Asokan, Secretary, AeSI, Chennai Branch also seen.

AeSI meeting, conference on regional transport aircraft held in Chennai

As part of the event, the Aeronautical Society of India's (AeSI) awards were presented to 15 members for their outstanding contribution in the field of aerospace.

A.S. Kiran Kumar, Former Chairman of ISRO and new President of Aeronautical Society of India addressing the gathering .

The 70th annual general meeting (AGM) of the Aeronautical Society of India (AeSI) and a national conference on 'Recent developments in aerospace and defence technology' with the theme 'Regional transport aircraft - opportunities and challenges' were held at Hindustan Institute of Technology and Science (HITS), Chennai.

The chief guest for the two-day event was Banwarilal Purohit, Governor of Tamil Nadu. Dr. Anand Jacob Verghese, Vice President of AeSI, Chairman of AeSI, Chennai branch and Director & CEO of Hindustan Group of Institutions welcomed the gathering. Guests at the event included Madam Chancellor Dr. Elizabeth Verghese, members of the management, officials of Hindustan Group of Institutions, awardees, speakers, delegates from ISRO, DRDO, HAL, NAL, DGCA, Indian Air Force, Indian Navy, Airports Authority of India, airlines, aviation companies, faculty and students.

The presidential address was delivered by Dr. R K Tyagi, President, AeSI and acceptance speeches were given by Dr .V K Saraswat, Member, NITI Aayog and Dr. K Sivan, Chairman, ISRO. The souvenir was released by the Governor. Awards were presented to 15 members for their outstanding contribution in the field of aerospace. Dr. Lalit Gupta, Hon. Secretary General, AeSI declared the awards. Dr. R Asokan Hon. Secretary, AeSI, Chennai branch proposed the vote of thanks.

The award winners included Dr. V K Saraswat (Lifetime Achievement Award); Dr. K. Sivan (Outstanding Leader of the Year in Aerospace & Defence); Dr. K Rajalakshmi Menon , Programme Director (ISTAR) and Associate Director AEW&C System, CABS, DRDO, Bangalore (Outstanding Woman Scientist / Engineer / Technologist of the Year); S. Somanath, Director, VSSC, ISRO Thiruvananthapuram (National

Secretary (Defence Production), Raj Kumar meeting Defence, Minister Rajnath Singh, in New Delhi.

GKN Aerospace to support Gripen E RM16 aero-engine

GKN Aerospace has been selected for the technical product support and MRO for the Gripen E RM16 Engines of the Swedish Air Force. The RM16 is the Swedish name for the aero-engine of the new Gripen E aircraft and GKN Aerospace's continued support to the platform was confirmed by FMV, in January. The engine is based on the General Electric F414 aero-engine which powers F-18 Super Hornet. GKN Aerospace will closely collaborate with Saab and GE to build up the necessary infrastructure and competence for the new engine type.

The selection reinforces GKN Aerospace's unique position and extensive experience in aero-engine support. It effectively means that technical support and maintenance for all versions of the Gripen aero-engines will be available in Trollhättan,Sweden.

Aeronautical Prize); Dr. G Ayyappan, Programme Director, STS, VSSC (Dr. Biren Roy Space Science / Design Award); Dr. Sudha U P V, Scientist / Engineer 'E', ADA, Bangalore (Dr. Biren Roy Trust Award) ; Abhishek Singh, Dy GM (Design) and team, Mission & Combat System, R&D Center, HAL, Bangalore (Dr. V M Ghatage Award); Rear Admiral Deepak Bansal, Admiral Superintendent, Naval Ship Repair Yard, Kochi (Dr. V M Ghatage Award); Dr. Dipak Kumar Maiti, Professor & Head, Department of Aerospace Engineering, IIT Kharagpur (Excellence in Aerospace Education Award); K Sathyanarayana, Assistant Engineer, Solar Panel Division, Power Systems Group, U R Rao Satellite Centre, Bangalore (Production Technology Award); G Jagannatha, Assistant Engineer, U R Rao Satellite Centre (Production Technology Award); Shashank Mishra, Technical Officer 'D', Defence Materials and Stores Research & Development Establishment, Kanpur (Indigenisation of Aeronautical Equipment Award); Sumanta Kumar Sahoo, High Skilled Technician, Sukhoi Engine Division, HAL, Sunabeda (Indigenisation of Aeronautical Equipment Award); Manu Varrier, Scientist / Engineer 'SF', LPSC Valiamala (Swarna Jayanti Award); and Sunita Devi Jena, Technology Director, DORP & Project Director, LFRJ, Directorate of Ramjet Propulsion DRDL, Hyderabad and team (Bharat Ratna Dr. A P J Abdul Kalam Award).

Several memorial and technical lectures were delivered on both days of the event. They included the Bharat Ratna Dr. A P J Abdul Kalam Memorial Lecture by Dr. C G Krishnadas Nair, former Chairman, HAL on 'Realise Make in India dream by working together.'

Meanwhile, the Neelakantan Memorial Lecture was delivered by Air Marshal Arvindra Singh Butola, VM,VSM Air Officer Commanding in Chief, Head Quarters Training , Southern Command, Indian Air Force on 'Regional connectivity'. Dr. Biren Roy Memorial Lecture was given by M S Velpari, Director (Operations), HAL on 'Technological development and innovation continually shape the A&D industry.' Dr. Kalpana Chawla Memorial Lecture was given by Dr. Sunita Devi Jena on 'Liquid ramjet system'.

The reunion dinner and award presentation were organized at Hotel Novotel. Dr. A S Kiran Kumar, new President of AeSI, was the chief guest. Among the progammes was a panel discussion on 'Regional transport aircraft – opportunities and challenges'.

National MSME Awards: R. Sundar, Managing Director, Aerospace Engineers Pvt. Ltd, Salem and Dr. Anbarasi Sundaram receiving the National MSME Awards for the Outstanding Entrepreneurship and Lean Manufacturing Techniques from Nitin Gadkari, Union Minister for Road Transport & Highways and Shipping, Ministry of Micro, Small and Medium Enterprises and Pratap Chandra Sarangi, Union Minister of State for MSME, Animal Husbandry, Dairying and Fisheries at New Delhi. Aerospace Engineers Pvt. Ltd is a prominent Aerospace Industry from Tamil Nadu.

Reliable Performance: The New Solid Carbide Drill with SGL-Point Geometry

Kennametal brings unprecedented drilling success to manufacturers in the aerospace, and energy industries.

Kennametal introduces another high-performance cutting tool, the B21*SGL solid carbide drill with coolant-through. Designed

for stainless steel, nickel and cobalt-based alloys, the B21*SGL with patented point geometry and monolayer PVD AlTiN coating, delivers improved productivity and longer tool life for aerospace and energy applications requiring predictable, highproduction drilling.

"In customer tests, the B21*SGL consistently outperforms competing drills, producing more holes in less time, with improved hole straightness and surface quality.

The new design virtually eliminates the risk of chipping and flaking that lead to drill failure. And thanks to a unique point gash, it offers the lowest thrust level on the market, enabling productive drilling even in delicate workpiece geometries", said Frank Martin, Product Manager, Solid Carbide Drills.

One of the problems with these materials is their tendency to stick to the cutting tool, leading to built-up edge and corner chipping. The B21*SGL's proprietary gash geometry, polished cutting edge, negative rake corner margin, and "chip-friendly" flute design mitigates these effects, while encouraging chip evacuation and reducing cutting forces. Add to that Kennametal's extremely wear-resistant, high aluminum content KCMS15 grade and you have a drill that not only makes more holes per tool but does so more quickly and predictably. "A number of our customers have seen tool life improve by two to six times in a variety of challenging materials, even after increasing feed rates by up to 50% in some cases," said Martin.

Holemaking is a critical machining process, especially so for those producing turbines. Becausethe drilling operation typically comes near the end of the production cycle, when workpieces are at maximum value, a broken drill can damage or even destroy components worth tens of thousands of dollars.

"This new solid carbide drill will bring incredible value to anyone needing to drill large numbers of holes in Inconel, titanium, PH-series stainless steels, and other heat-resistant superalloys. Especially relevant to aerospace manufacturers, given the tremendous pressure to ramp up production of the LEAP aircraft engine program", said Matthieu Guillon, Key Account Manager, Aerospace.

The Secretary, Department of Defence R&D and Chairman, DRDO, Dr. G. Satheesh Reddy handing over the Initial Operational Clearance Certificate to the Chairman & Managing Director Hindustan Aeronautics Limited, R. Madhavan in the presence of the Union Minister for Defence, Rajnath Singh and the Chief Minister of Uttar Pradesh, Yogi Adityanath, during the MoU signing ceremony titled 'Bandhan', on the sidelines of DefExpo 2020.

R Madhavan, CMD, HAL presenting memento to Defence Minister Rajnath Singh during the Kannada Naada Habba. P.C. Mohan, MP, Amitabh Bhatt, Chief Executive Officer (CEO) of HAL's Bangalore Complex also seen.

Defence Minister Calls HAL Backbone of Indian Defence

Defence Minister Rajnath Singh has hailed HAL's contribution in the nation building calling it as the backbone of the Indian Defence Forces. "While there is every reason to be happy about its performance especially in the last five years, the Company should prepare itself to take up the challenges in the emerging market. HAL should see the competition as an opportunity", he said at Kannada Naada Habba, a cultural event organized at HAL. The Minister inaugurated the program in the presence of HAL officers, employees, Kannada luminaries and others.

The Defence Minister complemented HAL for celebrating the rich heritage and the language of Karnataka which he said has contributed immensely in enriching India's diverse culture. The state is a beautiful mix of modernity and tradition with great history, he said.

P.C. Mohan, MP from Central Bengaluru and R Madhavan, CMD, HAL also spoke during the event.

SIATI holds Supply Chain Conference

Call for synergizing the effect of various supply chains in India to a strong sustainable one which can be used by foreign and Indian OEMs together.

Lt General S K Upadhyay
AVSM, SM, VSM,
Master General of Ordnance

The Society of Indian Aerospace Technologies and Industries (SIATI) with the support of Indian

aerospace industries and R&D organizations and foreign OEMs having establishments in India conducted a two-day 'India International Supply Chain Conference' at Bangalore. An exhibition by the aerospace companies showcasing their capabilities was held as part of the conference.

Lt General S K Upadhyay, AVSM, SM, VSM, Master General of Ordnance (MGO), Army was the Chief Guest. The guests of honour for the event were G V S Bhaskar, CEO, Helicopter Complex, HAL and Air Marshal D S Khajuria, AVSM, SC (Retd), former AOM IAF.

SIATI Honorary President Dr C G Krishnadas Nair welcomed the guests and outlined the purpose and importance of holding the Supply Chain Conference. He stressed the requirement for synergizing the effect of various supply chains in India to a strong sustainable one which can be used by foreign and Indian OEMs together.

G V S Bhaskar, CEO, Helicopter Complex HAL spoke about the need for the private industry, particularly the SMEs, to partner with HAL for manufacturing helicopter parts. He said that HAL would prefer to be an integrator only to produce the large number of helicopters required, in case manufacturing can be taken over by the industry.

Lt Gen Upadhyay, explained to the industries the large requirements of the Army to maintain its mammoth inventory. "The Armed Forces are facing challenges with regard to maintaining the equipment of foreign OEMs and the Indian industry could step in to fill the slot," he said.

Participation of private sector is welcome in some categories of capital expenditure and they should help the OFBs and DPSUs to maintain these equipment, Lt Gen Upadhyay added.

He also congratulated SIATI for holding the conference and commented that such events were essential in India to facilitate synergy and networking among all stakeholders.

The exhibition held as part of the conference had more than 30 stalls and it was inaugurated by Lt Gen Upadhyay and G V S Bhaskar

On the first day there were five sessions.They were, 'New Aircraft & Engine Projects'; 'Supply Chain Development'; 'Space Projects and Opportunities'; 'Supply Chain Development for Armed Forces'; and 'Supply Chain Development for Defence Equipment - Electrical & Electronics Equipment, Ship and Land Vehicles'.

Sanjiv Sukla
ED, HAL

Dr Pashilkar
Scientist, NAL

P.G.Yogindra
ED, HAL

H Balaji
Scientist, ADA

Dr K.Suibramanya
Dassault Systemes

Col HS Shankar
CMD, ADTL

Dr Suresh Nair
COO, SFO

Dr Sudheer Kumar
Ass. Dir, CPBO, ISRO

Air Marshal DS Khajuria AVSM,SC (Retd)
Former AOM, IAF

Brig Malik,
Brig(I), Army

Gp Capt Manoj Kumar
CLMO, HQ,TC,IAF

Cdr Suresh Nair
NA, Navy

Smt V Latha
GM(OP&D&E, BDL

R Adm JS Mann NM,VSM,(Retd)
VP & Head, L&T Shipbuilding Ltd

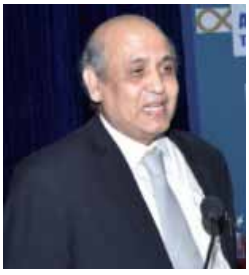
Srinivas Duvvuri
Director, AIRBUS

RV Suresh Kumar
GM (Tech Plg) BEL

KV Subramanian
CEO, Systemes Aids

Wg Cdr V. Menon(Retd)
Sr. Director, SIATI

M.S Velpari
Director (Operations) HAL



Chamarajendra
MD, JCTT

Rob Bosgraaf
GM, GKN Aerosace

V. Dasaradhan
Mgr SAFRAN

Deepak Govindraj
Textron, India

Venkata Nagesh
AERDC, HAL

Kallol Bhattacharya
AGM, HAL

Dr.Sumeet Suseelan, Chairman, International Institute of Aviation, Koodli Subramanya, Director, Dassault Systemes, Wg Cdr Peter Immanuel(Retd), CEO, BridgeNow Academy, Ruchika Sahni, TATA Strive, Bangalore, Anand.B, General Manager, Business Dev., NTTF, Wg Cdr S Bhatnagar (Retd), CEO AASSC.

SIATI

Defence Minister Rajnath Singh and the Chief Minister of Uttar Pradesh, Yogi Adityanath along with all the stakeholders, during the MoU signing ceremony titled 'Bandhan', on the sidelines of DefExpo2020. Minister of State for AYUSH (Independent Charge) and Defence, Shripad Yesso Naik and the Defence Secretary, Dr. Ajay Kumar are also seen.

DRDO handed over 15 licenses for ToT (LATOT) to 17 industries

In DEFEXPO 2020, during the MoU signing ceremony titled 'Bandhan', DRDO handed over 15 licenses for ToT (LATOT) to 17 industries on DRDO developed technologies. This would enhance cooperation and synergy between industry and Government organisations. The technologies transferred are from the area of electronics, laser technology, armaments, life sciences, materials science, combat vehicles, naval systems, aeronautics, sensors, etc. These products are Mine Field Marking Equipment MK-II (MFME MK-II), e-Nasika, DMS HIDEN Fuel-I, Bi-Modular Charge System (BMCS), 500kg General Purpose Bomb, 250kg Pre Fragmented Bomb, Electronic Fuze for 81mm Mortar Bomb, Post Impact Delay Fuze for Air Delivery Bomb, Vehicle Mounted ECM System, IR Flare for CMDS, Process Monitoring of Vacuum Assisted Resin Transfer Moulding (VARTM), Man mounted cooling system, Optical Target Locater 600 (OTL 600), High Power Li-ion Battery Technology (HPLBT) and Combat Free Fall (CFF) Parachute System.

These high technology products will boost the defence manufacturing sector with self-reliance and enhance the operation capabilities of Armed Forces. In a big push to the Uttar Pradesh defence corridor, Uttar Pradesh Expressways Industrial Development Authority (UPEIDA) signed a Memorandum of Understanding (MoU) for knowledge partnership with Defence Research & Development Organisation (DRDO). The partnership with DRDO is expected to provide impetus to further boost the development of the defence production corridor in Uttar Pradesh.

The MoU was exchanged between Dr G Satheesh Reddy Secretary DD(R&D) and Chairman DRDO and Awanish Kumar Awasthi, CEO, UPEIDA.

Speaking on the occasion, Defence Minister Rajnath Singh lauded the efforts of DRDO and further expressed his happiness in achieving the record transfer of 114 technologies to the industries in last one year. He also said that the industries have been benefitted with the efforts put in by DRDO through TDF and the free patent which is available to the industries coupled with availability of test facilities, which as a whole are the confidence building measures which needs to be fully exploited by the industries to propel the nation forward towards self-reliance. The minister also lauded the MoU between DRDO and UPEIDA and told that this will facilitate technical and knowledge support by DRDO to the corridor to facilitate a well-planned and efficient industrial base that will lead to increased defence production in the country. He announced that DRDO will provide technical and hand holding support to industries for export of DRDO developed products and hand holding support for innovation and R&D by industries. He expressed that our defence equipment manufacturing should be explored to tap the global market as well.

Yogi Adiyanath said that the Signing of MoU with the DRDO will be a step

forward towards achieving the aim of capability-building and indigenous production of defence equipment.

Dr G Satheesh Reddy said that DRDO will provide all technology support for the development of defence corridor as this will give thrust to the "Make-In-India" programme under the guidance of Defence Minister Rajnath Singh and envisioned by the Prime Minister Narendra Modi. Dr Reddy elaborated that the recent success of DRDO products such as Anti-Satellite (A-SAT) Missile, Man Portable ATGM, Naval LCA, Naval Torpedo Varunastra, Radars, Sonars, Advanced materials have not only made country more self-reliant in defence technology but also provided immense opportunities to the industries in defence manufacturing sector. He further stressed the point that the industries are invaluable partners and it is an apt time for an Indian industry to take advantage of the latest polices of the Government and further steer the country by enhancing the efforts towards self-reliance through indigenous technologies, job creation and Nation building.

"DefExpo Reflects India's Growing Stature in International Defence Arena": Prime Minister

The 11th edition of DefExpo, India's most premier defence exhibition, has been officially launched by the Prime Minister Narendra Modi at Lucknow, Uttar Pradesh in the presence of thousands of delegates and decision-makers from the global defence industry. The inaugural session was attended by Defence Minister Rajnath Singh, Uttar Pradesh Governor Anandiben Patel, Chief Minister Yogi Adityanath, Dr. Ajay Kumar, Defence Secretary, Subhash Chandra, Department of Defence Production, General Bipin Rawat, Chief of Defence Staff and several senior officers of Ministry of Defence and Armed Forces.

In his inaugural speech, Modi said that the expo will play the prime role in raising the defence exports from India. He invited the global defence investors to spend their money in the country's manufacturing sector and assured returns. "Over the previous years, the industry has witnessed a huge growth in defence exports with the present exports is estimated at a worth of Rs.17000 crores. In the next five years it will grow to Rs.35000 crores. India's defence sector is on the path of digitization and are actively following its roadmap on Artificial Intelligence in defence," said the PM.

Kalyani Group & Arsenal signed MOU for Small Arms & Ammunition

Baba Kalyani, Chairman Kalyani Group with Hristo Ibouchev Executive Director, Arsenal 2000 JSCo after signing MOU.

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 39 mm 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.

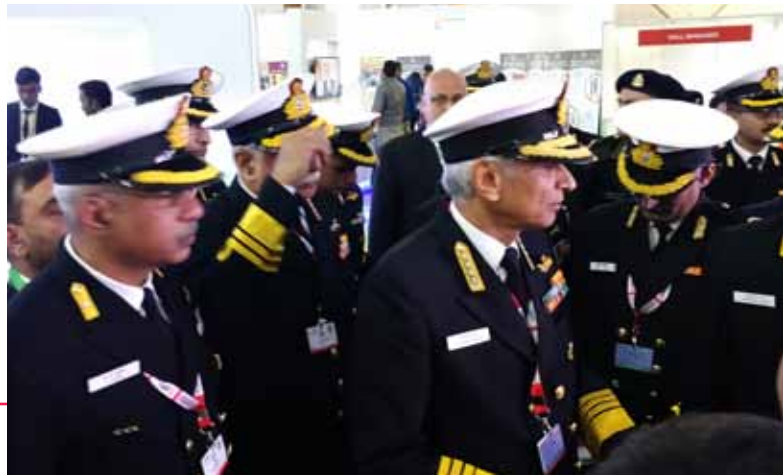
Rajinder Singh Bhatia, Chairman KSSL said "We are very excited to enter the Small Arms segment. This Strategic Alliance will combine Arsenal's Proven technology, knowledge and experience as an OEM with world class design, development and manufacturing capabilities of the Kalyani Group.

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 program with Kalyani Group as its partner for Assault Rifle, Machine Gun and Ammunition for Ministry of Defence, India."

Defence Minister Rajnath Singh visiting the Alpha Design Technologies stall at Def Expo.
Col. H.S.Shankar, Chairman, ADTL, Ashish Rajvanshi, Head, Adani Defence and Aerospace also seen.

Chief of the Army Staff Gen. M. M. Naravane PVSM, AVSM, SM, VSM, ADC visiting ADTL Stall.

The Minister of State for AYUSH (Independent Charge) and Defence, Shripad Yesso Naik, the Defence Secretary, Dr. Ajay Kumar and the Director General DGQA, Lt. Gen. Sanjay Chauhan releasing the booklet titled 'DGQA's Role in MoD Schemes for Incentivizing Defence Manufacturing', at a seminar, at the DefExpo 2020.



HAL, IAI and DTL form Strategic Collaboration for UAVs

Hindustan Aeronautics Limited (HAL), Israel Aerospace Industries Limited (IAI) and Dynamatic Technologies Limited (DTL) signed an MoU for marketing, manufacturing and selling of IAI's Unmanned Ariel Vehicles (UAVs) to Indian potential customers such as Indian Defence Forces, Paramilitary Forces and Central Armed Police Forces at DefExpo 2020.

The MoU was signed between Sanjiv Shukla, ED (Corporate Planning), HAL, Eli Alfassi, Executive Vice President, Marketing for IAI and Arvind Mishra, Executive Director & Global COO Hydraulics and Homeland Security for DTL, in the presence of R Madhavan, CMD(HAL), senior executives of HAL, IAI and DTL.

Defence Minister Rajnath Singh visiting HAL stall at DefExpo2020, in Lucknow.

The CMD, Bharat Dynamics Limited, Cmde Siddharth Mishra (Retd) dedicating Varunastra – Anti Submarine Torpedo in the service of the Nation, in the presence of the Union Minister for Defence, Rajnath Singh and the Chief Minister of Uttar Pradesh, Yogi Adityanath, during the MoU signing ceremony titled 'Bandhan', on the sidelines of DefExpo 2020.

Bharat Forge signs MOU with DASTAN for Underwater Naval Weapons

Bharat Forge Ltd., the world's leading technology solutions provider signed a Memorandum of Understanding with DASTAN Corp., Kyrgyzstan, engaged in development of Torpedoes with advanced homing heads for Shipborne & Submarine platforms, used by Indian Navy. Both firms are coming together for joint upgradation of CET-65E Torpedoes and to participate in jointly identified and mutually agreeable opportunities and programs related to the underwater weapon systems/Product in India and other territories.

Baba Kalyani, Chairman, Kalyani Group said, "We are very excited to enter the marine business segment. This collaboration brings together the manufacturing and technology excellence of two leading companies. We are looking forward to spread our foot print in this segment while working under the policy of 'Make in India'".

Talaybek Temiraliev, President, DASTAN Corp. said, "In September 2019, DASTAN Corp., and Bharat Forge Ltd. decided to collaborate for joint naval trials of new homing systems for CET65 and TEST71 torpedoes that are presently in use by the Indian Navy. The Stage-I of this project has been successfully completed at DASTAN Corp. and in February to March 2020 we plan to proceed to the Stage-II that is to carry out environmental naval field tests in the Indian Ocean.

Chief of Defence Staff Bipin Rawat with Baba Kalyani,Chairman and Managing Director, Bharat Forge with at their booth on first day of the DefExpo 2020.

Bharat Forge Signs MOU with General Atomics

Bharat Forge Ltd (BFL)., the world's leading technology solutions provider and forging company signed a Memorandum of Understanding (MOU) with General Atomics, US, a global leader in the research, design, and manufacture of a diverse portfolio of electromagnetic and advanced power and energy technologies. Under the terms of the MOU, BFL and General Atomics' Electromagnetic Systems Group (GA-EMS) will investigate opportunities to develop and integrate power generation, storage, control and distribution technologies related to surface and undersea naval platforms, and advanced projectiles for weapon system platforms to address Indian defence requirements.

Speaking on the occasion, Baba Kalyani, Chairman and Managing Director BFL said, "We have been relentlessly working towards bringing niche technologies in the country with the aim of making India self-reliant in defence vertical. This partnership with General Atomics is a firm step in the direction to develop new technologies in-house to produce benchmark products for naval systems, reduce expenditure due to dependency on imports and setting up a strong defence technology and manufacturing vertical within India."

Chief of the Army Staff, General Manoj Mukund Naravane inaugurating the BDL stall at Def Expo.

Jagadish Shettar, Minister of Large and Medium Scale Industries of Karnataka is inaugurating the Karnataka Pavilion at Def Expo 2020. Gaurav Gupta, Principal Secretary, Industries and Commerce, Gunjan Krishna, Commissioner, Industrial Development & Director of Industries & Commerce, Swaroopa TK, Chief Operating Officer, Invest Karnataka Forum, M.Bhyregowda, Deputy Director,Invest Karnataka Forum also seen.

HAL Signs MOUs with Rosoboronexport, Coast Guard, IIT Kanpur and TAPL

Hindustan Aeronautics Limited has signed a slew of agreements, contracts, MOUs during the DefExpo 2020.

HAL and TAPL: HAL signed a 'Lease Agreement' with Turbo Aviation Private Ltd. for operating two Do-228 aircraft under the UDAN scheme. TAPL would operate two Do-228 aircraft manufactured by HAL. The agreement was signed by Apurba Roy, General Manager of HAL's TAD Kanpur and V Umesh, MD, TAPL.

As per the agreement TAPL would acquire two aircraft from HAL and would be operating from the state capital Lucknow. The first aircraft will connect Lucknow from Shravasti, Aligarh, Azamgarh, Jhansi and Saharanpur. The second aircraft will operate from Lucknow to Hindon, Faizabad, Mirpur, Chitrakoot and Kushinagar.

HAL and Indian Coast Guard: HAL signed a contract with Indian Coast Guard (ICG) for midlife upgradation program on 17 CG Do-228 aircraft manufactured by HAL Kanpur. The contract was signed between Apurba Roy, General Manager of HAL's TAD Kanpur and Sanjai Singh, Joint Secretary (Air) & AM, MoD.

The contract aims to address the obsolescence and supportability issues and enhance the operational capability of ICG Do-228 fleet.

HAL and IIT Kanpur: HAL signed an MoU with IIT Kanpur for providing Do-228 or HS 748 aircraft towards extending logistic support to the Institution's projects in the field of 'Cloud Seeding'.The MoU was signed between Apurba Roy and Dr Manindra Agrawal, Deputy Director, IIT Kanpur.

HAL and JSC Rosoboronexport: HAL and JSC Rosoboronexport signed an MoU envisages export of spares and services to friendly countries for which license has been given to HAL. The parties will subsequently sign an agreement on mutually agreed terms and conditions. The scope will include Su-30 MKI, AL 31 FP engine, RD33 engines, accessories etc.

Prime Minister Narendra Modi inaugurating the 11th edition of DefExpo2020, at Lucknow. The Governor of Uttar Pradesh, Anandiben Patel, Defence Minister Rajnath Singh, the Chief Minister of Uttar Pradesh, Yogi Adityanath and the Minister of State for Defence, Shripad Yesso Naik are also seen.

DEFEXPO 2020 laid strong foundation for Development of UP Defence Corridor: CM

Defence Minister Rajnath Singh described DefExpo 2020 as an unprecedented success which not only witnessed participation of a large number of exhibitors but also forged new partnerships and attracted more than 12 lakh visitors.

Speaking at the valedictory ceremony of DefExpo at Lucknow , Rajnath Singh said UP stands for Unlimited Potential and DefExpo has succeeded in projecting a new identity of the state in defence sector and the Defence corridor received a huge boost for attracting new investments with the signing of 23 MoUs.

Lucknow Declaration adopted by the first ever India-Africa Defence Ministers conclave was another landmark achievement of this DefExpo. Defence Minister thanked Uttar Pradesh Chief Minister Yogi Adityanath for the successful organisation of the event.

Chief Minister said that his government had organised many international events during the last few years such as Prayagraj Kumbhmela, UP Investors' summit and Pravasi Bharatiya Diwas and the successful organisation of DefExpo enhanced the image and prestige of Uttar Pradesh. Describing DefExpo as "Defence Kumbh", he said the event witnessed presence of more than 3,000 foreign delegates, 10,000 Indian delegates and 12 lakh visitors and laid a strong foundation for development of UP Defence corridor

Defence Secretary Dr Ajay Kumar described DefExpo as a "job well done" as various events concluded smoothly. The event was successful in raising awareness and interest of investors in UP Def corridor.

The DefExpo was inaugurated by Prime Minister Shri Narendra Modi where he had set a target of USD$5 Billion for defence exports to be achieved in the next few years. India with its huge population, democracy cannot remain long dependent on defence imports, he ascertained. The DefExpo is part of Government efforts to make India a net exporter of Defence equipment.

More than 22 seminars held during the past four days highlighted the technological changes, digital transformation of Defence and the positive policies implemented by the Government - such as relaxation in FDI investment, encouraging innovation in Defence start-ups, opening up of testing facilities to Private sector and sharing of technology innovations of DRDO at no cost among others– to make India a defence manufacturing hub.

DefExpo 2020 had covered a lot of ground in creating an environment where Indian industry forged partnerships through MoUs, ToT agreements for innovation and manufacturing.

Defence Minister Rajnath Singh chairing the first India-Africa Defence Ministers' Conclave 2020, during DefExpo2020, in Lucknow. The Minister of State for Defence, Shripad Yesso Naik, the Chief of Defence Staff (CDS), General Bipin Rawat, the Chief of Naval Staff, Admiral Karambir Singh, the Chief of the Air Staff, Air Chief Marshal R.K.S. Bhadauria, the Chief of the Army Staff, General Manoj Mukund Naravane and the Defence Secretary, Dr. Ajay Kumar are also seen.

IAI, BEL to Establish Service & Maintenance Center for Air Defense Systems in India

Israel Aerospace Industries (IAI) and Navratna Defence PSU Bharat Electronics Limited (BEL) have entered a Memorandum of Understating (MOU) for collaboration on establishing a new center for providing product life cycle support including repair & maintenance services for the air-defence systems in India. The new center will provide the required technical and maintenance support to the Indian Defence Forces, viz. the Indian Air Force, the Indian Navy and the Indian Army, who will be operating the air-defence systems. The collaboration will leverage the synergetic capabilities of IAI and BEL, which have already been proven in other collaborations.

Anandi Ramalingam, Director (Marketing), said "BEL provides comprehensive Product Life-Cycle support solutions for the Products and Systems delivered by BEL to the Defence Customers. The collaboration with IAI and establishment of a new center to offer Repair & maintenance services will enhance BEL's service offerings and help to provide an immediate and optimized maintenance solution for the Air Defence Systems".

IAI's EVP and General Manager of Systems, Missiles & Space Group, Boaz Levi said "The MOU is another step in our growing collaboration with BEL. This partnership will enhance IAI's capability to provide immediate, optimized maintenance solutions to the users of our advanced air-defence systems, together with our Indian partners and customers."

Robot Accessories
The 6-axis compensation unit makes intuitive bin-picking possible

Reliable gripping without having to first detect the exact position and location of the gripping object – what humans do every day – is now possible for robots with the universal compensating unit SCHUNK AGE-U. Its complex design combines angled, lateral and rotary compensation, and applies sensor detection once deflection takes place. For example, when bin picking, ferromagnetic pre-machined parts can be picked up by a magnetic gripper without having to detect their exact position or orientation. Instead, all that is needed is an approximate – and therefore cost-effective – localization using equipment such as a simple 2D scanner, which decreases hardware and software costs as well as the effort needed for programming. In addition, the module is able to compensate for tolerances and position deviations in six axes during automated assembly.

Detecting contact with a component

Whereas the compensation units that have been available on the market up to now only offer angled, lateral or rotary compensation, the AGE-U has combined rotational and angular compensation, allowing the end effector to fully adapt to the undefined component position or to feed through insertion operations with gripped components. In the X and Y directions, the maximum possible compensation is +/- 2.7 mm. In the Z direction it is +/- 6.1 mm. Laterally, the compensation around the X and Y axis is at up to +/- 3°, rotationally, it is at up to +/- 8° around the Z axis. While the return to the basic position is achieved both via springs and actively via compressed air, the flexibility of the unit can be adjusted individually by regulating the air pressure. At a pressure of 6 bar, the unit is switched to a completely rigid mode, eliminating uncontrolled movements during the handling system process. Both the locked status as well as the deflection of the unit from the basic position can be monitored with inductive monitoring of the locking piston.

ISO flange for industrial and lightweight robots

The compensation module is recommended for handling weights up to 5 kg and can be connected to a wide range of industrial and lightweight robots quickly and easily using the standardized ISO-50 flange without adapter plate. The housing made of anodized aluminum and the functional components made of hardened steel ensure a long service life and reliable operation with minimum maintenance costs. The SCHUNK AGE-U is designed for one million compensation cycles.

AGE-U The AGE-U universal compensation unit was specially developed for intuitive handling, such as with bin picking or automated assembly applications.

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