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Defence manufacturing up 60%, says DRDO chief

‘Make in India programme has also made Indian companies export-ready’

In the last three years of the Central government’s Make In India programme, the country has seen a 60% increase in defence equipment manufacturing, Defence Research and Development Organisation (DRDO) chairman S. Christopher said here on Saturday. He was presiding over a function to commemorate the handing over of the 1,000th integrated propulsion airframe system hardware for the Akash missile. The hardware was manufactured by L&T Defence for Bharat Dynamics Ltd. Later, he told reporters that the ‘Make In India’ campaign had also brought about a change in the armed forces so much so that the DRDO and defence industries had received orders for equipment that they thought would be imported. The indigenisation of several products and their manufacture by both the public and private sector had improved product development in the sector making the Indian companies export-ready, he said.

‘Quality not an issue’

The queries the country had been getting for export of the Akash missile system was a case in point, Mr. Christopher said and pointed out that after the delivery of 40 Light Combat Aircraft, the Indian Air Force officers were of the opinion that it was as good as any fighter aircraft available internationally and was ready for export. Earlier, the quality dropped when numbers went up. Now, quality was no longer an issue for defence equipment manufactured in the country, he said. In response to a question on delay in development of products by the DRDO and their manufacture by industries, he pointed out that compared to the gestation period taken by defence industries in other countries, it was not so. When India began its Integrated Missile Development Programme, it used to be the case because the entire ecosystem had to be built including testing facilities.



But that was the case now.

In future, the time taken by DRDO could further come down as it was flush with the additional ₹2,000 crore that the Central government had sanctioned in this budget, he noted. The establishment of defence corridor and park would help the micro, small and medium enterprises as they could complement one another to even manufacture high-end precision equipment or even complete systems. Bharat Dynamics Limited CMD V. Udaya Bhaskar said the company would complete its order for the Akash missile to the Air Force by mid-2019 and thereafter begin production for a variant of the surface to air missile for the Army.

Foreign nations have shown interest in Akash missile: DRDO

Several countries have evinced interest in procuring the indigenously developed Akash missile, a top Defence Research and Development Organisation (DRDO) official said here today. There is a growing demand for the Akash, an all-weather medium-range surface-to-air missile, and many nations have shown interest in it, DRDO Chairman S Christopher told reporters here. Developed by the DRDO, the Akash missile

system has the capability to neutralise aerial targets such as fighter jets, cruise missiles and air-to-surface missiles as well as ballistic missiles.

Talks were underway with the countries and "it (orders for the missile) will come", Christopher said



without divulging further details. To a query on the allocation for research and development, he said this year the organisation has a budgetary allocation of Rs 2,000 crore. Christopher, who was here to participate in a function, also said there were export inquiries for the BrahMos missile. BrahMos is a joint venture between the DRDO of India and the NPO Mashinostroyeniya (NPOM) of Russia.

PSU Bharat Dynamics Ltd Chairman and Managing Director, V Udaya Bhaskar said the Akash missile is going to be in good

demand for another three to four years as both the Indian Air Force and the Indian Army need them in good numbers. L&T Board whole-time Director (Defence) Jayant Patil said a new aerospace facility in the district will become operational in another 10 months and it will manufacture rocket motors for ISRO. The defence arm of the L&T, which has so far invested Rs 500 crore in the unit here, is also supplying air frame to BrahMos missile and will expand the product range in the near future.

<https://economictimes.indiatimes.com/news/defence/foreign-nations-have-shown-interest-in-akash-missile-drdo/articleshow/64235450.cms>

The Indian EXPRESS

Sat, 19 May, 2018

Civilian staff of Defence Research and Development Organisation protest against privatisation

Defence civilian employees working in Defence Research and Development Organisation all over the country observed a one-day protest strike on Friday against the ongoing privatisation.

Defence civilian employees working in Defence Research and Development (DRDO) Organisation all over the country observed a one-day protest strike on Friday against the ongoing privatisation and outsourcing in defence establishments, including DRDO.

Four lakh defence civilian employees working in 41 ordnance factories, Military Engineer Services (MES), Directorate-General of Quality Assurance (DGQA) and other army, navy and air force extended support by wearing a black badge and held demonstration all over the country, a press release from the All India Defence Employees Federation said. "All major projects in DRDO are being handed over to private sector," the release said. "Permanent employees' strength is coming down day-by-day."

<http://www.newindianexpress.com/cities/chennai/2018/may/20/civilian-staff-of-defence-research-and-development-organisation-protest-against-privatisation-1816966.html>

L&T to set up Rs 500 crore facility to make rocket motors for ISRO

Larsen and Toubro (L&T) is all set to expand its defence component manufacturing facility in the district and set up an exclusive factory on its Malumichampatticampus at a cost of Rs 500 crore to manufacture rocket motors for the Indian Space Research Organisation (ISRO).

J D Patil, director, defence, L&T, said the factory would be ready within this financial year. "We have produced motors for Akash, which is an all-weather medium range surface-to-air missile system indigenously developed in India. Now, we plan to set up this factory to exclusively manufacture for ISRO. Their rocket motors are different from Akash, as the diameter is 2.8m and 3.2m and are massive. We will produce at least 10-12 sets a year which equals to nearly 50 sections of the motors," he said.

According to Patil, the industry and the ecosystem here were good enough to produce precision equipment. "Earlier, we were only able to produce at our facility at Powai near Pune that was set up in 1940. Slowly, that entire unit will be shifted to Coimbatore. Even various orders from Baroda facility will be shifted to the district. We are going to take the number of factories to five here," he said.

Patil said they would manufacture various components of satellites such as heat shields and other components that form the basic structural part of a satellite. "Currently, we are manufacturing these components in Baroda and we will shift all this to Coimbatore," he added.

<https://timesofindia.indiatimes.com/city/coimbatore/lt-to-set-up-rs-500-cr-facility-to-make-rocket-motors-for-isro/articleshow/64240405.cms>

Business Standard

Tejas Mark 1A faces delay as air force adds to demands

While some of these systems can be bought off the shelf, integrating these on to the Tejas would require comprehensive redesign of the fighter's mission computer

A key reason for delays in indigenous weaponry such as the Tejas fighter and Arjun tank has been the military's tendency to repeatedly enhance specifications, preventing weapon systems from leaving the drawing board and entering production. This is now happening with the Tejas Mark 1A fighter. It was to enter



production in 2020-21 with five specific enhancements. But, the Indian Air Force (IAF) has demanded additional features and the fighter could be entering a time-consuming development spiral that takes another three to four years. Tejas Mark 1A was conceived specifically to bring the Tejas into production. In early 2015, the IAF, defence ministry and Hindustan Aeronautics (HAL) agreed it could enter mass production as soon as HAL incorporated five improvements. Namely, an active electronically scanned array (AESA) radar, an electronic warfare (EW) suite, a self-protection jammer, mid-air refuelling capability and easier maintainability. With this

clear map, the ministry sanctioned the building of 83 Tejas Mark 1A fighters last December for an estimated Rs 330 billion.

Now, however, the IAF has added to that wish list. Among several additional demands are: “smart multi-function displays” for the cockpit, a “combined interrogator and transponder” to differentiate friendly aircraft from foes, a digital map generator and an improved radio altimeter. While some of these systems can be bought off the shelf, integrating these on to the Tejas would require comprehensive redesign of the fighter’s mission computer. HAL estimates doing so and integrating the additional software could take up to three to four years. “The existing ‘open architecture mission computer’ cannot support the software upgrades that are now needed for the Tejas Mark 1A”, says HAL chairman, T Suvarna Raju.

With HAL planning to deliver the 40 Tejas Mark 1 fighters currently on order by mid-2020, the Mark 1A must enter final assembly by that date. Before that, two years are needed for building the systems and assemblies that come together on the final assembly line. This schedule requires the IAF to contract for the Tejas Mark 1A by mid-2018. That order is still awaited. “The time line is certainly important from the IAF’s operational perspective. But, it is equally important from the standpoint of industrial production”, a HAL manager told Business Standard during a visit to the Tejas production line. Another question: who will re-design the Tejas’ mission computer? The Aeronautical Development Agency (ADA), a Defence R&D Organisation entity, designed the current version. “We have extensive experience, having designed mission computers for the Jaguar, Mirage and, more recently, the Hawk-i trainer. Furthermore, we are responsible for the Tejas Mark 1A project and time lines and would not like to be dependent on an external entity”, says Raju.

Worldwide, aircraft designers (ADA in this case) cede control to the manufacturer (HAL in this case), which is subsequently responsible for supporting the users (IAF), through spares, overhauls and upgrades during an aircraft’s service life cycle. With both ADA and HAL keen on re-designing the Tejas’ mission computer, the former argues it is already developing a more powerful mission computer for the Tejas Mark 2. HAL, however, counters that the Mark 2 will be a decade in the making, ADA is targeting 2025 – while the Mark 1A has much tighter time lines. HAL officials say they are on track with the original requirements of the Tejas Mark 1A. In December, global tenders were floated for the AESA radar and EW suite. Three companies have responded, Elta of Israel, Saab of Sweden and Thales of France. The winner is likely to be announced soon. Meanwhile, the Tejas has already been installed with air-to-air refuelling capability, and maintainability improvements are almost complete. In the recently concluded IAF Exercise Gaganshakti, eight Tejas fighters participated with credit, consistently flying six sorties each per day and drawing praise from the air force.



Sun, 20 May, 2018

Big push for defence hardware exports

Centre seeks response on equipment from manufacturers.

The Ministry of Defence has set in motion a process to identify military equipment that can be exported from India, in an effort to meet the ambitious targets set under the ‘Make in India’ policy. According to private industry sources, the Department of Defence Production has provided a list of 51 items to the industry lobbies to identify how many of them can be manufactured in India and made available for exports. Among the items listed for possible export are howitzers, UAVs, fighter aircraft, assault weapons, sniper rifles, grenade launchers and various software systems for the battlefield and light tanks. “It is a query, and no definite plans are in place,” one of the private industry sources said. The list is being circulated among various private and public sector units, industry lobbies and other representatives. They are to submit their responses by Thursday next week.

The move comes even as the department has proposed a series of amendments to the Defence Offset Guidelines to open up new avenues for discharge of offset obligations by foreign vendors. Among the new avenues are: investment in specified projects in defence, aerospace and internal security such as testing labs, testing ranges and skill centres. The proposal is also to cover specified critical technology and some specified technology acquisition.

Export targets

The draft Defence Production Policy, 2018, has set a target of \$5 billion in defence export by 2025. The target is ambitious, given the fact that in 2016-17 India's total defence export was a meagre ₹1,495.27 crore. About 15-16 companies in the private sector and a few public sector units contribute to this insignificant export. Major defence items being exported now are personal protective items, offshore patrol vessels, helicopters and radio sets.

'Better systems need'

The list of items that the government is hoping for export from India would require a massive jump in capabilities and a better ecosystem, admit private sector executives. m"We need to first fix the domestic situation before thinking of becoming a major exporter," said a senior executive of a private defence company, pointing out that the policy initiatives at present are not enough for such a turnaround. mHe pointed out that while officially the military is procuring more than 50% of its requirement from within the country, it is a



“statistics that hide the reality.” According to a recent statement in Parliament by Minister of State for Defence Dr. Subhash Bhamre, in 2015-16 the total capital expenditure for procurement was ₹62,341.86 crore. Of this, ₹39,149.64 crore was spent on procurement from Indian vendors, or 62% from domestic suppliers. Only ₹23,192.22 crore

was spent on purchases from foreign vendors. “Much of it is low-end products, and a significant part of this domestic procurement constitutes imported foreign items packaged domestically,” the senior executive pointed out. According to the Stockholm International Peace Research Institute (SIPRI), India was the largest importer of military equipment in the world, accounting for 13% of the total global arms import between 2012–16. It is more than both China and Pakistan. The report also points out that India increased its arms imports by 43% between 2007–11 and 2012–16.

THE ECONOMIC TIMES

Sun, 20 May, 2018

HAL keen to supply Navy with light utility helicopters

By Manu Pubby

Putting its hat in the ring for a naval requirement of light utility helicopters, state-owned aircraft manufacturer Hindustan Aeronautics Limited (HAL) has asked the defence ministry to consider its indigenous chopper as well, against just looking at international companies like Airbus and Bell for replacements.

Sources have told ET that the state-owned company has informed the defence ministry about the progress in its light utility helicopter (LUH) programme that undertook its first flight in September 2016 and is planned for production starting this year. mMaking a pitch for considering a naval variant of this helicopter for the requirement of 111 Naval Utility Helicopters (NUH), the company has written that rS 400 crore has already been invested into the programme and it can be used by the navy instead of relying on imports.

The NUH programme is a key priority for the Navy that wants to retire its ageing Chetak fleet and is short of rotary wing aircraft for warships at sea. The NUH programme for 111 choppers is currently being pursued under the strategic partnership (SP) programme that involved selecting a foreign developed chopper to be made in India with the private industry. At least three companies are in the fray for this order — the European Airbus, American Bell and Russian Kamov. While formal tenders are yet to be floated, a request for information has yielded replies from the companies and consultations are currently on within the defence

ministry to take forward the process. Indian companies that are keen to make the chopper under the SP model include MahindraNSE -0.64 % (which had an MoU with Airbus), Tata and the Kalyani Group.

It is yet to be seen whether the HAL pitch will make it eligible to qualify for the tendering process once the defence ministry manages to sort out how to proceed with the SP model. The HAL developed chopper which is currently undergoing trials is a 3.1 tonne aircraft that is designed to replace the ageing Cheetah and Chetak fleet. The program has been in the works since 2008 when the armed forces projected a requirement for a light chopper that could carry troops and supplies to all border areas. The chopper is powered by a Shakti engine in collaboration with French firm Turbomeca. A new production facility is to be built for the LUH project. HAL is also working on a project with Russian Helicopters to build 200 of the KA 226 light choppers in India as part of a government to government deal. A tender for the KA 226 order was issued earlier this month.

Business Standard

Sun, 20 May, 2018

US livid at China's maiden landing of strategic bombers in South China Sea

People's Daily, the Chinese Communist Party's official newspaper, posted a video on its Twitter account featuring a series of H-6K's training programmes, including take-off, landing and flying

China has for the first time landed strategic bombers on an island in the disputed South China Sea, drawing sharp reaction from the US which said that the move will "raise tensions and destabilise the region".

China's air force said that its fighter jets, including an H-6K bomber, had recently conducted take-off and



landing training on an island reef in the resource-rich South China Sea (SCS). The training had elevated the air force's abilities of "reaching its full territory, assaulting in full time and space, and striking in full scope", the Hong Kong-based South China Morning Post quoted the People's Liberation Air Force (PLAF) as saying. Wang Minliang, a military expert, was quoted as saying that the bombers' take-off and landing training was "beneficial to enhance the real combat ability against all kinds of security threats in the sea". People's Daily, the Chinese Communist Party's official newspaper, yesterday posted a video on its Twitter account featuring a series of the H-6K's training programmes, including take-off, landing and flying. Chinese bombers including the H-6K conduct

takeoff and landing training on an island reef at a southern sea area pic.twitter.com/ASY9tGhfAU

— People's Daily,China (@PDChina) May 18, 2018

The Chinese move invoked sharp reaction from the US which said that it will "raise tensions and destabilise the region". A spokesman at the Pentagon, Lieutenant Colonel Christopher Logan, called the exercise an act of "China's continued militarisation of disputed features in the South China Sea", the Post report said. Bonnie Glaser, a China security expert at the Centre for Strategic and International Studies in Washington, said the location of the H-6K landing was believed to be Woody Island Yongxing island in Chinese on which China's Sansha city government is located. China had established Sansha City, a prefecture-level city of Hainan Province, in 2012 to administer the South China Sea islands identified by China as Xisha, Zhongsha and Nansha island groups and their surrounding waters.

"I believe this is the first time a bomber has landed in the South China Sea. No doubt the H-6K will soon land on an island in Spratly (Islands) since hangars there are built to accommodate bombers," the Post quoted Glaser as saying. In early May, the US said that it was prepared to take measures against militarisation of the

South China Sea, after Beijing reportedly installed new missiles on outposts in the Spratly Islands known in China as the Nansha Islands that are also claimed by Vietnam and the Philippines. China claims almost all of the South China Sea but Vietnam, the Philippines, Malaysia, Brunei and Taiwan have counter claims. The US is periodically deploying its naval ships and fighter planes to assert freedom of navigation.



Sat, 19 May, 2018

Russia unveils world's first floating nuclear power station

Built in Saint Petersburg, the Akademik Lomonosov arrived in Murmansk on Thursday where it was moored in the port and presented to the media on Saturday.

Russia on Saturday unveiled the world's first floating nuclear power station at a ceremony in the port of the far northern city of Murmansk where it will be loaded with nuclear fuel before heading to eastern Siberia. Built in Saint Petersburg, the Akademik Lomonosov arrived in Murmansk on Thursday where it was moored in the port and presented to the media on Saturday. Constructed by the state nuclear power firm Rosatom, the 144 by 30 metre (472 by 98 foot) ship holds two reactors with two 35 megawatt nuclear reactors that are similar to those used to power icebreaker ships.

The 21,000-tonne barge will be towed in the summer of 2019 to the port of Pevek in the autonomous Chukotka region in Russia's extreme northeast, 350 kilometres (217 miles) north of the Arctic Circle.

The barge can produce enough electricity to power a town of 200,000 residents, far more than the 5,000 live in Pevek, Russia's northernmost town. It will be primarily used to power oil rigs as Russia pushes further north into the Arctic to drill for oil and gas and needs electricity in far-flung locations.

Vitaly Trutnev, who is in charge of the construction and operation of floating nuclear power stations at Rosatom, said such units would "supply electricity and heat to the most remote regions, supporting also growth and sustainable development." He said use of such floating reactors can save 50,000 tonnes of carbon dioxide emissions per year. The barge had initially been scheduled to be fuelled in Saint Petersburg, but that work was moved to Murmansk instead due to concern in countries along the Baltic Sea.



Sun, 20 May, 2018

Navy's all-women crew to reach Goa after sailing around globe

Over eight months after it set sail from Goa, the all-women crew of the Indian Navy on board the naval vessel INSV Tarini, will return to the state on Monday after the historic circumnavigation of the globe. Defence Minister Nirmala Sitharaman will welcome the all-women crew when it arrives near Panaji, from where they had embarked on the journey on September 10 last year.

"The Defence Minister and Navy Chief Admiral Sunil Lanba will be present for the flag-in ceremony of the ship near Panaji on Monday," a Navy spokesperson said. The expedition named 'Navika Sagar Parikrama' is led by Lieutenant Commander Vartika Joshi and it is the first-ever Indian circumnavigation of the globe by an all-women crew, the spokesperson added. The crew also included Lt-Commanders Pratibha Jamwal and Swati P, and Lieutenants Aishwarya Boddapati, S Vijaya Devi and Payal Gupta.

The six women officers trained under Captain Dilip Donde, the first Indian to solo-circumnavigate the globe in 2009-2010, the Navy official said. The expedition was sailed in six legs, with stopovers at the Fremantle (Australia), Lyttleton (New Zealand), Port Stanley (Falkland Islands), Cape Town (South Africa) and Mauritius. "It covered 21,600 nautical miles in the Indian-built sailing vessel INSV Tarini that visited five

countries and crossed the Equator twice, sailed across four continents and three oceans, and passed south of the three Great Capes - Leeuwin, Horn and Good Hope," the spokesperson said.

THE ASIAN AGE

Sat, 19 May, 2018

NASA satellites reveal freshwater decline in India

Groundwater extraction for irrigation of crops caused a rapid decline in available water

India is among the hotspots where overuse of water resources has caused a serious decline in the availability of freshwater, according to a first-of-its-kind study using an array of NASA satellite observations of Earth. Scientists led by NASA's Goddard Space Flight Center in the US used data on human activities to map locations where freshwater is changing around the globe and why. The study, published in the journal *Nature*,

found that Earth's wet land areas are getting wetter and dry areas are getting drier due to a variety of factors, including human water management, climate change and natural cycles.



Areas in northern and eastern India, the Middle East, California and Australia are among the hotspots where

overuse of water resources has caused a serious decline in the availability of freshwater that is already causing problems, *The Guardian* reported. In northern India, groundwater extraction for irrigation of crops such as wheat and rice have caused a rapid decline in available water, despite rainfall being normal throughout the period studied, the report said. "The fact that extractions already exceed recharge during normal precipitation **do es** not bode well for the availability of groundwater during future droughts, researchers said. The team used 14 years of observations from the US/German-led Gravity Recovery and Climate Experiment (GRACE) spacecraft mission to track global trends in freshwater in 34 regions around the world.

"This is the first time that we have used observations from multiple satellites in a thorough assessment of how freshwater availability is changing everywhere on Earth," said Matt Rodell of NASA's Goddard Space Flight Center. On land, freshwater is one of the most essential of Earth's resources, for drinking water and agriculture. While some regions' water supplies are relatively stable, others experienced increases or decreases. "What we are witnessing is major hydrologic change," said Jay Famiglietti of NASA's Jet Propulsion Laboratory (JPL).

"We see a distinctive pattern of the wet land areas of the world getting wetter - those are the high latitudes and the tropics - and the dry areas in between getting dryer. Embedded within the dry areas we see multiple hotspots resulting from groundwater depletion," said Famiglietti. He noted that while water loss in some regions, like the melting ice sheets and alpine glaciers, is clearly driven by warming climate, it will require more time and data to determine the driving forces behind other patterns of freshwater change.\