

# 'We'll become self-reliant in radars, sonars in 5 yrs'

*The successes with anti-satellite test and Tejas LCA has uplifted Defence Research and Development Organisation's (DRDO) confidence, with futuristic military technologies like hypersonic missiles, next-generation tanks and over the horizon radar*

*By Kalyan Roy*

New Delhi: In an interview to DH's Kalyan Ray, DRDO chairman G Satheesh Reddy shares the details of futuristic technologies on which DRDO is working and the areas in which India will become self-reliant in the next five years. Excerpts:

**Q: Existing DRDO programmes are mostly those that were conceptualised in the 1970s and 1980s. What are the technologies that DRDO would like to muster 25-30 years from now?**

A: Our veterans have laid a very strong foundation stone for us to progress and think about the route for self sustenance in technologies for the defence forces through research and development in DRDO. It's our endeavor to traverse the path and realize a number of weapons systems, to meet the present and futuristic requirements of our users. The new systems include Advanced Medium Combat Airera – the twin-engine medium weight fighter airera with 5th generation technologies, unmanned combat aerial, next-generation battle tanks, air-borne warning and control systems and high endurance UAV. Among the missiles, the aim is to develop naval anti-ship missiles and long-range hypersonic cruise missiles. Among the sensors and electronic warfare systems, R&D on very long-range radar, over-the-horizon radar, quantum radar and sensors suite for submarines are being undertaken. In the propulsion and engine field, high thrust aero engine, Wheeled vehicle engine with 1500 horse power and 600 hp are being developed. In the next 4-8 years, we should have prototypes and initial trials on at least some of these projects. As far as the new technology initiatives are concerned, we need to focus on swarm drone, artificial intelligence, cognitive, morphing, stealth, cyber defence, quantum communication, computing and advanced smart materials.

**Q: Can you share details of new technologies like hypersonic missile and next-generation main battle tanks?**

A: Hypersonic vehicles will have a speed of 6-20 Mach (1 Mach is the speed of sound). It will be a cruise missile and the process of developing hightemperature, high-strength material has started for the hypersonic vehicle. The next generation MBT will be lightweight and have sensors to sense the the enemy ahead. They will also be having better defensive mechanisms.

**Q: You recently had a successful anti-satellite test under Mission Shakti — What is the future of this programme? Do you plan more such tests?**

A: The ASAT has been a capability demonstrator of India's technological advancement to neutralise enemy satellites. Such tests will not be repeated and would not be carried out in higher altitude. We have always said no to weaponisation of space but that will not stop us from gaining technological capabilities to defend our national interest. DRDO would continue to work on development of advanced technologies for Air and Missile Defence systems. Any further work would be undertaken only on the directions of the government.

**Q: Is DRDO looking at a bigger space programme?**

A: We plan several activities as space becomes the fourth dimension of warfare, but I would rather not talk about them. India needs to work on a number of sensors and related systems for the space and a lot of defence-related activities for space needs to be carried out.

**Q: Can you provide an update on the missile development programme?**

A: We received further orders on Aakash and concluded the user trials for Nag anti-tank missile, which will be inducted soon. The Helina trials will be completed this year whereas the trials for the MPATGM will be finished next year. The trials are also going on for Stand-o anti-tank missile. Other future missile programs include Akash NG, MRSAM for Army, VL-Astra, AAM-Astra MK-II, ASM-Rudra-M and naval anti-ship missile.

**Q: Can you elaborate on the progress made on LCA (Air Force) and LCA (Navy)?**

A: Final Operational Clearance (FOC) for LCA (Air Force) was accorded in February 2019 and the production center HAL has commenced the Series Production. The Defence Ministry has finalised the orders for 83 LCA Mark-1 aircra to the IAF. The production of LCA Mk-1A by the HAL is to be completed in the next 4-5 years. HAL has also commenced production activities for Tejas Trainers. Two prototypes have been built and are undergoing flight tests. On LCANavy Mark-1, the development activities are to be completed by 2020 subsequent to which we will undertake flying trials. Development of LCA Mark-2 is going on simultaneously.

**Q: Compared to the situation two decades ago, how much import reduction has been made possible by DRDO?**

A: The production value of systems and equipment developed by DRDO and inducted or approved for induction by the services stands over Rs 2.73 lakh crore, which leads to huge foreign exchanges savings. The indigenous content in DRDO products have gone up to 40-45%. In the next five years, we expect that there will be no imports the areas of radars, sonar, torpedoes, armaments and EW systems.

**Q: But the armed forces still complain about DRDO's repeated failure to meet the deadlines?**

A: We concentrate on quality in a big way. For critical systems produced by our lead agencies, we engage third party quality assurance agencies. Though DRDO in not directly involved in the mass production of systems developed by it for armed forces but still, DRDO involves the external quality assurance agencies such as DGQA, DGAQA and user service representatives right from the inception stage of its Mission Mode Projects. A comprehensive in house quality and reliability policy ensures adherence to strict QR norms at every stage of development process. However, quality issues during production as flagged time to time, arise at Production Agencies, which are also being addressed by instituting mechanisms to hand hold the during the Product life cycle. We are also developing a sustained quality culture amongst Defence MSMEs with the involvement of professional bodies such as Quality Council of India. The time lag earlier happened due to lack of ecosystems in the academic institutions as well as in the industry. The systems have changed a lot now. The industries have also matured as they deliver built-to-specifications systems. There are now procedures and mechanisms within the organisation to improve eiciency so that the products can be delivered on time. However, in research and development, unforeseen problems can always come up as some amount of uncertainties are involved

**Q. Getting quality manpower is an issue for most of the scientific institutions. How serious is the problem in DRDO, particularly because of the attrition factor, and how do you deal with it?**

A: The department faced the attrition issue prior to implementation of 6th and 7th CPC recommendations. However, with increased pay and perks and technical challenges, the trend of attrition has been arrested to a greater extent.

<https://www.deccanherald.com/national/we-ll-become-self-reliant-in-radars-sonars-in-5-yrs-760227.html>

## **IAF decision to buy 83 LCA Tejas will boost aeronautical sector in the country: DRDO Chief**

*DRDO Chief G Satheesh Reddy, on Monday, said that the Indian Air Force's decision to buy 83 Light Combat Aircraft (LCA) Tejas will boost the capabilities of indigenous aeronautical sector*

New Delhi: The move by the Indian Air Force (IAF) to place orders for 83 Light Combat Aircraft (LCA) Tejas will help boost the scientific community in the country's aeronautical sector and the industry, Defence Research and Development Organisation (DRDO) chief G Satheesh Reddy said on Monday.

The IAF is expected to place orders worth around Rs 45,000 crore with the Hindustan Aeronautics Limited (HAL) to acquire 83 Tejas fighters.

"It is a great boost to the aeronautical sector of the country. The LCA has been developed by DRDO. It is a complete indigenous technology. The LCA went through operational clearance and then it got final clearance in February this year," Reddy told ANI.

"Now getting at one go orders for 83 LCAs from the IAF is a boost to the scientific community in the aeronautical sector and also to industry. This gives confidence to aeronautical engineers, scientists to develop aircraft which the IAF requires," he said.

The IAF had issued a tender for 83 LCAs about two years ago and the project was stuck over the pricing issue as the government and the Air Force felt that the price offered by the HAL was slightly higher.

Reddy said that the LCA Mark 2, which is being developed now, will also be inducted into the IAF.

"The LCA Mark 2 is about four-and-a-half generation aircraft which is close to the fifth generation. The aircraft has been completely redesigned with many features incorporated. Capabilities have also been built-in based on the knowledge acquired from the Mark 1. The Mark 2 will be a good fighter aircraft for the IAF," he noted.

Reddy said the "Akash" air defence missile is among the systems which have been acquired by the Indian Army and the Air Force.

"A number of industries have been supplying various systems and components to this programme. The defence public sector undertakings (DPSUs) have been the lead integrator of the Akash system. A large number of orders which we received from the Indian armed forces have been already produced and handed over. Industries have flourished due to this. Indian industries are now established to manufacture large numbers of missile systems in the country," he said.

Reddy stressed the present order of Rs 5,000 crore for Akash will give a boost to the industry and the production lines will be utilised.

The DRDO has also received orders worth close to about Rs 25,000 crore from the Indian armed forces, he said, adding, "We are expecting more orders."

Reddy noted that many countries have shown interest in purchasing equipment like the LCA.

"The country is gaining momentum towards exporting many of the defence systems. The world is observing that India is developing state-of-the-art defence systems...In a few years, we should be able to export a lot of defence equipment," he said.

The DRDO chief described as a "great success" the artillery gun developed by India.

"The long-range gun has been designed and developed by the DRDO along with private industries. So, India now stands tall in having developed that gun. A number of trials have been conducted and

trials are still on...In the coming years, the system will get inducted giving a boost to the Army," he added.

On Pakistan's "successful" test of 290-km range surface-to-surface ballistic missile Ghaznavi, Reddy said the neighbouring country may have conducted a routine test.

"Probably, Pakistan did a routine test. I am not very sure about it. I don't think it is very significant... Indian missile capabilities are very strong. A number of missiles have been developed indigenously. Prithivi and Agni series are being developed. We are self-reliant in areas of missile systems," he added.

<https://www.timesnownews.com/india/article/iaf-decision-to-buy-83-lca-tejas-will-boost-aeronautical-sector-in-the-country-drdo-chief/485463>



Tue, 10 Sep 2019

## **IAF to get Made in India fighter jets Tejas in service soon**

*The new order will come with homemade advanced avionics and radars*

*By Huma Siddiqui*

To meet its depleting fighter squadron numbers, the Indian Air Force (IAF) is expected to place an order for additional 83 Light Combat Aircraft (LCA)-Mk1A aircraft. This will be in addition to the earlier 40 aircraft order placed with the state-owned Hindustan Aeronautics Limited (HAL). This brings the total order to 123 LCA 'Tejas' indigenous fighters.

According to top officials the approval for the additional 83 was given in 2016 by the Defence Acquisition Council (DAC) and the request for proposal was issued by the IAF in 2017 and the proposal for which was submitted in March 2018 to IAF. The LCA-Mk1A is different than the earlier order of 40 aircraft. The new order will come with homemade advanced avionics and radars.

So far no contract for the additional 83 indigenous fighter planes has been inked due to the price quoted by HAL which was more than the price of the SU-30MKI.

However, according to officials, the pricing will be discussed with the costing committee and a contract will be signed soon. The total cost for the new order of 83 indigenous aircraft is expected to touch Rs 45,000 crore and this is expected to give a boost to the Make in India initiative as well as create jobs in both the public and private sectors.

So far, HAL has two contracts with the Ministry of Defence (MoD) for the supply of 20 aircraft for the Indian Air Force (IAF) in Initial Operation Clearance (IOC) configuration and another 20 aircraft in Final Operation Clearance (FOC) configuration.

Highly placed sources have confirmed that "Each contract delivery comprises of 16 fighters and four trainer aircraft. The state-owned company has completed production of all 16 fighters in IOC configuration with a significant improvement in Light Combat Aircraft 'Tejas' production rate during the last two years."

Sources added that the company is undertaking the production of 16 'Tejas' which is in FOC configuration. The clearance for the production of these was given in January this year. And for the remaining eight trainers (four in IOC and four in FOC) a provisional standard of preparation for production has recently been received and the work has just begun."

**Outsourcing:**

To enhance the production rate, HAL has also outsourced major assembly modules to private partners like DTL, Bengaluru (Front fuselage), Alphonatocol, Bengaluru (Rear Fuselage), VEM Technologies, Hyderabad (Center Fuselage) and L&T, Coimbatore (Wings). Additionally, a parallel production line is also established at Aircraft Division, Bangalore to support the increased rate of production.

**Export potential:**

As has been reported earlier, the company has received a Request for Information (RFI) for the supply of LCA-Tejas earlier this year from the Royal Malaysian Air Force (RMAF) and submitted the proposal to RMAF, Malaysia. Two Tejas aircraft had participated in LIMA 2019 for evaluation by RMAF. Further evaluation is being done at the prospective customer end with inputs from HAL as when called for.

<https://www.financialexpress.com/defence/iaf-to-get-made-in-india-fighter-jets-tejas-in-service-soon/1700987/>