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New DRDO's center to focus on critical ignition technology

The new complex of DRDO was inaugurated by MoS (defense) Mr. Shripad Naik at the High Energy Materials Research Laboratory (HEMRL) in Pune.

The facility is situated in the ignition complex at the laboratory and is of crucial importance to the DRDO's ignition research that it has been doing for various missiles, and its pet project, the Kaveri Engine.

Ignition is a highly critical aspect in the ignition chain of rocket motors, and to develop advanced missile systems, the organization needs to build on the advances made in the past to count for the future.

The collaboration with HEMRL is of superior importance to the DRDO as the lab has previously as well developed composite fuels and oxidizers to compliment the ignition process of rocket motors and advanced missile delivery systems.

The lab has also pioneered research in the usage of organic binders in the production of several ignition technologies to produce reliable ignition points and making sure that the motor delivers rather than failing.

The binder structure used by the lab to produce the oxidizers has been highly relevant from the point of understanding the structural integrity of these organic compounds to support the process involved in advanced delivery mechanisms and how innovatively a better alternative to synthetic additives can be used in such applications.

The inauguration also has come for a crucial time for DRDO as the organization is struggling to get its project the Kaveri Engine of the ground. The project has had undergone a lot of development but the premier institute in the country hasn't been able to deliver on the promises it made before the start of the project, French aviation giants Dassault have agreed to partner the project in lieu of the offset obligations that have been applied on them for the purchase of the Rafale jets that India have bought directly in flyaway conditions from the French manufacturer.

<https://www.industryglobalnews24.com/new-drdo-center-to-focus-on-critical-ignition-technology>



IIT Roorkee working with ISRO, DRDO for cutting edge space, defence tech

Researchers at the premier institute are working with ISRO and DRDO on "thin membrane-based technology" to develop parachutes for fighter aircraft

Noida: IIT Roorkee is working with the Indian Space Research Organisation (ISRO) and the Defence Research and Development Organisation (DRDO) to design and develop cutting edge technology for space and defence projects, officials said.

Researchers at the premier institute are working on "thin membrane-based technology" to develop parachutes for fighter aircraft and could be crucial in boosting indigenous production in the country, the officials said.

The information was shared during a seminar on "Inflatable Structures and Materials for Space Applications" held on Thursday at the IIT Roorkee's Greater Noida campus.

"If you look at foreign countries, they have excelled in defence technology and with permission of their government they are exporting their products, leading to the growth of their own economy," Director of DRDO's Armament Research & Development Establishment (ARDE) Arun Kumar Saxena.

All fighter aircraft in the country have DRDO-made parachutes in them which help them reduce their landing run when brakes are applied and reduces pressure on tyres during landing, he said.

Retired Group Director of ISRO Ahmedabad A C Mathur said inflatable technology can be a solution for complications faced when sending large structure projects in space, where the conditions are very different.

"A lot of private companies are working on this technology but if we succeed in it, we can supply the products to foreign countries also but for all this we need advanced industries and technology," he added.

A lot of work is underway at IIT Roorkee, its Deputy Director M Parida said.

"Several researchers are working on thin membrane-based technology and it's a continuing process. We have developed some technology and working on it further," Parida said, but did not divulge any details.

<https://economictimes.indiatimes.com/news/defence/iit-roorkee-working-with-isro-drdo-for-cutting-edge-space-defence-tech/articleshow/71967047.cms>

DRDO bets big on indigenous capabilities

India should focus more on indigenous defence production to reduce import in the defence sector, and to become self-reliant in technology

By Manish Kumar Jha

The Government aims to take the Indian economy to \$10 trillion by 2030, and it believes, defence is one of the sectors that can help in contributing towards this. Echoing the same views, the Defence Research and Development Organisation (DRDO) is working towards the same to make this a reality. With a network of 52 laboratories across the country and over 30,000 employees, it is one of India's largest and most diverse research organisations.

Controlled directly by the Ministry of Defence, DRDO feels the country should focus on more indigenous defence production to reduce import in the sector and should become self-reliant in technology. But the approach towards indigenisation since independence has yielded limited results. It has largely resulted in policy capture by public sector undertakings in the name of indigenisation. The net result is that the domestic industry is incapable of meeting India's defence requirements and is embroiled in license production as far as the key technology is concerned.

The Breakthrough

It would be unfair to deride the institution without talking about their breakthroughs, and in fact, the best in the world of science and technology, in some of complex technological challenges of the 21st century. Especially in Defence, the assimilation of such breakthrough in forming into the workable application is another crucial thread that scientists have to grapple with. For such breakthroughs, it is also a fact that the DRDO has not received the emphatic applause from the various corners that it actually deserves.

DRDO Chairman and Secretary Department of Defence R&D G. Satheesh Reddy proudly points out: "A-SAT, Ballistic Missiles, Ballistic Missiles defence Systems, Radars, Sonars, EW systems, Torpedoes are state-of-the-art systems and not World War II systems. DRDO has always and will continue to engage on cutting-edge technologies. All the stakeholders have always appreciated the efforts of DRDO. Incidentally, in all of the above systems, we are one of the six countries in the world to develop such capability."

DRDO has developed several ballistic missiles under its Integrated Guided Missile Development Programme (IGMDP), includes missiles like Prithvi, Trishul, Agni, Akash and Nag. The latest in this series is the successful testing of nuclear capable the Agni V missile. Earlier this year, DRDO successfully tested new generation anti-radiation missile (NGARM), which is capable of destroying enemy radars that can be launched from various altitudes. The DRDO is testing Hypersonic Technology Demonstrator Vehicle (HSTDV), which will have speed at in excess of Mach 6, while using atmospheric oxygen as oxidiser. The DRDO's role in developing multiple weapon platforms and systems for INS Arihant, India's first nuclear ballistic missile submarine, is commendable.

The Fallout

Even after 60 years of the DRDO formation, India still imports a large share of its defence equipments. In the year 2018-19, India is the world's second-largest importer of defence equipment, accounting for 13 per cent of the global total, according to the Stockholm International Peace Research Institute. The DRDO's list of successes is short -- primarily the Agni and Prithvi missiles. Its list of failures is much longer. The Kaveri Engine is indeed on top of that. It would cost indigenous fighter aircraft a great deal. The Indian Air Force (IAF) itself is looking for some 400 next generation fighter aircrafts. Navy has its own good number -- some 200 combat aircrafts and in the context of Indian

Ocean, along the greater shift of the naval supremacy, it is more than needed. Building the required thrust for the engine that could indeed be at the heart of 5th generation fighter aircraft should have been taken off. Delays in AMCA and dumping of joint collaboration programme with Russia turned clumsy and messy. That cost the IAF a lot as it had to start from scratch. The CAG report also revealed that not all technologies developed by the DRDO were suitable for the armed forces. The three services have rejected 70 per cent of the products developed at the Armament Research and Development Establishment (ARDE), Pune, in the last 15 years, costing Rs 320 crore because the products did not meet their standards and requirements.

Costly Affair

The DRDO's capital allocation is mere 6 per cent of the total defence budget and that also includes the cost of maintenance and other administrative expenditure. This is grossly inadequate, especially when the need should be for financial commitment to the Technology Perspective and Capability Roadmap (TPCR) after deliberations between the scientists and the defence services. Fact that no nation gives away its cutting-edge technology, the Centre should treat the DRDO as its No. 1 priority. It is tricky situation. One side, the government has to spent \$42 billion in procuring technology from overseas and a few domestically assemble, on the other, it harp on the assimilation of indigenisation up to 70-75 per cent by 2025. But the defence puts the total sum for the DRDO far less than desired. At 6 per cent of the total budget (Rs 18,000 crore), it halts many futuristic programme.

As DRDO Scientist & Former Chief Controller R&D W. Selvamurthy points out: "A minimum 12-15 per cent is what is required for India in its quest for indigenisation." Under the head, it goes into maintaining the entire infrastructural empire of the DRDO spread across India. That is a huge cost which takes way substantial chunk. Reddy said: "The cutting-edge technologies are not available at any cost. They are acquired hard way through the persistent efforts of the scientific community of the country, and the government is well aware of this."

It may be recalled that the government had set up a committee on 08 February 2007 chaired by Former Secretary, Department of Science and Technology P. Rama Rao to review and suggest measures to improve the functioning of the DRDO. The committee was mandated through its terms of reference to review the present organisational structure and to recommend necessary changes in the institutional, managerial, administrative and financial structures for improving the functioning of the DRDO. The Committee submitted its report to the government on 07 February 2008. The structural part of the DRDO is indeed the problem. Even the official agrees on the breadth and a scope of the functioning of the DRDO. But so far the committee's recommendations have been implemented abysmally, gerrymandering the core of the problem. The DRDO is far from reaching the operational efficiency of similar organisations from across the world given the size and scope of work. But it does not have the same scope of budget as mentioned above.

Selvamurthy has served four decades in the institution and has been a deft hand in some of the key technological breakthroughs of the DRDO. Talking about such issues, he pointed out that the DRDO should be put on track like the ISRO as Commission and be place director under the Prime Minister Office. The ISRO's model is often brought back under discussion whenever the obvious comparison takes place. And, truly, what is the most pertinent thing for an emerging nation like India which is to bring the thrust on the R&D in defence - a number one priority. Pointing the same question, Reddy said: "Yes, I am aware of such debates. But first, give me some time to set my house right." Some change is visible and the DRDO is definitely gearing up for the further challenges. The DRDO has taken some steps in the direction as it is considering long-term contracts with the Indian information technology vendors such as Tata Consultancy Services to build software solutions for defence projects, shifting its strategy of awarding deals to the lowest bidders on short-term projects. The doors for the private industry or individual are opening fast.

<http://www.businessworld.in/article/DRDO-Bets-Big-On-Indigenous-Capabilities/08-11-2019-178679/>

DRDO stall at science festival draws huge crowd

Kolkata: Night sight device used in Army tanks, exhibited at a DRDO stall, is drawing a huge crowd. Environment-friendly explosives and models of missiles on display as part of the India International Festival here is also a big attraction among the people.

The advanced night sight device enables the Army personnel in the tank to locate an object in pitch darkness before launching an attack, a DRDO official said on Thursday. Speaking on the device that uses thermal imaging technology, the official said, "We keep adding new features to every device in our lab.

It is then requisitioned by the Army after due tests and demonstration." The Defence Research and Development Organisation (DRDO) pavilion at Science City here has been

a big hit with visitors, largely school students and their guardians, he said. Environment-friendly 'benign green primary explosives', bulletproof jackets, specially made snake repellants and battle fatigues for high altitude were also on display at the stall. Harshad Motwani, a school student, seemed excited after donning a bulletproof jacket.

Another student Archisman Banerjee was equally enthused on getting an opportunity to look at the various objects. "We have also exhibited Capsi-grenade which is used against insurgents," the official manning the counter said. Capsi-grenade, made from 'Bhut Jolokia' (also known as "Nag Jolokia" - one of the world's hottest chilly peppers), is a handy weapon in crowd control and low-intensity conflicts. Inquisitive students and visitors were also having a look at the models of missiles. Nodal officer DRDO, Dr Sukhomoy Hazra, said that different devices, designed in 22 labs of the DRDO have been put up on display to inform the younger generation about the activities of the premier organisation.

<https://www.thehansindia.com/hans/young-hans/drdo-stall-at-science-festival-draws-huge-crowd-579752>

