

High-tech small and medium enterprises look to Defexpo for orders

Aeron Systems, founded in 2008 by Ashvani Shukla and Abhijit Bokil, is looking to contribute to programmes such as the Tejas light combat aircraft

By Ajai Shukla

Small, ultra-high-tech companies such as Aeron Systems that are attending Defexpo 2018 in Chennai from Wednesday, are hoping to benefit from Defence Minister Nirmala Sitharaman's assurance that micro, small and medium enterprises (MSMEs) would form the core of a galvanised defence industry.

Aeron Systems, founded in 2008 by Ashvani Shukla and Abhijit Bokil, two electronics graduates from Pune, is looking to contribute to programmes such as the Tejas light combat aircraft and the Future Infantry Combat Vehicle (FICV).

Aeron operates in the rarefied realm of inertial navigation systems (INS), a complex package of motion sensors and computers that allow moving objects — whether a spacecraft, missile, unmanned aerial vehicle (UAV), aerial bomb or a land vehicle — to continually track their own location with an accuracy of just inches.

INS is distinct from satellite navigation, which allows moving objects to glean their own location using signals from a network of satellites called the Global Navigation Satellite System (GNSS) — a more accurate version of Google Maps.

GNSS includes satellite networks from several countries — the American Global Positioning System (GPS), Russia's Global Navigation Satellite System (GLONASS), the European Galileo and China's Beidou. Most such networks allow all users to access a less accurate "commercial signal", while reserving the highly accurate military signal for their respective militaries.

In the Kargil conflict in 1999, India's military experienced problems in receiving GNSS signals, prompting the establishment of an Indian satellite constellation called IRNSS (Indian Regional Navigation Satellite System). In addition, India's GAGAN system — short for "GPS And Geo-Augmented Navigation" — uses ISRO satellites to augment the GPS commercial signal, enhancing accuracy to close to military grade.

However, satellite navigation is unreliable. A satellite signal can be lost because of weather, or while traversing dense foliage or tunnels or in mountain valleys. Signals can be deliberately jammed by the enemy, or spoofed (a false signal created) to divert a missile or UAV from its intended course.

Furthermore, satellite signals are updated only once a second. A missile or aircraft that could be travelling 500 meters per second needs location update data 50-100 times every second.

That is why critical systems like ballistic missiles, fighter aircraft or the FICV would navigate primarily with INS, using GNSS as back up. An INS system uses multiple, data inputs — including a high-tech gyroscope — for navigation and control. The data is fused into an output that minimises navigation errors. A company's core skill and intellectual property lies in the accuracy of its data fusion algorithm. India's Defence R&D Organisation (DRDO) spearheads INS development for India's strategic missiles. Meanwhile, Indian



Space Research Organisation (ISRO) develops INS for space applications and spacecraft. Neither have resources to build INS for other crucial applications like fighter aircraft, land combat vehicles and mine-laying.

Consequently, notwithstanding the lip service to indigenisation, many Indian platform developers continue to rely on foreign INS, with little done to indigenise these crucial devices.

Ashvani Shukla says the technical specifications for the FICV's INS mandates a "Hemispherical Resonator Gyro", which is only made by French company, Safran, and US vendor, Northrop Grumman. "We provide an equally high-performance INS, but get ruled out of the project on technical grounds," he says. Similarly, an INS that Hindustan Aeronautics Ltd (HAL) builds under licence from Safran, is fitted on almost every Indian Air Force aircraft. "Safran has given HAL technology for licence manufacture, so they effectively enjoy a monopoly," says Bokil.

In another example, Bharat Forge is also using a Safran INS in the Advanced Towed Artillery Gun System (ATAGS) it is developing in partnership with DRDO. "If we were told to build an INS for ATAGS, we would take just 18 months to deliver it", says Shukla. He hopes to pursue the project under the "Make 2" category, in which the MoD reimburses the development cost of successful projects undertaken by MSMEs.

Already, Aeron's systems are being installed on the army's mine-laying vehicles, unmanned ground vehicles used for bomb disposal, and on "precision guided" kits for rockets.

Aeron has also developed a miniaturised INS that converts "dumb iron bombs" that have been dropped from aircraft since World War I into "smart bombs" that navigate their way from an altitude of 20,000 feet to a ground target 30-50 kilometres away, landing within 5-10 metres of the target.

Aeron is a profit making company, turning over Rs 130 million in the last year. But its founders and its 55 employees are waiting to see how much of a boost Defexpo 2018 provides by bringing foreign vendors in touch with Indian industry.



Tue, 10 April, 2018

Kerala engineering students go great guns at DRDO contest.

uttippuram: An unmanned covered vehicle designed by students of the MES Engineering College at Kuttippuram has manoeuvred its way into a prestigious contest organised by the Defence Research and Development Organization (DRDO).

The DRDO Robotics and Unmanned Systems Exposition, organised by the research institution to mark its diamond jubilee, has selected 30 entries from south India. Three of them are from Kerala, including the NIT Kozhikode and the AIT Kottayam.



The organisers received more than 2,000 entries from across the five zones.

The prototype developed by the students of the MES Engineering College is expected to supply materialsto the army on the battlefield and to transport wounded soldiers back to safety. Named 'Ayudha', the vehicle can also be remotely controlled.

The prototype was designed on the inter-connected hybrid system platform by final-year electrical engineering students, including Faris, Basit, Suraj, Dibu, Arjun and Fasila. Five projects from the South Indian zone would be selected to the final round of the contest.

<https://english.manoramaonline.com/districts/malappuram/2018/04/09/kerala-students-mes-college-malappuram-drdo.html>



Tue, 10 April, 2018

Many States Interested in BrahMos as Talks Are Underway - Indian Defense Chief

India says that there is sustained interest among countries of South East Asia and Africa in purchasing the BrahMos but negotiations are taking time as there are a number of crucial issues that need to be addressed before exporting what has been touted as the world's deadliest missile system.

New Delhi (Sputnik) — The Indian Defense Ministry has reiterated that serious negotiations are going on with the countries that have exhibited interest in the BrahMos supersonic cruise missile — an Indo-Russia joint project. Defense Minister Nirmala Sitharaman has said that India is keen on exporting the missile to friendly nations.

"There is a lot of interest particularly on this missile (BrahMos)... definitely lots of interest. On that, a lot of discussions are also going on. Many things are being discussed within the government and on the other end, with governments which want to buy them. Decision making can sometimes be frustratingly long

drawn but the interest is sustained.

Sometimes it is the question of the cost being negotiated, but interest on Indian missiles is definitely growing and we are addressing it.

We want to be able to export it to friendly nations," Nirmala Sitharaman said, replying to a query posed by Jamshyd N. Godrej, CMD of Godrej & Boyce at the annual summit of the Confederation of Indian Industries (CII) in New Delhi.

Godrej Aerospace, a unit of Godrej & Boyce Mfg. Co. Ltd. has been producing airframes



for the air-launched version of BrahMos missile.

India, Russia Further Collaboration in Defense Tech After Success of BrahMos

For the past few years, there have been speculations about Vietnam negotiating with India for the purchase of the BrahMos — touted as the world's deadliest missile. Apart from Vietnam, several other South-East Asian countries, including Malaysia, Singapore, and Indonesia have evinced interest in purchasing the missile, according to reports. Some active discussions have also been going on with the South American countries like Peru and Chile. Seeking market opportunities in this part of the world, BrahMos Aerospace had participated in the FIDAE show held in Santiago, Chile, from April 3-8.

Presently, BrahMos Aerospace is working on an order worth \$7 billion placed by the three services of the Indian Armed Forces. "If exports fructify, then the order for BrahMos missiles can almost double in another five years," Sudhir Kumar Mishra, CEO, BrahMos Aerospace had said last October.

Based on demand for its armed helicopters, naval equipment, missiles including the BrahMos and the Akash air defense system, the Indian Defense Ministry has set an ambitious target of exports to the tune of \$5 billion in the next seven years. In the last few years, the state-owned Defence Research & Development Organization (DRDO) has developed over two dozen platforms, like the Arjun tank, Tejas fighter, airborne early warning and control (AEW&C) system, advanced towed artillery gun system (ATAGS), weapon locating radar, high-speed heavyweight ship-launched torpedo, anti-torpedo decoy system which have the potential to attract countries in Africa and South-east Asia.

India's Propellant Booster to Help BrahMos Achieve Unimaginable Speed

To boost exports, for the first time ever, the Indian Defense Ministry has also called over 40 defense attachés from missions abroad for a series of specialized briefings starting from Monday. They will also take part in the Defexpo which is set to be inaugurated by Prime Minister Narendra Modi later this week.



"I do not want to change the term of reference of their job (defense attachés) but I think defense attachés not only should identify those procurement requirements for us to buy but also be able to speak about what we are producing so that nation outside can look at India as a producing market also rather than a buyer market," Nirmala Sitharaman

said at the event.

"I am not asking them to become marketing experts but they should be also talking about a lot about what India's defense manufacturers are doing to enhance the capacity or preparedness of the Indian Armed Forces. If they do it, I think naturally they shall create an interest among people outside to see our manufacturers' capacities and in a way sell India without being a market expert," Sitharaman added.

The BrahMos missile is a product of BrahMos Aerospace, which is a joint venture of the Defence Research and Development Organization (DRDO) of India and the NPO Mashinostroyeniya of Russia.

<https://sputniknews.com/military/201804091063367380-international-interest-brahmos-growing/>