BW BUSINESSWORLD

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DRDO Chairman G Satheesh Reddy awarded honorary fellowship by UK's Royal Aeronautical Society

He led the development of advanced avionics and achieved a streak of successful missions of long-range Agni 5 strategic missile

Defence Research and Development Organisation (DRDO) chairman G Satheesh Reddy was awarded the honorary fellowship by the Royal Aeronautical Society of United Kingdom.

The aeronautical society recognised contributions of Reddy towards indigenous design, development and deployment of diversified missile systems, aerospace vehicles, guided weapons and avionics technologies in India. "Dr Reddy spearheaded Mission Shakti, the country's first Anti-Satellite Missile Test (ASAT) mission which demonstrated an extremely high degree of precision and technological prowess, enabling India to join a select group of four nations with such capability. He bolstered the Ballistic Missile Defence (BMD) programme and successfully demonstrated missile interception capabilities at high altitudes," said a release by the Royal Aeronautical Society.

"He led the development of advanced avionics and achieved a streak of successful missions of long-range Agni 5 strategic missile. His R&D contributions have made India self-reliant in Missiles and Avionics technologies," it added.

According to the statement, Reddy is the first Indian recipient of the prestigious award in over 100 years.

"Dr Reddy is known for his vision and capability to develop indigenous technologies and is famous in students as "Junior Kalam" and 'Next Generation Missile Man" due to his knack on advanced technologies," the society said.

"Dr Satheesh Reddy has received numerous awards that include AIAA Missile Systems Award, National Aeronautical Prize, National Systems Gold Medal, National Design Award, IEI-IEEE (USA) award for engineering excellence, Homi J Bhabha Gold Medal and Technology Leadership Award," it said. (ANI)

http://www.businessworld.in/article/DRDO-Chairman-G-Satheesh-Reddy-Awarded-Honorary-Fellowship-By-UK-s-Royal-Aeronautical-Society/26-11-2019-179415/

THE HINDU BusinessLine

Wed, 27 Nov 2019

Royal Aeronautical Society honour for DRDO Chief G Satheesh Reddy

First Indian recipient in over 100 years

By V Rishi Kumar

Hyderabad: Royal Aeronautical Society (RAeS) London has conferred the Honorary Fellowship of the Society for the year 2019 to G Satheesh Reddy, Secretary Department of Defence R&D and Chairman DRDO.

Reddy is the first Indian recipient of this prestigious award in over 100 years.

The Society's highest award is bestowed in recognition of Reddy's pioneering technological contributions over the past three decades which has enabled the country to realise frontline military systems and world class missile technologies.

Reddy received the Honorary Fellowship during the Medals and Awards presentation ceremony in London.

Honorary Fellowship from RAeS is one of the world's highest distinctions for aerospace achievement awarded for only the most exceptional contributions to the aerospace profession. It is considered as equivalent to the Nobel Prize in the aerospace domain.

The first Honorary Fellowship was awarded in the year 1917 and eminent persons have been conferred with this award which includes doyens of Aerospace such as Orville Wright, aviation pioneer known for inventing the airplane with his brother, Wilbur.

Reddy has made outstanding contributions to Defence Research and Development and is renowned for his pioneering contributions to the Indian defence and aerospace sector.

A visionary and an institution builder, he led the indigenous design, development and deployment of state-of-the-art mission critical aerospace technologies and advanced missile systems. These cutting edge technologies have been the backbone for key strategic programmes and other defence applications in India.

Reddy spearheaded Mission Shakti, the country's first Anti-Satellite Missile Test mission, bolstered the Ballistic Missile Defence (BMD) programme and successfully demonstrated missile interception capabilities at high altitudes.

He led the development of advanced avionics and achieved successful missions of long range Agni 5 strategic missile.

https://www.thehindubusinessline.com/news/royal-aeronautical-society-honour-for-drdo-chief-g-satheesh-reddy/article30089089.ece

The Indian EXPRESS

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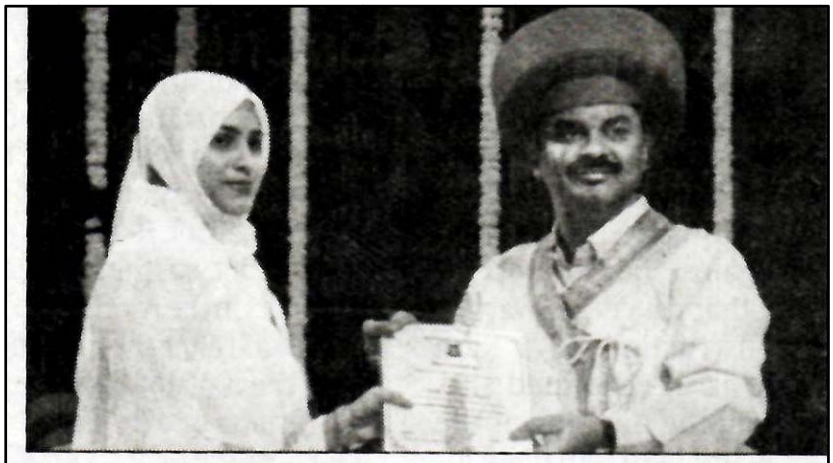

DRDO chairman G Satheesh Reddy presents a student with her degree during the annual convocation of Mumbai University on Tuesday. PTI

INDIAN DEFENCE NEWS

Wed, 27 Nov 2019

DRDO working on next generation hypersonic weapon

By Lt. General Prakash C Katoch (Retd)

News reports of October 2019 indicate that DRDO has commenced work on a next generation hypersonic weapon – a missile that can travel at five times the speed of sound, or a little over 1.6 km every second, and for testing and fine tuning the technology a wind tunnel will be operational soon. Defence Minister Rajnath Singh is expected to inaugurate the wind tunnel facility soon. The race to acquire hypersonic weapons technology is heating up globally. China, Russia, and the United States are testing hypersonic weapons of various types to enhance strategic nuclear deterrence and strengthen front-line combat units. Existing intercontinental ballistic missile (ICBM) re-entry vehicles also travel at those super fast speeds, but the hypersonic glide vehicles now in development are far more manoeuvrable, making their tracking and interception nearly impossible.

A wind tunnel model of BrahMos-II Hypersonic cruise missile

Hypersonic weapons are specifically designed for increased survivability against modern ballistic missile defence systems. Hypersonic vehicles typically consist of a Supersonic Combustion Ramjet, or Scramjet propulsion system to enable such high speeds. A Scramjet engine is an engine that uses 'air breathing' technology; the engine collects oxygen from the atmosphere as it is travelling and mixes the oxygen with its hydrogen fuel, creating the combustion needed for hypersonic travel. This is different than a traditional ramjet, which is used on space shuttles and satellite launches. In contrast to conventional

Reentry Vehicles (RV) that travel at supersonic speeds (between Mach 1 and Mach 5), hypersonic weapons travel along the edge of space and accelerate to between Mach 5 (around 3,800 mph) and Mach 10 (over 7,500 mph). While conventional ballistic missiles are launched at steep trajectories that inhibit speed during the high friction of launch and reentry, hypersonic missiles glide atop the atmosphere while engaging specialised jet engines to perpetually accelerate up to hypersonic speeds.

Ability to travel at ultra-high velocity is the primary appeal of hypersonic missiles because it extends their range and allows them to bypass modern layered missile defences. Hypersonic missiles are capable of delivering conventional or nuclear payloads at ultra-high velocities over long ranges. Hypersonic missiles can be fired from the last stages of an ICBM or Submarine-Launched Ballistic Missiles (SLBM) and skip along the top of the atmosphere using specialised jet engines to accelerate to hypersonic speeds. Alternatively, hypersonic missiles can be launched independently or released from a bomber, similar to cruise missiles, before accelerating to ultra-high speeds.

The US has invested in research and development of a hypersonic missile called the Advanced Hypersonic Weapon (AHW), which uses boost glide technology to propel warheads. During a test in 2011, the glide vehicle successfully struck a target located 3,700 km away with precision. Concurrently, Lockheed Martin has developed a hypersonic vehicle called the Falcon Hypersonic Technology Vehicle 2 (HTV-2), which is a manoeuvrable rocket-launched aircraft that glides through the Earth's atmosphere at speeds up to Mach 20 (13,000 mph). US is using the HTV-2 and AHW in its 'Prompt Global Strike', which would allow the US to launch a hypersonic strike against targets anywhere on the planet in less than one hour.

Russia has been designing and testing various hypersonic glide vehicles (HGV) and hypersonic cruise missiles. Avangard, a hypersonic glider has been tested multiple times since February 2015. It can reach speeds of Mach 20 (15,000 mph). In March 2018, President Putin announced completion of testing and commencement of its series production. It was then set to become operational in late 2018 or early 2019, nearly five years ahead of schedule. India and Russia are also jointly developing the BrahMos-II hypersonic cruise missile, testing of which is ongoing. BrahMos-II is likely to enter service in Indian and Russian military in 2025. BrahMos-II will be one of the fastest hypersonic cruise missile in the world reaching speeds of Mach 7 (5,000 mph/8,050 kph).

Russia's 3M22 Zircon anti-ship hypersonic cruise missile was successfully launched in June 2017, reaching Mach 8 (6,000 mph). KH-47M2 Kinzhal is another Russian hypersonic cruise missile. It can reportedly travel as fast as Mach 10 over a distance of 1,200 miles. Kinzhal is designed to counter US missile defence systems like THAAD and heavily defended US aircraft carriers. As of May 5, 2018 ten MiG-31 fighter jets have reportedly been fitted with Kinzhal missiles. China has been developing its hypersonic weapon capabilities with advancements in both hypersonic glide vehicles (HGV) and hypersonic cruise missiles since 2014.

China's hypersonic glide vehicle 'DF-ZF' had undergone six plus development tests between 2014 and 2016. Launched during the last stage of a missile, the DF-ZF can reach nearly 7,500 mph (Mach 10), as well as manoeuvre to avoid missile defences and zero in on targets. Scheduled to be operational in early 2020, China claims it can attack ships at sea with precision. PLA has also been testing its DF-17 ballistic missile combined with an HGV. The DF-17 underwent two tests in November 2017. It has an estimated range of 1,100 to 1,500 miles and can reach mach 10, without losing any of its manoeuvrability. The DF-17 combined with HGV is also expected to be operational by 2020. India's missile program is impressive thank to the initial push given by former President A.P.J. Abdul Kalam and BrahMos-II will be good addition to India's combat capability. But considering the level of R&D and focus by China in next generation weapon systems, the DRDO will need to work with top speed in conjunction the private industry. China appears to be racing ahead not only in swarm drones warfare but there is also speculation that China may have raced ahead of the US in stealth technology.

http://www.indiandefensenews.in/2019/11/drdo-working-on-next-generation.html

INDUS DICTUM

Wed, 27 Nov 2019

Defence Min: 274 Indigenous production projects worth Rs 62,852 cr ongoing at DRDO

New Delhi: There are 56 ongoing Mission Mode (MM) Projects with a cost of Rs 49,424.54 cr. and 218 ongoing Technology Demonstration (TD) mode projects with a cost of Rs 13,427.45 crore by the Defence Research & Development Organisation (DRDO).

DRDO Exhibition at India International Science Festival (IISF) 2019.

The above projects are directed for 100% indigenous productions, however a few projects have collaboration with foreign countries during development phase.

This information was given by Minister of State for Defence Shripad Naik in a written reply to Tiruchi Siva in Rajya Sabha today. The total number of ongoing projects is 274, and the total expenditure is Rs 62,852 crore.

Last week, Naik revealed that Rs 1,812 crore FDI has been channeled into the Defence sector since 2014.

Defence Minister Rajnath Singh also said earlier in November that under the Defence Production Policy and Make in India initiative, the Ministry of Defence (MoD) has set a target of $26 billion for aerospace, Defence services and goods by 2025. He urged the Defence Research & Development Organisation (DRDO) to cooperate with the industry to achieve this target.

https://indusdictum.com/2019/11/25/defence-min-274-indigenous-production-projects-worth-rs-62852-cr-ongoing-at-drdo/