

‘Tejas, a best in class aircraft’

By M Somasekhar

Tejas, India’s home-grown Light Combat Aircraft (LCA), has emerged among the best in class aircraft, providing flight stability even under extreme unstable conditions says S Christopher, Chairman, Defence Research & Development Organisation (DRDO). This has been achieved through indigenous technology and developments.

In addition, Tejas has rules-based Artificial Intelligence incorporated into its Flight Control System (FCS), he said at the third International Federation of Automatic Control (IFAC), International Conference on Advances in Control & Optimisation of Dynamical Systems (ACODS 2018) here.

The FCS provides the pilot 'carefree handling'. However, flight limits cannot be exceeded, which at lower speeds on aircraft such as the MiG-23/27 or Jaguar, results in the loss of the aircraft. The Aeronautical Development Establishment, Bengaluru, and HAL have been involved in the development of Tejas.

However, it has posed challenges for pilots in controlling its longitudinally unstable airframe, which escalates rapidly any disturbance of even a small magnitude. A major challenge that has resulted in delays and long gestation for the Tejas development programme.

Christopher, who is also Secretary, Department of Defence R&D, said to add more features and capabilities, continuous R&D has been taken up in the area of AI. Control systems have wide applications varying from aircraft and submarines to missiles. To meet the growing requirements of aerospace and defence projects, there is a need to develop innovative guidance schemes and control algorithms, he added.

Futuristic weapon systems will be smart, intelligent, complex and technologically advanced, he added. More than 500 scientists, academicians, industry partners and students are taking part in the conference being organised by DRDO. In his address, G Satheesh Reddy, Scientific Adviser to the Defence Minister and DG (Missiles & Strategic Systems), said miniaturised avionics and smart sensors will be the backbone for futuristic aerospace and defence systems.

Hence, there is an urgent need to create infrastructure and train a resource pool to develop algorithms for control and guidance to take aerospace vehicles such as fighter aircraft, missiles and launch vehicles into the next generation.

N.V. Kadam and S.K. Ray, former senior scientists of the APJ Kalam Missile Complex, were felicitated for their lifetime contributions in the field of control and guidance. Frank Allgower, President, IFAC Austria (Stuttgart University, Germany), addressed the inaugural function.

Many globally renowned Control and Guidance experts including P.K. Menon, Chairman & CEO, Optimal Synthesis Inc., Reza Moheimani, University of Texas, Sarah Spurgeon, University College of London, and Min-Jea Tahk, Korea Advanced Institute of S&T will be delivering the plenary and invited talks during the international conference.

<https://www.thehindubusinessline.com/news/science/tejas-a-best-in-class-aircraft/article22794759.ece>

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‘Future weapon systems will be smart, complex’

DRDO chief addresses seminar

Futuristic weapon systems would be smart, intelligent, complex and technologically advanced, said S. Christopher, Chairman of DRDO and Secretary, Department of Defence R&D.

He was speaking at the Third International Federation of Automatic Control (IFAC) International Conference on Advances in Control & Optimisation of Dynamical Systems (ACODS-2018) organised by DRDO.

G. Satheesh Reddy, Scientific Adviser to Raksha Mantri and Director General, Missiles and Strategic Systems, said synergetic efforts of R&D institutes, academia and industries have enabled India to achieve self-reliance on many technological fronts. “Technologies have been evolving quickly and we need to focus on smart, adaptive learning systems to make our aerospace vehicles cost-effective and state of the art,” he said.

Frank Allgower, President of IFAC Austria highlighted the activities of the IFAC and complimented efforts of ACODS, India, in that direction.

Ramkalyan Ayyagari, President of ACODS India (NIT, Trichy), B.N. Suresh, President of Indian National Academy of Engineering, M.S.R. Prasad, Director of DRDL, Tessy Thomas, Director of ASL and B.H.V.S. Narayana Murthy, Director of RCI were among those who spoke at the international conference.

<http://www.thehindu.com/todays-paper/tp-national/tp-telangana/future-weapon-systems-will-be-smart-complex/article22793244.ece>



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Explore underwater sonar surveillance at NPOL meet

Kochi: The Naval Physical and Oceanographic Laboratory (NPOL), Kochi is organising an International Conference on Sonar Systems and Sensors, ‘ICONS-2018’. The scientific meet will be held at ADLUX International Convention Exhibition Centre, Karukutty, Angamaly from February 22-24. K Sivan, secretary, Department of Space and chairman of ISRO, will inaugurate the conference on Thursday at 6 pm. S Christopher, secretary defence (R&D) and chairman DRDO will preside.

NPOL is a Systems Laboratory of Defence Research and Development Organisation (DRDO), Ministry of Defence, Government of India engaged in the research and development of Sound Navigation and Ranging (SONAR) systems and allied technologies. Giving a broad outline of the sphere of activity of NPOL, S Kedarnath Shenoy, director NPOL and organising committee chairman, said that its thrust areas of Research and Development are signal processing and imaging, underwater acoustics, electronics, engineering systems, transducers, materials and oceanography.

The laboratory has developed hull mounted sonar for ships and submarines, towed array sonar and airborne sonar for Indian Navy. NPOL’s success has contributed to the nation’s self-reliance in these vital fields. The conference aims to pool the knowledge in the domain of sonar and underwater sensors, underwater surveillance and communications from across the world.

With sessions covering every aspect of sonar systems and underwater sensors, ICONS-2018 plans to establish a network of all leading practitioners in this domain. Arogyaswami J Paulraj from Stanford

University, who is also a Padma Bhushan awardee and recipient of Marconi prize and Alexander Graham Bell award and John Summerscales, School of Engineering, Plymouth University, UK will deliver the keynote addresses on the first and second day respectively. The other key speakers are Flemming Jakobsen from DHI Denmark, Manell Elias Zakharia from the French Naval Academy, Angelino Farina from University of Parma, Italy, Bertrand Dubus from Institutd' Electronique, France, Yves Doisy from Thales Underwater Systems, France and Da Silva Felisberto from University of Aguilere, Portugal.

The conference has scientific sessions on 11 broad themes which will run in four parallel tracks. Each session has invited speakers from within the country and abroad, apart from keynote lectures. Above 200 papers will be presented in the three days. As a prelude to the conference, a one day pre-conference workshop with tutorials on various aspects of sonar technology is planned on Feb 22 for the benefit of students and young researchers. A cultural evening featuring a bharatanatyam concert by Rajashree Warriar is also scheduled on February 23.

<http://www.newindianexpress.com/cities/kochi/2018/feb/19/explore-underwater-sonar-surveillance-at-npol-meet-1775332.html>



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‘Innovation backbone for defence’

By Syed Akbar

Hyderabad: Dr S Christopher, chairman of Defence Research and Development Organisation (DRDO), said on Sunday futuristic weapon systems will be intelligent and complex. Integrated, miniaturized avionics, smart sensors etc., will be the backbone for future aerospace and defence systems.

Dr Christopher, who is also secretary of DRDO, told a conference on Advances in Control and Optimization of Dynamical Systems that control, guidance form the crucial technologies that find widespread applications in civil, defence sectors. Developments in areas of control, guidance and dynamical systems brought in a paradigm shift in research and development capabilities of India.

Referring to futuristic weapons, he said Tejas, the light combat aircraft of Aeronautical Development Agency of the DRDO, is a longitudinally unstable airframe. “Any disturbance will magnify in a short time. So, it becomes difficult to control the vehicle, but Tejas has the finest handling capability even under extreme conditions,” he added.

Dr G Satheesh Reddy, scientific adviser to Raksha Mantri and director-general, Missiles and Strategic Systems, said, “Synergetic efforts of research and development, academia and industries enabled the country to achieve self-reliance on many technological fronts.”

<https://timesofindia.indiatimes.com/city/hyderabad/innovation-backbone-for-defence/articleshow/62976419.cms>