

PATRONS

Dr V K Saraswat	Former Director General of DRDO and Member of NITI Ayog
Dr G Satheesh Reddy	Secretary, Dept of Defence R&D & Chairman DRDO
Shri A S Kiran Kumar	Former Chairman of ISRO & President of AeSI
Dr Shekhar C Mande	Director General, CSIR
Shri R Madhavan	CMD, Hindustan Aeronautics Limited

ADVISORY PANEL

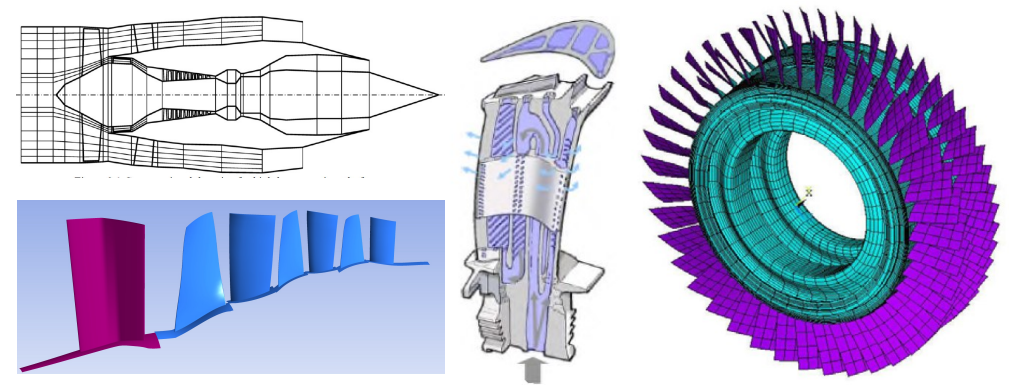
Dr Tessa Thomas	Chairperson	Director General, Aeronautical Systems, DRDO
Dr Kota Harinarayana	Member	Former Program Director-LCA, Director-ADA & Chairman, Design Division, AeSI
Shri M Z Siddique	Member	Director, Gas Turbine Research Establishment, DRDO
Dr S Venugopal	Member	Former Director, Aeronautical Development Establishment, DRDO
Shri Jitendra J Jadhav	Member	Director, National Aerospace Laboratories
Dr Girish S Deodhare	Member	Director General, Aeronautical Development Agency, DRDO
Shri Arup Chatterjee	Member	Director, Engineering R&D, Hindustan Aeronautics Limited
Shri APVS Prasad	Member	Chief Executive, Centre for Military Airworthiness and Certification, DRDO
Prof Dipankar Banerjee	Member	Former CC R&D, DRDO and Professor, Materials Engineering, IISc
Prof B N Raghunandan	Member	Former Professor, Aerospace Engineering, IISc
AVM S K Jain	Member	Assistant Chief of Air Staff, Engineering (Transport and helicopters), Air HQ

ORGANISING COMMITTEE

Dr K.Ramachandra	Chairman	Former Director, GTRE
Dr M Vijayakumar	Member	Former ED, Rotary Wing R&D Centre, HAL
Shri K Ramesh	Member	GM, AERDC, HAL
Prof Debasis Chakraborty	Member	Director, COPT, IIT Bombay
Prof R K Pant	Member	Professor, IIT, Bombay
Prof S R Chakravarthy	Member	Professor, IIT, Madras
Prof Vikram Jayaram	Member	Professor, IISc, Bangalore
Dr R K Mishra	Member	RCMA (Engines), CEMILAC
Shri Kishan Chowhan	Member	Hon Secretary, AeSI
Dr Sanjay Kumar Pandey	Member	AR&DB, DRDO
Shri Vidyadheesh Pandurangi	Member	Gas Turbine Research Establishment
Dr S V Ramana Murthy	Member Secretary	Gas Turbine Research Establishment

First Annual Webinar: Aero Gas-Turbine Engine Development in India

(Virtual Mode)
28th & 29th January 2022



Organised By:



www.aerosocietyindia.co.in/Events/UpcomingEvents

First Annual Webinar: Aero Gas-Turbine Engine Development in India

About Webinar :

The webinar will cover topics such as large fighter aero-engines, small gas-turbine engines and turbo-shaft engines, with a focus on technology requirements for next generation aero-engines and technology readiness levels to meet challenges of Next-Gen aero-engines in INDIA. The webinar is being organized jointly by the Design Division of AesI Bengaluru, Gas Turbine Research Establishment, DRDO, Bengaluru and Center of Propulsion Technologies, IIT Bombay. Topics include but not limited to the following areas

- Gas Turbine Propulsion
- Compressors, Fans, Turbines
- Heat Transfer
- Combustion, fuels and emissions
- Materials
- Structures and Dynamics

The Design Division of Aeronautical Society of India - Bangalore Branch

Is the principal Society in India serving the professionals in areas of aeronautics, aerospace and aviation. The Aeronautical Society of India, a professional body devoted to advancement of aeronautical sciences and engineering in India was founded in 1948. India's First Prime Minister Pandit Jawaharlal Nehru was the first Patron-in-Chief of the Society.

Gas Turbine Research Establishment

One of the pioneering laboratories of Defence Research & Development Organization under the Ministry of Defence, Government of India. The main charter of the establishment is to design and develop aero gas-turbine engines for military applications, besides carrying out advanced research work in the area of aero gas turbine subsystems. In addition, the establishment is responsible for establishing the requisite testing and prototype manufacturing facilities for components and full-scale engine development.

Centre of Propulsion Technologies-IIT Bombay

Established to achieve high international reputation and stature amongst the professionals and engaged in collaborations for future propulsion technology development in a leading role. The centre intends to interface with leading experts from across the globe in various areas beneficial to the country.

Program Schedule

DAY - 1 : 28th January 2022 - Friday

09:00 am : Inaugural Session

Address by Chief Guest : Dr V K Saraswat , Former Director General of DRDO and Member of NITI Ayog.

Session 1 Theme - Indigenous gas turbine aero engine development .

Session 2 Theme - Critical technologies for next-gen aero engines.

Session 3 - Panel discussion.

DAY - 2 : 29th January 2022 - Saturday

Session 1 Theme - Advanced technologies for next-gen aero engines.

Session 2 Theme - Maintenance Requirements for Aero Engines.

Session 3 Theme - Development of aero engine accessories.

Session 4 Theme - Enabling Technology initiatives for propulsion systems.

Session 5 Theme - Advanced material and manufacturing technologies.

Session 6 - Panel discussion.

For detailed program details , topics of discussion , speaker profile
Visit us at : <https://www.aerosocietyindia.co.in/Events/UpcomingEvents>

To Register :

Participants are requested to send their name, e-mail address , contact number and employer details to aerogasturbineindia@gmail.com or to pandurangi.vr@gmail.com for registration.

Please Note :

- No registration fee is charged.
- Last date for registration - 25th January 2022.
- Participants will receive a separate email confirmation after the verification by organizing team.
- Event joining link will be shared to participant one day before the event.

Also you can register online - [by filling the form here](#)

For queries, feel free to contact us at :

Mobile: +91-9845667544 | **Phone:** 080-25040081 |

Email: pandurangi.vr@gmail.com | aerogasturbineindia@gmail.com

First Annual Webinar : 28th & 29th January 2022

Aero Gas-Turbine Engine Development in India

Organised By: Design Division of Aeronautical Society of India (AeSI), Gas Turbine Research Establishment (GTRE) and Centre of Excellence for Propulsion Technologies (CoPT)

Program Schedule

DAY – 1 : 28th January 2022 –Friday

INAUGURAL SESSION

Time	Duration	Program	Speaker
09:00am to 09:10am	10 mins	Welcome Address	Dr K Ramachandra, Former Director, GTRE
09:10am to 09:40am	30 mins	Address by Chief Guest	Dr V K Saraswat, Former Director General of DRDO and Member of NITI Ayog
09.40am to 09:50am	10 mins	The Webinar Program	Dr SV Ramana Murthy, GTRE

THEME : INDIGENOUS GAS TURBINE AEROENGINE DEVELOPMENT

Time	Duration	Topic	Speaker
09:50am to 10:20am	30 mins	Challenges in Indigenous development of Aero Gas Turbine Engines	Shri M Z Siddique, Director GTRE
10:20am to 10:50am	30 mins	Indigenous Aero Gas Turbine Engine Development at HAL	Shri K Ramesh, GM AERDC, HAL
10:50am to 11:20am	30 mins	Propulsion System Development Programs at NAL	Shri R Prathapanayaka, NAL
11:20am to 11:50am	30 mins	Progression of Private Industries from Contract Manufacturing to System Development	Shri J Vinod Kumar, BFL

THEME : CRITICAL TECHNOLOGIES FOR NEXT-GEN AERO-ENGINES

11:50am to 12:15pm	25 mins	Requirements for Future Generation Fighter Gas Turbine Engines	Dr S V Ramana Murthy, GTRE
12:15pm to 12:40pm	25 mins	Fan Blade Flutter: Engine Operability and Engine Integrity	Shri Ajay Pratap, GTRE

12:40pm to 01:10pm – LUNCH BREAK

01:10pm to 01:35pm	25 mins	Engine Flow Distortion: Influence on Performance and Operability	Prof K Sudhakar, Former Prof IITB & R Jolly
01:35pm to 02:00pm	25 mins	Combustor Atomiser, Temperature Pattern Factors and High Altitude Performance	Prof S R Chakravarthy, IITM
02:00pm to 02:25pm	25 mins	Advanced Turbine Technologies, Materials and Processes	Dr S V Ramana Murthy, GTRE
02:25pm to 02:50pm	25 mins	After Burner Screech	Dr S Ganesan, GTRE

02:50 pm to 03:00 pm – TEA BREAK

03:00pm to 03:25pm	25 mins	Aero Engine Signature Studies using Infrared Cross Section (IRCS)	Prof Shripad Mahulikar, IITB
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03:25pm to 03:50pm	25 mins	Future Generation Engine Control System	Shri A N Viswanatha Rao,GTRE
PANEL DISCUSSION ON TECHNOLOGIES/INFRASTRUCTURE			
03:50pm to 04:35pm	45 mins	<ul style="list-style-type: none"> National Level Manufacturing and Testing Facilities Stealth Technologies for Next Generation Aero Gas Turbine Engines 	Moderator: Dr Kota Harinarayana, Former Program Director-LCA, Director-ADA & Chairman, Design Division, AeSI Panellists: <ul style="list-style-type: none"> Shri M Z Siddique, Director, GTRE Shri K Ramesh, GM AERDC, HAL Shri Jitendra J Jadhav, Director, NAL Dr Debasis Chakraborty, Director CoPT, IITB Prof Shripad Mahulikar, IITB
DAY – 2 : 29th January 2022 –Saturday			
Time	Duration	Topic	Speaker
THEME: ADVANCED TECHNOLOGIES FOR NEXT-GEN AERO-ENGINES			
09:00am to 09:25am	25 mins	Damage Tolerant Design Technology for Next-Gen Aero-Engines	Dr Vikas Kumar Saxena, Former Director, DMRL
09:25am to 09:50am	25 mins	Ceramic Matrix Composites for Hot-End Parts of Aero-Engines	Dr A Uday Kumar, NAL
THEME : MAINTENANCE REQUIREMENTS FOR AERO ENGINES			
09:50am to 10:15am	25 mins	Maintain to Sustain! - Requirements of Maintainability of an Aero Engine	Gp Capt K Giri, GTRE
THEME : DEVELOPMENT OF AERO-ENGINE ACCESSORIES			
10:15am to 10:40am	25 mins	Development and Certification of High-Speed Aero-Engine Bearings	Dr Soumendu Jana, NAL
10:40am to 11:05am	25 mins	Design and Development of Fuel System	Shri K Lingamoorthy, Chief Manager, HAL
THEME : DRDO ACADEMIA INTERACTION			
11:05am to 11:35am	30 mins	Synergy between DRDO and Academia to develop technologies for Aero Engines	Dr Debasis Chakraborty, Director CoPT, and Shri Kishore Prasad, GTRE
Turbomachinery			
11:35am to 12:00pm	25 mins	Inflow distortion and its propagation in a transonic fan-duct configuration	Prof A M Pradeep, IITB

Combustion			
12:00pm to 12:25pm	25 mins	Development of Nano-Boron Slurry Fuels, Characterization and Atomization with Co-axial Air-Blast Atomizers	Prof S R Chakravarthy, IITM
12:25pm to 12:50pm	25 mins	Combustion Characteristics of Boron Impregnated slurry fuel	Prof Bhaskar Dikshit, Jain University
12:50pm to 01:20pm - LUNCH BREAK			
01:20pm to 01:45pm	25 mins	Advances in Modelling and Simulation of Combustion Processes	Dr K Aditya , IISc
01:45pm to 02:10pm	25mins	After Burner Thrust Vectoring	Prof Abhijit Kushari, IIT Kanpur
Structural Mechanics			
02:10pm to 02:35pm	25 mins	Modelling and Analysis of Mistuned Rotor Blade Systems	Prof S F Ali, IITM
THEME: ADVANCED MATERIALS AND MANUFACTURING TECHNOLOGIES			
02:35pm to 03:00pm	25 mins	Aero Engine Materials, Coatings and Indigenous Efforts	Shri B V A Patnaik,GTRE
03:00pm to 03:25pm	25 mins	Advancements in Single-Crystal Blade/Vane Castings	Dr D K Das, DMRL
03:25pm to 03:50pm	25 mins	Challenges in Additive Manufactured Gas-Turbine Components & Certification	Dr. U Chandrasekhar ,WIPRO
03:50 pm to 04:15 pm	25 mins	Advanced Casting & Forging Processes for Gas Turbine Engine	Shri Kallol Bhattacharya , HAL(K)
04:15pm to 04:25pm TEA BREAK			
04:25 pm to 04:50pm	25 mins	Development and Certification Test Facilities for Turbo shaft Engines	Shri Girish Degaonkar,HAL
04:50 pm to 05:15pm	25 mins	Module and Engine Test Facilities: Status and Requirements	Dr A C Bhaskar,GTRE
PANEL DISCUSSION ON CERTIFICATION			
05:15pm to 06:00pm	45 mins	<ul style="list-style-type: none"> Reforms In Engine Certification Processes for Ab-Initio Engine Development: Indian Scenario Characterization of Additive Manufactured Engine Components & Certification. 	Moderator:- Prof BN Raghunandan, Former Prof. IISc- Bangalore. Panellists: <ul style="list-style-type: none"> Shri D Roy,GTRE Shri K Ramesh, GM AERDC, HAL Shri A P V S Prasad, CE, CEMILAC Dr. U Chandrasekhar ,WIPRO
Vote of Thanks : V Pandurangi, GTRE			

PATRONS



Dr. V K Saraswat

Former Director General of DRDO and Member of NITI Ayog



Dr. G Satheesh Reddy

Secretary, Dept of Defence R&D & Chairman DRDO



Shri A S Kiran Kumar

Former Chairman of ISRO & President of AeSI



Dr. Shekhar C Mande

Director General, CSIR



Shri R Madhavan

CMD, Hindustan Aeronautics Limited

ADVISORY PANEL



Dr. Tessy Thomas

Chairperson –Advisory Panel
Director General, Aeronautical Systems,



Dr. Kota Harinarayana

Former Program Director-LCA, Director-
ADA & Chairman, Design Division, AeSI



Shri MZ Siddique

Director, Gas Turbine Research Establish-
ment, DRDO



Dr. S Venugopal

Former Director, Aeronautical Develop-
ment Establishment, DRDO



Shri Jitendra J Jadhav

Director, National Aerospace Laboratories



Dr. Girish S Deodhare

Director General, Aeronautical Develop-
ment Agency

ADVISORY PANEL



Shri Arup Chatterjee

Director , Engineering R&D, Hindustan
Aeronautics Limited



Shri APVS Prasad

Chief Executive, Centre for Military Air-
worthiness



Prof. Dipankar Banerjee

Former CC R&D, DRDO and Professor,
Materials Engineering, IISc



Prof. B N Raghunandan

Former Professor, Aerospace Engineering,
IISc



AVM S K Jain

Assistant Chief of Air Staff, Engineering (Transport
and helicopters), Air HQ

Organising Committee



Dr. K. Ramachandra

Chairman , Org Committee
Former Director , Gas Turbine Research
Establishment, DRDO



Dr. M Vijayakumar

Former ED, Rotary Wing R&D Centre,
HAL



Shri K Ramesh

GM, AERDC, HAL



Prof. Debasis Chakraborty

Director, COPT, IIT Bombay



Prof. Rajkumar S Pant

IIT, Bombay



Prof. S R Chakravarthy

IIT, Madras

Organising Committee



Prof. Vikram Jayaram

IISc, Bangalore



Dr. R K Mishra

RCMA (Engines), CEMILAC



Dr. Sanjay Kumar Pandey

AR&DB , DRD



Dr. S V Ramana Murthy

Member Secretary

Gas Turbine Research Establishment-
DRDO



Shri Vidyadheesh Pandurangi

Gas Turbine Research Establishment-
DRDO

About the Webinar

AeSI Design Branch, GTRE and CoPT have jointly planned to host Seminars / Workshops on Aero-Engine Systems and Advanced Gas-Turbine Technologies. The specific theme for this Webinar is “Aero Gas-Turbine Engine Development in India, Present Status and Future Programs”

The two-day meet will cover topics such as large fighter aero-engines, small gas-turbine engines and turbo-shaft engines, with a focus on technology requirements for next generation aero-engines and technology readiness levels to meet challenges of Next-Gen aero-engines

The two-day program consists of several invited talks from eminent Scientists and Engineers drawn from various R&D Labs, Public and Private Sector Organizations and Academic Institutions. Contents and the Format of the Webinar is aimed at Members of AeSI, Scientists and Engineers working in Gas Turbine Development Organizations,, Students and Teachers in Academic Institutions

Warm Regards

Dr. K Ramachandra

Former Director, GTRE

Chairman, Webinar Organizing Committee



Dr. Vijay Kumar Saraswat is an Indian scientist who formerly served as the Director General of the Defence Research and Development Organisation (DRDO) and the Chief Scientific Advisor to the Indian Minister of Defence.

Dr. V K Saraswat is the key scientist in the development of the Prithvi missile and its induction in the Indian armed forces. Dr Vijay Kumar Saraswat, India's most gifted scientist and an accomplished researcher with more than four decades of experience spanning over several fields and areas in both basic and applied sciences of defence research. Apart from being a scientist, he is a rare combination of an innovator, technologist and visionary. Born at Gwalior on 25 May 1949, Dr Saraswat completed his engineering from Gwalior; Master of Engineering from IISc Bangalore followed by Ph.D from Osmania University. During his illustrious career, from Scientist to Scientific Adviser to Defence Minister, Director to Director General DRDO and Secretary to Dept of Defence R&D, Dr Saraswat has been credited with development of Liquid Propulsion Rocket Engines and missiles namely PRITHVI, DHANUSH, PRAHAAR indigenously. He is the principal architect of the Ballistic Missile Defence programme which included major technology breakthroughs. The successive interceptions of incoming target ballistic missiles at Exo and Endo atmospheres are a testimony to his dedicated efforts and exploitation of limited technological resources. With this India joined the select nations that have the capability to develop BMD systems.

Dr. V K Saraswat brought new dimensions to the strategic defence scenario through successful test firing of AGNI-5; SHOURYA; Initial Operational Clearance for Light Combat Aircraft TEJAS and induction of INS Arihant. Thus, today nation can boast of reaching any shores in the world with the nuclear capable missiles with different strike ranges. Under his leadership, DRDO provided the technologies developed

by them for societal benefits namely Solar Powered Modular Green Shelters, Bio-Digesters, AAHAR programmes,

Explosive detection kit, Diagnostic Units for Dengu and Chickengunia etc. Dr. V K Saraswat's pioneering efforts have taken shape into establishment of Research & Innovation Centre at IIT Madras; MILIT- Centre for Training needs of armed forces on S&T ; CERT for reporting, auditing and handling emergency response of Information Security Incidents; CHESS – futuristic technology Centre for High Energy Laser and Microwave devices; Kyrgyz-Indian Mountain Bio-Medical Research Centre at Kyrgyzstan;

Dr. V K Saraswat is the recipient of many national and international awards including:

- PADMABHUSHAN (2013)
- PADMASHRI (1998)
- Vikram Sarabhai Memorial Award from Indian Science Congress (2011);
- Lifetime Achievement Award by Ramakrishna-Vivekananda International Foundation, New Delhi;
- Prof Jai Krishna Memorial Award by Indian National Academy of Engineering (INAE);
- Dr Y Nayudamma Memorial Gold Medal for the year 2011 by AP Science Congress;
- Jawaharlal Nehru S&T Award (2009) by Govt of Madhya Pradesh;
- FICCI Annual Award;
- ARYABHATA Award (2011) from Astronautical Society of India;
- National Aeronautical Prize (1998)
- Dr Saraswat is Fellow / Member of following Professional Bodies.

Honoris Causa was conferred upon him by more than 18 Universities including Andhra University(Vishakhapatnam), NIT Surat. He has also authored and presented several papers at National and International level journals/ conferences and guided eight Ph.D Scholars. Dr V K Saraswat presently is the Member of NITI Aayog and shouldering Honorary positions in Government and Academic Institutions.

Dr. K Ramchandra—Chairman Org Committee



Dr. K. Ramachandra is an Outstanding Scientist & former Director, Gas Turbine Research Establishment, Defense Research & Development Organization, and former Director of National Design and Research Forum(NDRF). He is the President of the Bird Strike Research Group of India and a Chartered Mechanical Engineer. His academic qualifications include BE (Mechanical Engineering), ME(Machine Design) PhD (Mechanical Engineering) & MBA (Financial Management) . He worked as the Coordinator of the Propulsion Panel of AR&DB, CEO of the NDRF Projects of the National Program on Micro Air Vehicles, and is the Chairman of one of the Review Boards of Centre of Excellence in Propulsion Technologies of DRDO

He has supported Honeywell, Triveni Turbines, Cades Technologies, Defiance Technologies, Enlivening Technologies, Infosys, WIPRO, and Accenture as a Consultant/Mentor and is a Technical Advisor to Bharat Forge Limited. He is associated with Governing Council /Academic Senate and Board of Studies of several Universities and Engineering Institutions such as VTU, Sastra University, Christ University, Dayanand Sagar University, RV & MVJ College of Engineering, Acharya & Gogte Institute of Technology and is associated with many academic programs of several IITs. He has more than 100 National & International publications and co-authored a Text Book on Experimental Stress Analysis as well as Monographs on Sea Planes, Bio Printing.

He has been the Research Advisor for 15 PhD Programs, 4 MS Programs, 40 ME /M Tech Programs. He has got Two National & One International Award for Outstanding Research & Design Publication and Dr Visvesvaraya Award of Distinguished Engineer by The Institution of Engineers (India).

His areas of specialization and expertise include Structural Design and Materials of Aero Gas-Turbines, Weight Control & Lifing, Damage Tolerant Design, On-Line Life/Health and Usage Monitoring system, Airworthiness & Life Extension of Aero-Engines . He was the Project leader of the Turbine Life Improvement Program (TULIP). Few of his recent project initiatives include Bird-Avoidance Measures at Airports, Micro Air Vehicles & Micro Underwater Vehicles for Medical Emergencies, Agricultural/Aquacultural Applications, Anti-Drone Technologies , Small & Micro Gas Turbines, Blisk (Integrated Bladed Rotor) Technology & Thrust-Vectoring Exhaust Nozzle.

Dr. S.V. Ramana Murty—Mem Secy Org Committee



Dr. S.V. Ramana Murty, Scientist 'G' working in Turbine Group of Gas Turbine Research Establishment. He is Technical Director of Turbine group. He has 25 years of experience in the Aero-thermal Design, Detailed configuration, manufacturing and testing of Axial flow / radial inflow turbines for aero, marine and land applications. He has done B. Tech (Mechanical) from JNTU, Kakinada, M.Tech (I.C. Engines and Gas Turbines) from REC, Warangal and PhD from VTU, Belgaum. He has also done Gas Turbine Technology Fellowship Course in Defence Institute of Advanced Technology, Pune. He has more than 35 publications in National/ International seminars and Symposiums and Journals. He is also a Recipient of DRDO Technology Day Award. His overseas professional expertise to engineering design and manufacturing are with Safran Aircraft Engines, Malichaud, France, Sukhoi Design Bureau, CIAM, and GFRI, NPO Saturn, Russia, Betshmesh Engines Limited, Israel, Centrax, AETC, Howmet, UK, Cranfield, UK and Formetal, Belgium. His association with National / International Bodies includes Aeronautical Society of India, Institute of Engineers, Society of Aerospace Quality and Reliability and ASME.

Dr. Kota Harinarayana



Dr. Kota Harinarayana was born in Berhampur, Orissa, in 1943 and graduated from BHU in Mechanical Engineering. He did his post-graduation in Aero Engineering at IISc, Bangalore. He did his Ph.D. at IIT Bombay. He also holds a Bachelor's degree in Law. He started his career in 1967 at HAL. He moved to DRDO HQ in 1970. He rejoined HAL in 1982 as Chief Designer in Nasik Division. He was deputed to DRDO in 1985 and assumed charge as Director, ADE, Bangalore. He was appointed as LCA Programme Director in December 1985. During 1995 he was elevated as Distinguished Scientist by DRDO. As Programme Director and Chief Designer of Light Combat Aircraft, he successfully directed the project leading to flight testing and clearance for limited series production. Thanks to his efforts, India succeeded in developing a state-of-art, high technology fighter aircraft of world class. He has been awarded by Padma Shri, 2002 and Distinguished Alumnus award from Indian Institute of Science and IIT Bombay. He is member of Aeronautical Society of India (former President of the Society), Indian National Academy of sciences, National Academy of Sciences and Indian National Academy of Engineering.

Dr. B.N. Raghunandan



Dr. B.N. Raghunandan, former Professor, Department of Aerospace Engineering and Dean of Engineering, IISc, is an expert in combustion and propulsion, atomization and spray formation in propulsive devices & space propulsion systems. He is graduated from IIT Bombay in Aeronautical Engineering in 1971 and obtained his Doctorate from IISc Bangalore after his B.Tech in 1976. As a specialist in the area of Aerospace

Propulsion and Combustion. He has over 200 research publications, 80 technical reports & several book reviews to his credit and has delivered several invited lectures. He has guided more than 50 Masters / Doctoral students. Earlier, he was the Chairman of the Department of Aerospace Engineering, the Chairman of the Earth & Environmental Sciences Division, IISc, ASTRA, EMCBB Panel of Armament Board, and Coordinator of the Propulsion Panel of AR&DB and the Convener of the Space Technology Cell, IISc. He was a Visiting Scientist in the University of Leeds and Imperial College, London. He was an International Scholar in Hosei University, Tokyo, Japan and Visiting Professor at SSRC Aleppo. He has represented India in the International Society for Air-breathing Engines. ISRO, DRDO, CSIR, DST, IIST, IITs and many other institutions often seek his expertise and Reliability and ASME. He described his work years as slew of opportunities abroad which included assignments in UK, Japan, Syria, Canada, USA, and representation in ISABE.

Shri. MZ Siddique



Shri. MZ Siddique is a Distinguished Scientist and Director, Gas Turbine Research Establishment, Defence Research & Development Organization, Bengaluru. Shri.MZ Siddique is Director of the establishment since 2015, responsible for the design and development, of military gas turbine engines in the country. Under his leadership, various technology demonstrator and mission mode projects pertaining to indigenous development of gas turbine systems and technologies are progressing for the combat aircraft and cruise missile applications. Apart from the aero propulsion systems, GTRE is indigenously developing military class turbochargers for the combat vehicle platforms. He is steering technical teams in resolving the various technology issues related to propulsion systems of the imported fielded weapon platforms for the tri-services. Multiple research projects towards the futuristic aero engine propulsion technology requirements of the country are being pursued by GTRE technology groups through Indian academia, industry and national research institutions.

In the past, under his leadership as Project Director, the Flying Test Bed (FTB) trials of Kaveri Engine was carried out at Gromov Flight Research Institute (GFRI), Russia. This is the first time an Indigenously designed and developed military gas turbine engine was flight tested. For this feat, he was awarded “DRDO Agni award for excellence in self-reliance – Team leader” in the year 2010. Further, the altitude testing of Kaveri and its core engine were successfully completed at Central Institute of Aviation Motors (CIAM), Russia. He played a crucial role towards the design, development and aero-mechanical evaluation of three variants of Low & High Pressure Compressor for Kaveri & its derivatives. The configurations were indigenously tested and also undergone verification tests at Anecom, Germany and CIAM, Russia. On the indigenous cruise missile engine development front, he played a pivotal role towards integrating the engine and carrying out the experimental flight trials with the designated cruise vehicle.

Shri. MZ Siddique is providing technology leadership guidance for many national research and development initiatives pursuing gas turbine related research in the country and he is the national representative for International Society of Air Breathing Engines (ISABE). He represented the nation in the Indo-US joint working group for jet engine technology as Co-Chair under the Defense Technology and Trade Initiative (DTTI). He spearheaded the Gas Turbine Enabling Technology (GATET) program, a pan India initiative associating Indian academia for developing cutting edge technologies for aircraft engines.

Shri. K Ramesh



Shri K. Ramesh has completed his B.E in Mechanical Engineering from PSG College of Technology, Coimbatore in 1986. He joined HAL as Management Trainee in 1986 and was subsequently posted to Aero Engine Division in Bangalore as Engineer in Test House. He has completed his M.Tech in Aircraft Production Engineering from IIT, Madras in 1989. He has also completed his Executive PGDM from XIME, Bangalore in 2010. He has worked in various capacities in Engine Division Bangalore in Testing, Quality Control, Exports, Assembly and Overhaul departments. He has undergone Training in Testing of TPE-331 engines at M/s Allied Signals, Phoenix, USA. He has also undergone Training at M/s RollsRoyce, UK and M/s Turbomeca, France for Adour Engine of Hawk aircraft. As DGM (Quality), he was Head of Quality Control at Sukhoi Engine Division, Koraput. He has associated in establishing Quality procedures and obtaining Type certification of AL31FP Engines in its component Manufacture phase and Indigenous Raw Material Manufacture phase (Phase IV & Phase V). He has also established Quality Management System at Sukhoi Engine Division and steered the Division to obtain its AS 9100 Certification. He was also in-charge of Industrial and Marine Gas Turbine Division for Assembly, Testing, Installation and commissioning of LM 2500 Engines for Indian Navy's frigates as well as ROH and commissioning of Industrial Avon and 501K engines. Presently, he heads the AERDC Division of HAL.

Dr .K Sudhakar



Dr. K Sudhakar, is a retired professor of Indian Institute of Technology, Bombay. He has done his B. Tech. and M. Tech both from Indian Institute of Technology, Madras. He has done his PhD (Aerospace Engineering) from Indian Institute of Technology, Bombay. He has worked in Hindustan Aeronautics Limited from 1973 to 1984 as Senior Design Engineer, then he worked as Professor in Indian Institute of Technology, Bombay from 1984 to 2014. His areas of expertise are Aerodynamics, Aircraft design, Design optimisation, Bayesian Framework and Twin Spool Turbofan Engine. His research interests are Modelling & Simulation, Robust Design, Systems Engineering, Micro(mini) Aerial vehicles, Wind Energy .He has about 54 publications in National/ International seminars and Symposiums and Journals.

Shri R.Jolly



Shri R Jolly has got very versatile working experience in different organisation of country. Currently he is working with Laaminar Aviation InfoTech. He has worked with reputed organisations such as ADA, HAL, NAL and Spicejet. His interest areas includes: Fighter and Transport Aircraft Configuration Design & Performance, Engine – Airframe Aerodynamic Integration, Civil Aircraft Flight Operations Engineering.

Shri Ajay Pratap



Shri Ajay Pratap, Scientist 'G' working in Compressor Group of Gas Turbine Research Establishment is Technical Director of Compressor group. He has more than 25 years of experience in the Aerodynamic design and testing of Axial flow / Centrifugal Compressor for aero, marine and land applications. He has also immensely contributed in the Flutter prediction and mitigation methodologies for gas turbine engines. He has done B. Tech in Aerospace Engineering from IIT, Kharagpur in 1993. He has also done Gas Turbine Technology Fellowship Course in Defence Institute of Advanced Technology, Pune in 1996. He is project director of technology demonstrator project "New Fan with high inlet pressure distortion tolerance" at GTRE. He has more than more than 20 publications in National/ International seminars and Symposiums and Journals. He is a Recipient of J C Bose Award- 1996, National Technology Day Award- 2003, and Agni Award for Excellence In Self Reliance – 2010. His association with National / International Bodies includes Aeronautical Society of India.

Dr. S Ganesan



Dr. S Ganesan, Scientist 'G' working in Afterburner and Exhaust System (ABES) Group of Gas Turbine Research Establishment. He has more than 20 years of experience in the Aero-Thermal Design, Detailed configuration, manufacturing and testing of aero and marine engine components. Dr. S. Ganesan obtained his B.Tech. in Aeronautical Engineering from MIT, Anna University in 1995 (First class with distinction). Further he obtained his M.Tech. in Aerospace Engineering from IIT, Madras in 1997. He earned his Doctorate from IIT, Madras in 2006. From 1997, he has been associated with GTRE for the design and development of Afterburner and Exhaust Systems of various engine programmes. Currently, he leads the Afterburner and Exhaust System group in GTRE. He is a recipient of "Young Scientist Award" from DRDO in 2006 for his outstanding contribution towards design and development of gas turbine afterburner system. He is a life member of Aeronautical Society of India and Combustion Institute (Indian Section) and has over 45 publications both in national and international Journals / Conferences.

Dr. S R Chakravarthy



Dr. S R Chakravarthy is a Professor of Aerospace Engineering at the Indian Institute of Technology Madras, Chennai, India. He received his Bachelor of Technology degree in Aerospace Engineering in 1991 from IIT Madras, and went to obtain his Master of Science in Aerospace Engineering degree in 1992 and Doctor of Philosophy in 1995, both from the Georgia Institute of Technology, Atlanta, GA, USA. Satya Chakravarthy works in the areas of propulsion and combustion, and researches on different aspects of combustion in gas turbine and rocket engines. He heads the National Centre for Combustion Research & Development (NCCRD) at IIT Madras supported by the Department of Science and Technology. He has around 100 peer-reviewed archival journal publications to his credit, and presented over 250 conference papers, delivered many keynote/plenary/invited lectures, visited many universities such as MIT, Cambridge, TU Berlin, TU Munich, etc., and industries such as GE, FM Global, etc. He is on the editorial board of Progress in Energy and Combustion Science, and is a Colloquium Co-Chair on Solid Fuel Combustion for the International Symposium on Combustion, Dublin, 2018. He has been awarded the HAL Prize for the best undergraduate in aerospace engineering in 1991, the Young Engineer Award by the Indian National Academy of Engineering in 2003, the Young Faculty Recognition Award by IIT Madras in 2009, the Dalmi-HEMSI-ACRHEM Award by the High Energy Materials Society of India in 2009, and the DRDO Academic Excellence Award by the Defence Research and Development Organization twice, in 2009 and 2016.

Dr. S P Mahulikar



Dr. S P Mahulikar, is Professor - HAG (Higher Academic Grade) in Indian Institute of Technology, Bombay. He is Alumnus (B.Tech.) of Dept. of Aerospace Eng. IIT Bombay. He is among World's Top 2% Scientists - 2020, 2021 (Stanford Univ. List: Elsevier Research Intelligence & SciTech Strategies). He is member of Aeronautics R&D Board (Propulsion Panel), Min. Defence, Govt. of India (since, Mar'2021). He is Maharashtra Governor's Nominee – Solapur Univ. Academic Council (till Aug'2022), Competent Toastmaster (Toastmasters' International Inc. USA) in Communication & Leadership, Fellow of DFG-Mercator Professorship Program, F.R. Germany, A. von Humboldt Fellow, F.R. Germany, Fellow of Foreign Experts' Program for Scientific Research, P.R. China. He has been invited as Official Consultant (from IIT-Bombay) by - Turkish Aerospace Ind. (TAI) Ankara; Agency for Defense Development (ADD) Daejeon S. Korea; etc. on, "Infrared Sign. of Aircraft / Helicopters (Stealth Technology)". He has received Outstanding Reviewer Award - ASME Journal of Heat Transfer. He is Winner - Academic Excellence (Faculty @ National level) IEI - FCRIT Award 2021. His areas of research are Aerospace Thermodynamics, Heat Transfer & Fluid Flow, Heat Transfer to Hypersonic Vehicle, Infrared Signatures of Aerospace Vehicles, Microchannel Cooling of Gas Turbine Blades, Non-Equilibrium Thermodynamics

Shri Vishwanatha Rao AN



Shri Viswanatha Rao AN, Scientist G, is a Technology Director at Gas Turbine Research Establishment Bangalore. He has completed his B.E in Electronics from UVCE & ME in Aerospace engineering from IISc. Currently he heads the instrumentation and control Group at GTRE. He has more than 30 years of experience in design and development of gas turbine engines for military applications. Currently he is the project director of " Full Authority Digital Electronic Control Unit" project .The FADEC developed indigenously has salient features such as " Enhanced fault tolerant capabilities , " Co-ordinated flight and propulsion control " ,Safety critical DO-178B level software and it is a Modular electronic design with improved packaging for Integrated health monitoring. He has more than 30 publications on controls, instrumentation and FADEC .He has made significant contribution towards development of indigenous propulsion technologies required for military gas turbine engines in the area of instrumentation and propulsion controls .

Dr. Vikas Kumar



Dr. Vikas Kumar, Distinguished Scientist (DS) & Former Director, Defence Metallurgical Research Laboratory (DMRL), Hyderabad joined in the organization in 1982. He has obtained his Bachelor's degree in Metallurgical Engineering from IIT, Roorkee, M. Tech from IIT Kanpur and Ph.D from IIT Madras. He has developed expertise in the area of Fatigue, Fracture & Damage Mechanics, Life Prediction & Structure Integrity Analysis of Military Aeroengines and Weapon systems in DMRL for more than three and half decades. He has developed several application fracture mechanics based software codes for testing and on-line analysis of materials for service simulated environments. He has made contributions to several projects in DMRL related to development of materials for aerospace, armour and naval applications. He has executed successfully several projects on Life Cycle Management of Aero engine for Indian Air Force which saved enormous foreign exchequer as well generated lakhs of additional flying hours for IAF. Presently, he is Distinguished Visiting Professor at several IITs & Autonomous Institutes, and in process of creating CoEs and MSME-Academia-Services ecosystem to develop cutting edge futuristic multidisciplinary technologies under Atma Nirbhar Bharat Initiative of Govt. of India and also assisting MSMEs for MoD driven Defence Testing Infrastructure Scheme (DTIS) for Defence Corridors.

Dr. Udayakumar A



Dr. Udayakumar A, Senior Principal Scientist working in Materials Science Division of CSIR-National Aerospace Laboratories. He has more than 35 publications in National / International journals and 5 patents. He has been awarded by DMRL-DRDO Laboratory Award-2020, DMRL DAY award -2020, NAL's Technology shield award for SiC/SiC development, and CSIR-NAL Excellence Award in Technology for Development of Process for Fabrication of C/SiC Composite and C/SiC Composite Components for Applications in Aerospace Vehicles, September 2015. His research interests are Materials science, Ceramics and Ceramic Matrix composites. His association with National / International society includes Indian Carbon Society, Indian Ceramic Society and Indian Society for Advancement of Materials and Process Engineering, ACerS.

Group Captain K Giri



Group Captain K Giri is an Aeronautical Engineering Officer of Indian Air Force, presently posted to GTRE. He has an experience of about 26 years in the field of Military Aviation maintenance. He is trained on the O, I and D level maintenance of military aircraft and aero engines of western origin. He has served in the Military aircraft squadrons, Wings and Base Repair Depots of IAF at frontline locations. He also had a staff appointment at MoD and Air HQ as Director Acquisition. He holds an M Tech degree in Combustion and Propulsion Technology from IIT Madras and a post graduate degree in Management from Delhi University. He has been trained on various in service courses including Higher Defence Management Course. He has been trained by the US Air Force on Weapons Safety. He is a Certified Reliability Engineer (CRE) by American Society for Quality (ASQ) and holds IPMA Level D certification. For his distinguished service, he has been awarded the commendations by the Chief of Air Staff and C-in-C Strategic Forces Command.

Dr. Soumendu Jana



Dr. Soumendu Jana graduated from Mechanical Engineering Department, Jadavpur University, Calcutta (1989) and an alumni of Mechanical Engg Department of IIT Kharagpur (MTech 1992, PhD 1998). He joined as scientist to the Propulsion Division of CSIR-NAL in February 1998. At present, he is working as the Chief Scientist & Head, Propulsion Division, CSIR-NAL. Dr. He has been member of various learned body such as, Bureau of Indian Standard (Mechanical Vibration & Shock Sectional Committee, MED-28 and Bearings Sectional Committee, MED-13), Tribology Society of India, Aeronautical Society of India, Institute of Smart Structures and Systems (ISSS, IISc, India). He has been awarded National Design Award in Mechanical Engineering for the Year 2013 by National Design Research Forum of the Institution of Engineers, India for indigenous development of Active Magnetic Bearings besides two awards from CSIR-NAL for excellence in 'Design & Development'. He has published more than 80 technical papers in Journals & Conferences and has two Indian patent to his credit. His research group is actively involved in experimental performance evaluation of aero-engine bearings under various operating conditions of unbalance & transient loads, oil interruption, oil contamination, development of high speed rotor-bearing system, development of magnetic bearings and air-foil bearings, external dampers for rotor under sponsored projects and aero-engine health management.

Shri K Lingamoorthy



Shri K. Lingamoorthy has graduated in BE (Mechanical) from Madras University and ME (Manufacturing Engg.) from Madras Institute of Technology (MIT), Chennai . He pursued his MSc in Thermal Power from Cranfield University, UK in the year 2011. He is an associate member of AeSI, Bangalore. He has joined ETBRDC, HAL (Presently AERDC) in 2001 and gained experience by working in the various domains of gas turbine engines over 20 plus years.

He has

- Involved in PTAE-7 land recovery system design and development related engine development testing and data analysis.
- Played a key role in the co-development program of Shakti Engine for ALH. During co-development stage, he worked with design team of Safran Helicopter Engines in France.
- Design & development of oil system accessories like Oil pump, Oil Cooling System (through MSME) for Shakti Engine.
- Played an active role in certification of these LRU's to both CEMILAC (military) requirement and civil requirements (EASA through Safran).
- Design optimization studies and 1D analysis of hydraulic detailed components of the fuel system of Shakti Engine.
- Design improvement of the fuel metering system for small gas turbine engines.
- Involved in many engine testing, their data analysis and troubleshooting of engine technical issues.
- Currently, responsible for Engine fuel system & oil system design and indigenous development of accessories for both 25 kN Thrust class Engine (FMU with servo valve) and 1200 kW Turbo shaft Engine (FMU with stepper motor).

Dr. Debasis Chakraborty



Prof. Debasis Chakraborty has worked for 35 years in VSSC/ISRO and DRDL/DRDO on many practical aerodynamics and propulsion design problems pertaining to ISRO's satellite launch vehicles and DRDO's strategic and tactical missiles. He has superannuated from DRDL Hyderabad as outstanding scientist. Currently, he is a professor in Aerospace Engineering Department, and Director of CoPT at IIT Bombay. He has developed number of industry standard compressible CFD codes for aerodynamic and propulsion characterization of different kind of aerospace vehicles. His contributions in CFD simulations of external and internal flows has enabled the designers to take some standalone design decision based on numerical results without any experimental testing. He has published many papers (~250) in reputed international journals and conferences. He is the fellow of many prestigious professional bodies including Indian National Academy of Engineering, Telangana Academy of Science, Aeronautical Society of India etc. and received many awards including DRDO Scientist of the year, DRDO award for Best innovation / futuristic Development. He is the member of editorial board of many aerospace journals. His research interest include Aerodynamics, Propulsion, CFD, Combustion, High speed reacting flows, modelling of turbulence – chemistry interaction, unsteady flows. .

Shri Kishore Prasad D



Shri Kishore Prasad, Scientist H, at Gas Turbine Research Establishment is a post-graduate in Mechanical Engineering from Indian Institute of Science, Bangalore. Currently he heads the design groups of Compressor, Turbine and Heat Transfer besides the Performance group at GTRE. He has more than 30 years of experience in design and development of gas turbine engines for military applications. His area of research is thermodynamic cycle configuration and prediction of design and off-design performance of gas turbine engines. In this respect he has made significant contribution towards aero and marine gas turbine projects of the establishment. He has made immense contribution towards development of indigenous propulsion technologies required for military gas turbine engines by bringing synergy between DRDO and Indian Academia.

Dr. A M Pradeep



Dr. A.M. Pradeep, is currently a Professor at the Department of Aerospace Engineering, IIT Bombay. He has been a faculty member at IIT Bombay since 2004 soon after completion of his PhD at IIT Kanpur. His research interests are in the area of aircraft propulsion, design and performance analysis of turbomachines, active and passive flow control and turbomachines for renewable energy generation. He received Gold medal for the best paper in Aerospace Engineering Division during 2003-2004, by the Institution of Engineers (India), SAFRAN-French Embassy Second Prize for the best Ph.D. thesis in Aerospace Engineering published during 2002-2007. His broad area of specialization is aerospace propulsion. He has been involved in setting up the Turbomachinery Research Laboratory at the Department of Aerospace Engineering. Some of the test facilities at the Turbomachinery Research laboratory include: Low speed, low turbulence wind tunnel, Low speed, 1.5 stage axial flow compressor test facility, annular/conical diffuser test facility, low speed compressor/turbine cascade wind tunnel and contra-rotating axial flow compressor test facility. His current research areas are Flow physics of tip leakage flows, blade tip de-sensitization, Non-axisymmetric endwall contouring, with and without endwall motion, Contra-rotating axial flow fan aerodynamics, inflow distortion, stall inception and control, Exhaust turbine diffuser flow aerodynamics, effect of inflow conditions and flow control, Active and passive flow control in serpentine intakes

For more details: www.aero.iitb.ac.in/~ampradeep

Prof . Bhaskar Dixit



Prof. C S Bhaskar Dixit is a Mechanical engineering graduate with doctorate in Aerospace Engineering in the area of Combustion in biomass stoves. He has carried out postdoctoral research from Indian Institute of Science. He has served as a professor and Head of Rotating Machinery Design division in MS Ramaiah Institute of Advanced Studies.

He is presently Director of Fire and combustion Research Center, Jain deemed to be University, involved in development and management of an NABL accredited Fire suppression lab established in collaboration with Underwriters Laboratories, called UL-Jain Fire Lab. It certifies active fire suppression products to global standards. Major research projects completed include conservative pool fire testing of nuclear transportation packages for BARC and Boron combustion for GTRE. He is involved in computational and experimental research in the areas of fire and combustion. He has filed 4 patents & has over 10 publications to his credit in the fields of Biomass & Bio energy and Fire science.

Dr. K Aditya



Dr. K Aditya work as an Assistant Professor in the Department of Computational and Data Sciences, Indian Institute of Science, Bengaluru, India. Prior to this, he was a Postdoctoral Researcher at the Combustion Research Facility, Sandia National Laboratories, Livermore, CA, United States. He has done BE in Mechanical Engineering Osmania University, MS (Research) in Engineering Mechanics Jawaharlal Nehru Centre for Advances Scientific Research ,MS in Aerospace Engineering Georgia Institute of Technology, PhD in Aerospace Engineering Texas A&M University, College Station. His current research includes large scale simulations of turbulent combustion relevant to gas turbine and scramjet engines, design of machine learning methods for anomalous/extreme event detection in scientific phenomena, and development of scalable asynchronous numerical methods and simulation algorithms for solving partial differential equations on massively parallel computing systems. His major focuses are on Fluid Mechanics, Combustion, Numerical Methods, High Performance Computing, Data Science, Scientific Machine Learning.

Dr. Abhijit Kushari



Dr. Abhijit Kushari, is Professor in Indian Institute of Technology Kanpur. He is Head of Department of Aerospace Engineering, Indian Institute of Technology Kanpur. He has done his PhD from Georgia Institute of Technology, Atlanta, Georgia, USA. He is member of Member Editorial Board, Scientific Reports, Nature Group, Member Editorial Board, Journal of Rotating Machinery, Review Editorial Board of Frontiers in Interdisciplinary Physics, Editorial Board: Recent Patents on Mechanical Engineering, Bentham Publications. His research interests are Rocket and Gas Turbine Propulsion, Flow Physics and Flow Control, Aero acoustics, Fluid Structure Interaction, and Fire Dynamics and Suppression. He has more than 130 publications in National/ International seminars and Symposi-ums and Journals.

Dr. S.F. Ali



Dr. S F Ali is an Associate Professor with the Department of Applied Mechanics, Indian Institute of Technology Madras (IIT-M). He has been an Assistant Professor from December 2011 in the same Department. Before this he was a Newton International Fellow in the University of Swansea, UK. He has been a research scientist in Automatic Control Laboratory, IUT-Longwy, CRAN-CNRS, Nancy University, France. Dr. Ali obtained his doctorate in the Department of Civil Engineering at Indian Institute of Science, Bangalore in 2008 and B.E. from Jadavpur University, Kolkata in 2003. Dr. Ali's current research interest are in the inter-disciplinary area of smart materials and structures. He is particularly interested in vibration based Energy Harvesting for wireless smart systems. Apart from energy harvesting Dr. Ali is interested in nonlinear control of smart systems. He has expertise in semi-active vibration control using magneto-rheological devices. His works include both development of suitable control algorithms for structures and their experimental verifications. Dr. S F Ali is also interested in control of infinite dimensional systems and control applications to bio-medical engineering.

Shri Patnaik BVA



Shri Patnaik BVA, Scientist G, is a Technology Director at Gas Turbine Research Establishment Bangalore. Currently he heads the Structural Mechanics Group and Engine Life and Health assessment groups at GTRE. He has more than 30 years of experience in design and development of gas turbine engines for military applications. His area of research is structural analysis and life prediction of gas turbine engine components. In this respect he has made significant contribution towards aero and marine gas turbine projects of the establishment. He has more than 30 numbers of publications in national / international seminars. In this respect he has made immense contribution towards development of indigenous propulsion technologies required for military gas turbine engines.

Dr. U Chandrasekhar



Dr. U. Chandrasekhar, Program Director AddWize Wipro 3D Bangalore is an experienced researcher, administrator and keen practitioner of additive manufacturing and design engineering, with 35 plus years of experience in strategic and industrial domains. After his stint at GTRE during 1986 to 2013, he led the Institution of Engineers as the Secretary and the Director General and also as the Visiting Professor at IIT, Bombay. He received his graduation (NIT, Suratkal) and post-graduation degrees (IIT Madras) in Mechanical Engineering. He received PhD from VTU for his research stereolithography based reflection photoelasticity coatings. He received a Gold Medal from the former President of India Dr. A.P.J Abdul Kalam for his academic performance at IIT Madras. He established 3D Printing laboratory at GTRE, Bangalore in 1998 and carried out numerous DRDO projects. In his tenure at DRDO, He received commendation medal from the Scientific Advisor to the Defence Minister in recognition of his contributions to rapid prototyping of complex aeronautical systems. During 2016-17, he carried an Indo Canada project on application of drones for structural integrity evaluation. He serves on the National Board of Accreditation as a Member of Academic Sub Committee for fostering outcome-based education and mentors two start-up companies working in 3D printing of high-performance materials.

Shri Kallol Bhattacharyya



Shri Kallol Bhattacharyya has completed B.E in Metallurgical Engineering from Bengal Engineering College, Shibpore, West Bengal in the year 1994 and M. Tech from IIT, Kanpur in 1996. He topped the M.Tech list. He joined HAL as a Management Trainee in 1996. In 1997, he was posted to Koraput Division. Thereafter, he has worked in different areas of Foundry & participated in several casting developmental project in association with Defence Metallurgical Research Laboratory, HAL AERDC & GTRE. He was actively associated for development of AL-31FP phase-V castings and setting up facilities for JFS & Kaveri Project from DMRL as part of transfer of technology. He has carried out extensive work in the development of Directionally Solidified HPTR Blade casting for Adour for Engine Division, Bangalore and Hindustan Turbo Shaft Engine for AERDC. He has been awarded “Young Metallurgist of the year” in 2004 by the Ministry of Steel & Mines, Govt. of India for his contribution towards improvement in acceptance of nozzle guide vane castings and development of aluminium investment castings for LCA Project. He is a life member of both Indian Institute of Metals and Aeronautical Society of India.



Shri. Girish K Degaonkar is a Member of AeSI and he, Graduated from Gulbarga University, India in 1985. He Joined HAL as Assistant Engineer in March 1987 and is working as Chief Designer at AERDC-HAL. Has headed many DI committees and Design Review Committees .He was a member in Jaguar re-engineering program. He was a member in HTT-40 engine selection committee. In his 30 plus years of service, he has,

-Served as in charge of aerodynamics in RWRDC, HAL and involved in Design, development and military certification of indigenous helicopters like ALH & LCH.

- Played key role in civil certification of ALH from DGCA.
- Significantly contributed to drag reduction studies, Aerodynamic optimization of helicopters, Weight reduction analysis, simulation programs for runway calculations, generation of flight manuals and pilot reference cards for various emergency procedures.
- Involved in helicopter re-engining programs like TM-333-2B1/2B2 and Shakti on ALH and engine selection (TPE-333-12B) for HTT-40.
- Been in-charge of design department at AERDC and is pursuing the design development of small engines of 60 to 135 kW turbo shaft engines, Air producers and medium class turbo shaft and Turbofan engines.
- Involved in Design and Development of Hindustan turbofan engine 25 KN for military Jet trainers, Hindustan turbo shaft engine for indigenous ALH, LCH and LUH helicopters.
- Instrumental in reviewing and enabling design improvements on GTEG -60 APU for AN 32 aircraft from time to time and ensuring programme's successful completion.
- Been pivotal for seeking critical engine technologies such as Single crystal blades, EBPVD coating, Deep hole drilling, Laser shock peening, Air blast atomizer etc.
- He and his team was awarded the ***“Golden Peacock”*** award for high altitude landing of Cheetal helicopters at 23000 feet in Saser kangri (Himalayas), a world record.



Dr. D K Das is a specialist in the field of Metallurgical Engineering and Materials Science. He received B.Tech. (Hons.) degree in Metallurgical Engineering from IIT, Kharagpur. He Completed Master's degree (M. Tech.) in Metallurgical Engineering from IIT, Kharagpur. Received Ph. D. in metallurgical engineering from IIT, Varanasi. Carried out his Post Doctoral research work from University of Michigan on laser-induced breakdown spectroscopy (LIBS) on thermal barrier coatings and gamma-gamma prime diffusion aluminide coatings on Ni-base superalloy substrates. He is recipient of DMRL Scientist of the Year Award for 2018 ,DMRL Technology Day Award for 2016. He has authored and presented several papers for at National & International level journals / conferences.

Shri Jitendra J Jadhav



Shri Jitendra J Jadhav, is currently the Director of CSIR-National Aerospace Laboratories (CSIR-NAL), Bangalore. Shri Jadhav has obtained his BE (Electronics) from University of Pune in 1987 and MS from Computer Engineering Department of Defence Institute of Advanced Technology (DIAT), Pune. He has more than 29 years of experience in Design and Development of Military Systems for Army, Navy, Air Force, Industrial and Railways applications. He has designed, developed and commercialized major systems like Fire Control Systems for Tanks, Airborne Digital Optronic Pedestal for Nishant, Optical Fire Control Systems for Navy, Mission and Display Computer for LCA, Weapon Control System for LCA, Tactical Mission System for Helicopter and Digital Servo systems for automobiles / Railways.

Prior to taking over charge of Director, CSIR-NAL on 27 June 2016, Shri Jadhav had worked as Outstanding Scientist, Project Director, LCA (AF Mk1) & Group Director (Weapon & Missile System) at the Aeronautical Development Agency (ADA), Bangalore. As a Project Director-LCA, he was instrumental in steering the Initial Operational Clearance of LCA and induction into services. Under his leadership LCA has obtained many major milestones few of them are demonstration of Live swing role capability of LCA in Iron Fist 2013. Initial Operational Clearance, Weapon integration of Air to Air (A/A) and Air to Ground (A/G) Weapons, Induction of Aircraft into Service and Participation in Bahrain International Air Show. He has won Design Award of ADA in the year 2000, DRDO Scientist of the year award in the year 2008, DRDO Performance Excellence Award for Initial operational clearance of Tejas in the year 2013 and Agni Award for Excellence in Self Reliance in the year 2014. He has published more than 20 papers in National and international journals of repute.

Shri APVS Prasad



Shri APVS Prasad . heads the Center for Military airworthiness and Certification (CEMILAC) Department of Defence R&D, Ministry of Defence as its chief Executive. He is an alumnus of Osmania University, Hyderabad and obtained his B.E degree in Electronics and Communication Engineering in the year 1989. Subsequently he pursued higher studies and acquired M.Tech in Telecommunications from IIT Kharagpur during the year 1997. He joined Aeronautical Development Establishment (ADE- DRDO) in 1990 as a scientist and has close to 30 years of experience in the research and development of Avionics system for Unmanned Aerial Vehicles. He has worked as the program Director of Rustom II UAV and it is under his guidance Rustom II was successfully flight tested. . His areas of interest are Design and development of Data Links, Avionics , Payloads Software defined Radios, Altimeters and Doppler Radars. He took over as the Chief Executive of Center for Military Airworthiness and Certification (CEMILAC) on 31st May 2019. As CE CEMILAC he is spearheading the Airworthiness Certification of all development programs of national importance viz, Military Aircraft , Helicopters, UAVs, Airborne Stores, Integration of Weapons, Upgrade programs , Indigenization etc. He was honored with the DRDO Scientist of the year award for the 2016, Technology Group Award for the year 2012 and also in 2017, CACE team award for the years 2009 and 2010 and DRDO team award consecutively for the year 2004 and 2005.

Dr. AC Bhaskar



Dr. A.C. Bhaskar, Scientist 'G' is Technology Director, Test Facilities Group, Gas Turbine Research Establishment. He has more than 33 years of experience in design and setting up of Test Facilities to test Gas Turbine Engine & its Components and Test Facilities for Aircraft Systems. He was also Project Director for Kaveri Marine Gas Turbine project.

He has done B.E. (Mechanical) from Annamalai University, M.E. (I.C. Engines and Thermal Sciences) from College of Engineering, Guindy, Anna University and PhD from Bangalore University. He has also done Gas Turbine Technology Fellowship Course in Defence Institute of Advanced Technology, Pune.

He has designed and established Test Facilities for testing Gas Turbine Engines for limited forward speed conditions and Engine Test Cell to test Small Turbo Fan Engine.

He has designed and established test facilities for testing Environmental Control System module of Tejas-LCA and Qualification Test Facility for qualifying Compact Heat Exchangers of Tejas-LCA.

He was Project Leader for carrying out tests on Engine in integrated mode with missiles with respect to defect investigation and life extension programmes for Indian Navy.

He is a member of Aeronautical Society of India and Indian Society of Heating, Refrigerating and Air-conditioning Engineers (ISHRAE).

Shri Debabrata Roy



Shri Debabrata Roy is Outstanding Scientist at Gas Turbine Research Establishment (GTRE) Bangalore. He is heading the Advanced Technology Group and Program Management office in GTRE. He has obtained his Bachelor's degree in Mechanical Engg. from Jadavpur University, Calcutta and Master's degree from IIT, Madras with specialisation in Thermal Turbo Machines.

Shri Debabrata Roy had worked in Public Sector and Private industries before joining the DRDO in 1987 as Scientist in GTRE, Bangalore. He has vast experience spanning over 34 years in gas turbine field for defence applications. His core area of expertise is high temperature turbine design & development for fighter jet engines, marine engines and small engines.

At present, he is leading the Future Engine Development Programme in GTRE for Indian Advanced Medium Combat Aircraft (AMCA).

He has been associated with various research projects at different levels including Multi-Centric GATET Programme, a collaborative pan India Government-University-Industry initiative of DRDO/GTRE.

Shri Debabrata Roy is a 'Fellow' of the Institution of Engineers (India). He is a life member of The Aeronautical Society of India and Society of Aerospace Quality and Reliability.

He has authored a number of technical papers and reports related to Gas Turbine Engine.

Shri Vinod Kumar Jonnagadla



Shri Vinod Kumar Jonnagadla has an M.Tech degree in Machine Design from IIT-Madras. His specialization is Design and Development of Small Gas Turbines. During last 30 years, he has worked in various organizations such as HAL, Infotech Enterprises, Trusted Aerospace Private Limited-Chennai. Presently he is working in Bharat Forge Limited (BFL)-Bangalore and has taken up the responsibility of establishing the Jet Propulsion Technology Centre. He leads the team in Design & Development of Small Gas-Turbine Engines as a future business venture.

During initial years of his career, he was one of the team-members in design and development of Jet Fuel Starter (Gas-Turbine Starter Unit-110), for starting the GE 404 Engine of Light Combat Aircraft (Tejas). Later he joined Infotech Enterprises to support new Engine-Programs of Pratt & Whitney, Canada (P&WC) from Satellite Centre. After successfully establishing the Design and After-Market Services for P&WC, he took up the responsibility as Program Leader in Trusted Aerospace Private Limited, to develop Air-Control Valves for P&W Geared Turbofan Engine and its variants, by integrating global Design, Manufacturing and Test Facilities. He has successfully developed three of these valves.

Shri Prathapanayaka R



Shri Prathapanayaka R, Senior Principal Scientist, in Propulsion Division, CSIR-NAL, is a post-graduate in Power Engineering from NITK, Surathkal. His area of interest are, Design and development of small gas turbine engines, turbine stages and propellers. Also developed expertise in, Design of CD aerofoil for compressor. He has published more than 45 papers and technical reports.

Professional experience : Worked on

- Propeller design and development for Manned and unmanned aircrafts
- 3D CFD analysis of single stage and multi stage axial compressors
- Design of CD aerofoil for compressor
- Testing and performance evaluation of commercial propellers
- Design, analysis, fabrication and testing of propellers
- Establishment of Versatile Turbine test rig
- Performance evaluation of high speed turbine stages
- Design and analysis of contra rotating turbines
- Design and development of axial flow turbines
- Development of small gas turbine engines.