

DR. K. RAMACHANDRA

Name and Designation		Dr. K. Ramachandra, Former Director	
Organization		National Design and Research Foundation The Institution of Engineers (India) No.3, Dr. B R Ambedkar Veedhi, Bangalore - 560 001	
Educational Qualification (Bachelor to Doctoral):			
Degree	Year	University	Specialization
B.E	1968	Bangalore University	Mechanical Engineering
M.E	1970	Bangalore University	Machine Design
M-II	1976	Max Mueller Bhavan	German
Ph.D.	1980	Bangalore University	Mechanical Engineering
M.B.A	1987	Bangalore University	Financial Management
Professional Experience			
<ul style="list-style-type: none"> • Former Director National Design and Research Foundation • Outstanding Scientist & Former Director Gas Turbine Research Establishment Defense Research & Development Organization (DRDO) Ministry of Defense, Government of India, Bangalore • Former Coordinator Propulsion Panel, Aeronautical Research & Development Board, Ministry of Defense, Government of India, New Delhi • Former Member of the Academic Senate, Visvesvaraya Technological University, Belgaum • Governing/Advisory Council, <ul style="list-style-type: none"> ▪ MVJ College of Engineering, Bangalore ▪ PES College of Engineering, Mandya ▪ Acharya Institute of Technology, Bangalore ▪ Government Tool-Room & Training Center, Bangalore ▪ Don Bosco Institute of Technology, Bangalore ▪ GM Institute of Technology, Davanagere ▪ BMS College of Engineering, Bangalore • Consultant <ul style="list-style-type: none"> ▪ Defiance Technologies Limited, Bangalore ▪ Triveni Engg Industries Limited, Bangalore ▪ Enphiniti Limited, Bangalore ▪ CADES Digital Solutions, Bangalore ▪ Honeywell Technology Solutions, Bangalore ▪ Anaga Engineering, Bangalore ▪ Polynex Ltd, Bangalore ▪ Hindusthan Turbomachinery Ltd, Bangalore ▪ Sampoorna Rotor Dynamics Consultants, Bangalore 			
Specialization and Expertise			
<ul style="list-style-type: none"> • Gas Turbines • Propulsion • UAVs / MAVs • Additive Manufacturing • 3D Printing 			
Awards and Distinctions			
<ul style="list-style-type: none"> ○ Two National & One International Award for Outstanding Research Publication / Design ○ Dr Visvesvaraya Award of Distinguished Engineer by The Institution of Engineers (India) 			
Top ten publications in last ten years			
1	Experimental Measurement of Displacement and Vibration of Piezoelectric Smart Structures	International Journal of Mechanical Engineering, Manchester University Press, UK ISSN-0306-4190	2008

2	Computer Modeling of Influence of Actuation and Sensing in Piezoelectric Smart Materials	International Journal of Mechanical Engineering, Bratislava, Slovak Republic, ISSN-0039-2472	2008
3	Finite Element Development for Analysis of Smart Structures	International Journal of Mechanical Engineering	2008
4	Bird-Strike Research in India Micavs for "Bird-Scaring" at Airports	23rd National Aerospace Engineers The Institution of Engineers (India)	2009
5	Gear Box Fault Classification Based on Vibration Signals Using Artificial Neural Networks	International Journal of Emerging Technologies and Applications in Engineering, Technology and Sciences	2009
6	Neuberisation Technique for Weight Reduction of Aero- Engine Rotor	Proceedings of NAFEMS World Congress 09, Crete-Greece	2009
7	Vibration Based Gearbox Fault Detection Using Artificial Neural Networks	International Journal of Theoretical and Applied Mechanics: ISSN 0973-6085	2010
8	Critical Issues in Assessment of Over-Speed and Burst-Margin in Aero-Engine Discs'	Int. Journal on Engineering Trends and Computer Application, ISSN: 0974-3596,	2010
9	Strength evaluation in Aero-Engine Rotor	World Journal of Engineering" USA ISSN: 1708-5284.	2011
10	Disc Stresses In Bladed Disk And Disk under Constant Speed	Int. Journal. Computer Applications in Technology Trends and Computer Application, USA.	2011

Summary of research output (papers, patents, technology development

- Forecasting and Strategic Planning of Propulsion Systems
- System Integration and Performance Evaluation
- Airworthiness Certification of Kaveri Engine & Sub-Systems
- Design Analysis: Stress, Vibration, Heat Transfer, Air/Oil/Lubrication System and Gear Box.
- Aero Thermodynamic Design of Fan, Compressor, Combustor, Turbine & Afterburner
- Structural and Aerodynamic Tests of Kaveri Engine Components / Subsystems
- Engine Component Test Facility
- Photo-Elastic and Holographic Applications
- Life & Usage Monitoring System for Aero-Engines
- Weight Control & Reliability
- Optimization of Blade Root Joints
- Rapid Prototyping Technologies
- Cold-Hole Expansion Techniques
- Life-Extension of Aero Engines of IAF
- Advanced Material Testing & Characterization
- Aeronautical Material Testing Laboratory
- Advanced Gas Turbine Technologies
- High Temp Composite Materials & Components
- Bird Strike Hazard Analysis
- Ceramic Matrix Composite Engine

Components

Current Projects:

- Micro Air Vehicles & Wing Morphing
- Micro Underwater Vehicles
- Small & Micro Gas Turbines
- Blisk (Integrated Bladed Rotor) Technology
- Thrust-Vectoring Exhaust Nozzle
- Anti-Icing Devices for Aero-Engines
- Damage-Tolerant Design & FOD Capability of Engines
- Life Extension Strategies and MRO
- Engine Health & Life Usage Monitoring
- Bird Strike Research Group of India
- Boltless Turbine Discs & Vane-less Turbines
- Ducted Fan Wind Turbines
- Geothermal Steam Turbines
- Material Characterization at High Strain Rates
- Damping in Engine Components
- Geared Fan Technology
- Wildhaber-Noivikov Recess Action Gears
- Multi-Disciplinary Optimization
- High Speed Telemetry for Rotors
- National Gas Turbine Test Facility
- FOD and Engine Debris Monitor
- High Speed Fretting and Wear of Engine Components
- Thin Film Technology for Strain Gauges & Thermocouples

Five major sponsored R&D projects completed/handled

- Steered the Country's Maiden Aero-Engine (KAVERI) Development program for Light Combat Aircraft (LCA) with a Project outlay of Rs 3000 Crores (Nov 2003-Feb 2006)
- Launched Science & Technology Projects related to Gas Turbine Engines, with a budget of nearly Rs 80 crores (Jul 2003-Jul 2005)
- As a Team Member conceived the R & D content in Structures and Gas Turbine Materials, as part of the new Gas Turbine Technology Initiative, with a project outlay of more than Rs 100 Crores (Mar 2006-Mar 2008)
- Was responsible for giving momentum and accelerate the pace of Gas Turbines for Marine Applications and Small Gas Turbines of 300 kgf Thrust class (Jul 2002- Feb 2006).
- As CEO and Director, NDRF, steered the 30 projects of NP-MICAV under NDRF Consortium.

Technology development/translation/initiation

- Successfully Completed the CDR of the K4-K9 Engines through experts from SNECMA, Rolls Royce & CIAM. Implemented all the Modifications based on Engine Running experience and Risk Analysis made on K4-K9 Engines.
- All the major Failures & Incidents experienced were investigated and "Fixes" finalized for implementation. These have resulted in successful completion of Kabini Engines & K8 Engines in GTRE and High Altitude Test Facilities in Russia.
- Achieved weight reduction of Kaveri engine from 1430 kg to 1235kg, maintaining the structural integrity and life requirements. A final production version of Kaveri Engine (K10 series) was conceptualized. Design Analysis completed to achieve the main target of 1100kg, with all the CDR recommendations incorporated.
- Research Advisor for : 15 PhD Programs; 4 MS Programs ; 40 ME / M Tech Programs

Any other relevant information