

Apurva N Vyas
PhD
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Date of birth: 21 July 1984

Sr. No	Designation	Organization	Professional Experience
1	Scientist	National Aerospace laboratories (CSIR)	4 years & 4 months
2	Trainee Engineer	Bosch Rexroth India ltd.	1 year

Work Experience:

Assistant professor in the faculty of Engineering Science at National Aerospace Laboratories.

Expertise : Thermodynamics, heat transfer, Fluid dynamics, Aircraft Mechanical Systems

Role at National Aerospace Laboratories (NAL): (Oct 2010-Jan 2015)

Worked as Thermal and fluid specialist (Scientist) at National Aerospace Laboratories (NAL) on various aircraft systems like avionics cooling, Environmental control and cabin pressure control systems (aircraft HVAC), Anti-icing system and Fuel systems.

Avionics Cooling

- Hand calculations and analysis of heat transfer from aircraft electronics enclosures.
- Carried out numerical investigation of cooling requirements of avionics box and ways of improving thermal management and performance of electronic equipments using mathematical modelling.

ECS and CPCS systems (Environment cooling system and cabin pressure control system)

- System design for ventilation and temperature control requirement for aircraft cabin and passenger compartments as per FAA requirements
- Analysis of ECS system architectures in terms of performance, fuel penalty and weight and space management

Anti- icing system

- Numerical investigation to understand the internal heat transfer inside the leading edge of the aircraft wing due to jet impingement by nozzles of piccolo tube.
- The results of this study helped in creating design specifications and evolving the architecture for the thermal anti-icing system to be used for the National Civil Aircraft (NCA).

Aircraft Fuel system

- Developing the experimental jet pump test rig to evaluate the performance of jet pumps used in aircraft fuel system.

Role at Bosch Rexroth India ltd:(Jul 2006-Jun2007)

Worked as trainee engineer in the hydraulics systems division.

- Evolving hydraulic system architectures and fluid flow networks design for industrial applications
- Hydraulic Component selection and sizing like pumps, accumulators, hydraulic valves etc.
- Functional testing of hydraulic system power packs and components

Research expertise and skills:

- Development of complex experimental setups to investigate flow and thermal fields during PhD.
- Experimental investigation of flow in channels with embedded cylinders as vortex generators to enhance heat transfer using optical techniques and numerical modelling.

- Expertise in optical visualization techniques like Interferometry, Schlieren, Infra-red camera and Particle image velocimetry (PIV), LIF and other instrumentation techniques like thermocouples, constant temperature bath, flowmeters, data acquisition systems etc.
- Ability to work as a team member in a complex and dynamic project with excellent communications skills
- Computational Skills: Python, MATLAB, Ansys, Origin, FlowMaster and MS Office

Internship /Fellowship:

- Hitachi home and life solutions (India) Ltd. [Dec 2005- Jan 2006]
- Ingersoll Rand (India) Ltd. [Jun 2005 – July 2005]

Professional responsibility and achievements:

- Design, development and system level analysis and simulation of aircraft mechanical systems for the National Civil Aircraft Development (NCAD) project at National Aerospace Laboratories.
- Preparation and planning of various test methodologies and performance matrix for aircraft system testing and documentation of test results.
- Awarded certificate of excellence by NAL.
- Silver medal in academic performance during Bachelors in Mechanical Engineering degree.
- Participated in and organized National level robotics competition and technical symposium.

Doctoral Thesis Title

Whole field measurements of flow and heat transfer in a rectangular channel with a built-in cylinder (PhD Supervisor – Prof. Atul Srivastava, IIT Bombay)

International Journal Publications:

- Flow and heat transfer measurements in the laminar wake region of semi-circular cylinder embedded in a rectangular channel – *International Communications in Heat and Mass Transfer* (2020)
- Investigation of the effect of blockage ratio on flow and heat transfer in the wake region of a cylinder embedded in a channel using whole field dynamic measurements – *International Journal of Thermal Sciences* (2020)
- Experiments on flow and heat transfer characteristics of a rectangular channel with a builtin adiabatic square cylinder – *International Journal of Heat and mass transfer* (2020)
- Non- intrusive investigation of flow and heat transfer characteristics of a channel with a built-in circular cylinder – *Physics of Fluids* (2018)
- Non-intrusive diagnostics of nanofluids based natural convection heat transfer over a heated cylinder – *Journal of Thermophysics and Heat Transfer* (2017)
- Investigation of vorticity characteristics in the wake region of an eccentrically embedded cylinder in a rectangular channel (2022) – *Journal of Flow Visualization and Image processing*

Educational Qualification:

Examination	Degree	Institute	Year	CPI / %
Doctorate	PhD (Thermal and Fluids)	IIT Bombay	2022	8.64/10
Post-Graduation	M. Tech (Thermal Engineering)	IIT Delhi	2010	8.831/10
Graduation	B.E (Mechanical)	North Gujarat University	2006	71.50%