Curriculum Vitae

Dr. Arjumand Rasool
Department of Mechanical Engineering,
IoT, University of Kashmir J&K, India.
e-mail: arjumandrasools@gmail.com

Personal Information

Name	:	Arjumand Rasool
	:	
Nationality	:	Indian
Gender	:	Female
Marital Status	:	Married
Spoken languages	:	English, Kashmiri (mother tongue), Urdu, Hindi
Present Address	:	45-New Colony Nigeen, Hazratbal -190006 Mobile: +91 70060 21997

Present Position:

Senior Faculty, Department of Mechanical Engineering,
Institute of Technology, University of Kashmir J&K, India.

Academic Qualification:

PhD in *Mechanical Engineering* (2013-2018)
Department of Mechanical Engineering
National Institute of Technology-Srinagar
CPI: 8.4/10

M. Tech. in *Mechanical Engineering* (2008-2010)
Department of Mechanical Engineering
National Institute of Technology-Srinagar
CGPA: 6.6/10

B. E. in *Mechanical Engineering* (2000-2004)
SSM College of Engineering (affiliated to University of Kashmir),
Parihaspora, Baramulla
Kashmir, J & K
Division/Class: 1st

10+2 with *Physics, Chemistry, Mathematics, General English* (1997-1999)
J & K State Board of School Education
Division/Class: 1st

10th Standard with *Science, Mathematics, General English, Social Science and Urdu* (1997)
J & K State Board of School Education
Division/Class: 1st

Research Experience:

HEAT TRANSFER ENHANCEMENT: Rib turbulators are most commonly used passive method of heat transfer augmentation in gas turbine blade cooling channels. However the conventional method of using solid rib turbulators lead to higher pressure drop, which decreases the overall thermal hydraulic performance. In my investigation I have carried out the heat transfer and pressure drop analysis of two-pass channels using rib turbulators of seven different shapes. Some of these shapes have led to an increased thermal hydraulic performance as compared to conventional solid square rib turbulators.

HOT SPOT REDUCTION: Conventional rib turbulator lead to hotspot formation just behind the ribs, which many times lead to turbine blade failure. Perforation in ribs has been found to be solution to hot spot formation. In my research, four different kinds of perforations have been used in two-pass channel of gas turbine blades. Out of these perforations, the proposed novel perforation of square shape has provided the highest thermal hydraulic performance.

COMBINED HEAT TRANSFER ENHANCEMENT AND REDUCED HOTSPOTS: In order to get both enhancement of heat transfer and also reduction in hotspot formation, crisscross ribs have been proposed in literature, however no parametric study has been done yet. I have carried out parametric study of crisscross ribs in two-pass channels and one new crisscross rib pattern has been proposed. The proposed novel crisscross rib pattern has provided the maximum thermal hydraulic performance and much reduced hotspot regions.

MACHINE LEARNING ALGORITHMS IN HEAT TRANSFER ANALYSIS OF TURBINE BLADE COOLING CHANNELS

Intelligent optimization methods, which have been developed for years, are now widely used in turbine performance optimization and design. Much effort has been put into improving the internal and external cooling structures of turbine blades in recent years, leading to improvements in heat transfer efficiency and a reduction in aerodynamic losses. Therefore, to have a clear understanding of this field and to look forward to the future development direction, my work provides an intelligent algorithm in turbine blade cooling optimization, and the main research areas include the optimization of two-pass channel internal.

Tools:

Python, SQL, Tableau, COMSOL5.3a, AutoCAD 2015, TECHPLOT, Advanced Excel, Numpy, Pandas

Techniques Applied:

Infrared thermography, hot-wire anemometry, thermocouple measurements, micro-manometery

List of Publications:

1. Numerical analysis of heat transfer and friction factor in two pass channels with variable rib shapes.
   Arjumand Rasool and Adnan Qayoum
   International Journal of Heat and Technology, Vol. 36, No. 1, 2018, pp. 40-48 https://doi.org/10.18280/ijht.360106
2. Numerical Investigation of fluid flow and heat transfer in a two pass channel with perforated ribs.
   Arjumand Rasool and Adnan Qayoum
   Pertanika Journal of Science and Technology.
   Pertanika J. Sci. & Technol. 26 (4): 2009 - 2029 (2018)
3. Numerical Investigation of Heat Transfer and Pressure Drop in a Two-Pass Channel with Criss Cross Rib Patterns
   Arjumand Rasool Sarwar Masoodi and Raof Ahmad Khan
   International Journal of Scientific and Technical Advancements
   Volume 5, Issue 1, pp. 163-170, 2015.

4. Shape Optimization by Intelligent Algorithm in Heat Transfer Analysis of Turbine Blade Cooling Channels
   Arjumand Rasool and Sarwar Masoodi
   Submitted to Journal Energies (under Review) 2026

Conferences and Workshops:

- Effect of different rib shapes on heat transfer and pressure drop for a flow through a 2-pass square channel (42nd National Conference on FMFP-Dec 14-16, 2015, NIT Suratkal, India).
- Experimental investigation of Heat and Fluid flow in a heated duct with perforated repeated ribs (6th International and 43rd National Conference on FMFP-Dec 15-17, 2016, NIT Allahabad, India).
- Computational analysis of heat transfer and pressure drop for a flow through a 2-pass square channel with various rib shapes (17th ISME Conference-Oct 3-4, 2015, IIT Delhi, India)
- Influence of repeated permeable ribs on heat transfer enhancement in a 2-pass square channel (5th international and 41st national conference on FMFP-Dec 12-14, 2014, IIT Kanpur, India).

Work Experience:

- 09 March 2020 till date
  Senior Faculty at Kashmir University (IOT Zakura Campus), Srinagar, Kashmir J&K
  Mechatronics, Refrigeration and Air-conditioning, Engineering Graphics, Autocad, Thermal Engineering, Theory of Machines.

- 09 October 2018 to 06 March 2020
  Senior Faculty at Department of Mechanical Engineering, Government College of Engineering and Technology, Safapora, Ganderbal, Kashmir J&K
  Engineering Graphics, Machine Drawing, Thermodynamics, Heat Transfer, Fluid Mechanics, Machine Design and Wear Analysis

- April 2011 to 31 March 2013
  Assistant Professor at Department of Mechanical Engineering, SSM College of Engineering and Technology, Parihaspora, Kashmir J&K
  Engineering Graphics, Machine Drawing, Heat Transfer, Fluid Mechanics, Machine Design and Wear Analysis

- 01 February 2010 to 31 March 2011
  Senior Lecturer at Department of Mechanical Engineering, MBS College of Engineering and Technology, Digiana, Jammu J&K
  Theory of Machines, Machine Design and Heat Transfer

- 01 May 2007 to 31 July 2008
  Assistant Professor at Department of Mechanical Engineering, SSM College of Engineering, Parihaspora, Baramulla Kashmir J&K
  Machine Drawings, Machine Design, Heat and Mass Transfer

- 14 April 2005 to 28 April 2007
  Senior Engineer at Material, Purchase and Procurement Department, Mahle Filters Limited. (formerly Purolator India Limited) Gurgaon, Haryana

Certificates:

6 months Certification Diploma (AutoCAD 2000) from AutoDesk registered center in Srinagar
Certification in DSML (Data Science and Machine Learning) from Scaler Institute 2023

References:

Dr. (Prof.) Adnan Qayoum
Department of Mechanical Engineering
Telephone: +91 95962 07090
e-mail: adnan@nitsri.ac.in
National Institute of Technology-Srinagar
India

Declaration:

I hereby declare that the details stated above are true and correct to the best of my knowledge.