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SHARAD N. PACHPUTE

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Indian Institute of Technology, Delhi
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Academic Oualifications

July 2014 to Dec.2018 **Doctor of Philosophy,**
Indian Institute of Technology Delhi, India.
9.25 CGPA on a 10 point scale, Excellent
Thesis Title: Experimental and numerical investigations of turbulent jet impingement heat transfer from a circular cylinder.
Description: Experimental studies have been carried out to understand heat transfer characteristics of a single air slot jet and multi-jet impingement over a circular cylinder. For numerical investigations, the V2F (RANS) turbulence model was used to know the flow pattern and the correct local heat transfer variations. Furthermore, eddy resolving simulations were also carried out using the LES and the Hybrid LES/ RANS to know the flow physics, mean quantities in turbulent flow and heat transfer. The open source FVM (C++) solver, OpenFOAM was used for all numerical simulations. In experimental techniques, the thermocouples mounting, digital mass flow rate measurement, Thermo-graphy using the IR camera and construction electrical heaters were involved.
(*for more details of the thesis work refer the publications)*

July 2009 to June 2011 **Master of Technology** in Thermal Engineering
Indian Institute of Technology Delhi, India.
8.7 CGPA on a 10 point scale, Excellent
Thesis Title : Numerical simulation of combined convection and radiation heat transfer from single cylinder and tube banks.
Description: A detailed CFD analysis was carried for hot gas flowing over a single cylinder, inline and staggered layouts of tube banks considering the radiatively participating medium. The correlations of average Nusselt numbers have been provided for the various ranges of geometric and flow parameters.

Sep. 2004 to June 2008 **Bachelor of Engineering** in Mechanical Engineering
Amrutvahini College of Engineering, Sangamner,
Affiliated to *Pune University*, Maharashtra, India.
71.5 %, First class with distinction
Project: Design of baggase fired boiler components like furnace, super-heater, evaporator, economizer, air heater and draughts.

Professional Experiance

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Dec. 2012 to Dec.2015

Consultant, Altran Technologies India Pvt.Ltd, Delhi NCR,
(a leading French conglomerate, *www.altran.com*)
Client: **AREVA/Transnuclear Inc**., Columbia (USA)

Projects undertaken:

- Thermal Evaluation of Spent Nuclear Fuel (SNF) during the on-site transfer loading operations as well as in horizontal storage module.
- These studies were carried out at normal or off-normal ambient, accidental condition using a commercial FVM solver, ANSYS FLUENT and User defined function (UDF) files in C programming for calculation of convection and radiative heat transfer from ambient and radiative heat transfer modeling as per **U.S. N.R.C.** (Nuclear Reqularatory Commission) standards. ANSYS Parametric Design language (APDL without GUI) was also used for Finite Element Method (FEM) modeling and simulation of heat transfer.
- I have worked individually more than **twelve projects**. Work elements were preprocessing, numerical simulation and technical report writing as per the AREVA framework.
- Apart from the above projects, I also reviewed the CFD projects for **AREVA (USA) and Alstom Power (Spain).**

Sept. 2012 to Nov.2012 **Tetrahedrix Engineering Pvt. Ltd.**, Mumbai

Projects undertaken:

- CFD analysis of the multi-stage cyclone used in the cement plant
- CFD analysis of a bomb blast case

Jan. 2012 to Mar2012 **Senior Research Fellow**, Department of Mechanical Engg, IIT Delhi

P.I.: Prof. Prabal Talukdar

Description: A project entitled 'Development of an alogorithm for inverse problem of forced convection and gas radiation in duct flows'. The work involves a coupling of a new code with a course code FASTEST-3D by programming in FORTRAN followed by the numerical simulation of combined forced convective and gas radiation in duct flows.

July 2011 to Oct. 2011 **Project Engineer**, Department of Mechanical Engineering, IIT Delh

P.I.: Prof. P.M.V. Subbarao

Description: '*Development of Turbulence Model for Atmospheric Boundary Layer*' was sponsored by the Ministry of Earth Sciences, Government of India. The project task involved the study and mathematical modeling of governing equations for turbulent atmospheric boundary layer for cloud free as well as cloud topped layer.

Jan. 2016 to till date **Teaching Assistant**, Department of Mechanical Engineering
IIT Delhi, India

PG courses: Experimental Methods, Gas Dynamics and Jet Propulsion, Thermal system simulation, Computational Heat Transfer.

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Aug. 2007 to till June 2008 **Under Graduate Project,** entitled '*Design of baggase fired boiler-30TPH'*, sponsored by *Bikson Engineering Works Pvt. Ltd, Pune (*India*).*

Areas of interest

Turbulent flow, Heat Transfer, Multi-phase flow, Combustion, CFD of turbo-machinery, Modeling of Transport Phenomenon, Experimental Methods

Publications In International Journals

[1] S. Pachpute, B. Premachandran, Prabal Talukdar, **A numerical study of combined forced convection and gas radiation from a circular cylinder in cross flow**, *Journal of Heat Transfer Engineering*, Taylor and Francis Group, 36(2) (2015)135–151.

[2] S. Pachpute, B. Premachandran, **Experimental and Numerical Investigation of Slot Jet Impingement with and without a Semicircular Confinement**, *Int. J. Heat Mass Transfer*,114 (2017) 866–890.

[3] S. Pachpute, B. Premachandran, **Slot Air Jet Impingement Cooling over a Heated Circular Cylinder with and without a Confinement**, *App. Thermal Eng.*,132 (2018) 352-367.

[4] S. Pachpute, B. Premachandran, **Effect of the shape of flow Confinement on Turbulent Slot Jet Impingement cooling of a circular cylinder**, *Int. J. Thermal Sci*. 131 (2018) 114-131.

[5] S. Pachpute, B. Premachandran, **Experimental investigation and large eddy simulation of slot jet impingement cooling over a heated cylinder with and without a Quadrilateral Confinement,** *App. Thermal Eng.*,144 (2018) 854-876.

[6] S. Pachpute, B. Premachandran, **Effect of Jet temperature on the Slot Jet Impingement Cooling over a Heated Cylinder**, *ASME J. Heat Transfer* 141(2) (2018) 022201.

[7] S. Pachpute, B. Premachandran, **Turbulent Multi-jet Impingement Cooling of a Heated Circular Cylinder,** *Int. J. Thermal Sci*. (under review).

[8] S. Pachpute, B. Premachandran, **Effecr of Number of round Jets on Impingement cooling of a Heated Circular Cylinder,** *Exp. Therm. Fluid Science* (under review).

[9] S. Pachpute, B. Premchandran, Prabal Talukdar, **Numerical simulation of combined convection and radiation heat transfer over circular cylinder and tube banks**, Proceeding of *21th National and 10th ISHMT-ASME Heat and Mass Transfer Conference*, 27-30 December 2011, IIT Madras (India).

Qulalifying Exam

- **GATE-2009** (Graduate Aptitude Test in Engineering), GATE score 716, All India rank 129, Percentile score 99.45

Computer skill

Programming: C, Advance C++, FORTRAN, MATLAB
Operating system: Windows Vista, windows 7,Unix
CFD Tools: OpenFOAM, ANSYS FLUENT, CFX, COMSOL,ICEMCFD, TECPLOT
CAD Tool: PRO-E wild fire3 (Modeling and drafting),ANSYS Workbench, AutoCAD.
FEA Tools: ANSYS, APDL (ANSYS Parametric Design Language)

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PhD /M.Tech courses done

Open MP, Turbulence and its Modeling, Physics of turbulence, Turbulence in Enviremental flow, Application of CFD , Viscous Fluid Flows, Advanced Computational Fluid Dynamics, Solar Energy Utilization, Advanced Thermodynamics, Experimental Methods In Thermal Engg., Heat transfer application, Applied Mathematics for Mechanical Engg., Advanced Power Plant Cycles, Convection Heat & Mass Transfer, Radiation And Conduction Heat Transfer, Thermal Systems Simulation & Design, Computational Heat Transfer, Multiphase Flows, Combustion.

Achievement & Presentations/ Participations

- Attended the **British Council /IIT Delhi Intensive English Summer Camp**, 12 to 24 July 2010.
- Presented the paper on '**Numerical simulation of combined convection and radiative heat transfer over circular cylinder and tube banks',** in the ISHMT-ASME Heat and Mass Transfer Conference, Dec. 28-30 2011, IIT Madras, Chennai, India.
- Attended one week workshop of ANSYS Inc. entitled "***CFD for industrial applications***", in Greater Noida, Delhi NCR, India, 4 to 12 June, 2014.
- Delivered two lectures as a guest speaker on "***Computational Fluid Dynamics***", 4^{th} -8^{th} June, 2018, One week faculty development program of Dr. APJ Abdul Kalam Technical University, Lucknow, India.
- Participated in Indo-German Symposium on "**Advanced Measurement and Multi-scale CFD Simulations for Intensification of Multiphase Flow Process** ", 03-05 Oct., 2018, Department of Chemical Engineering, IIT Delhi.

Personal detail

- **Languages Known**: English, German (basic level), Marathi, Hindi
- **Marital status**: Single
- **Permanent address**: A/P - Vadagon (kandali), Tal-Junnar,Pune-412412 (India)
- **Passport No**: Z5293587
- **Date of Birth:** 7/4/1986

Referee

Dr. B. Premachandran, Associate Professor, Department of Mechanical Engineering IIT Delhi, New Delhi Phone : 9111 2659 1128 Email: prem@mech.iitd.ac.in	**Prof. Anjan Ray,** Professor, Department of Mechanical Engineering IIT Delhi, New Delhi 110016 Phone: 91-11-2659 1143 Email: raya@mech.iitd.ac.in
Mr. Amit Mathur, Technical Lead, Altran Technologies India Pvt. Ltd. Phone: +91-7503143292 Email. amit.mathur@altran.com	**Prof. P. M. V. Subbarao,** Professor, Department of Mechanical Engineering IIT Delhi, New Delhi 110016 Phone: 91-11-2659 1142 Email: pmvs@mech.iitd.ac.in

Place,
IIT Delhi , Delhi

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