Department of Mechanical Engineering

Post Graduate Programme in Heat Power Engineering

Pimpri Chinchwad Education Trust's

Pimpri Chinchwad College of Engineering

Sector 26, Pradhikaran, Nigdi, Pune - 44

Why ME @ PCCoE?

M.E.-means MAKING OF AN EXPERT

- Technical satisfaction between BE and ME is huge!
  - Masters in Engineering adds value to your education and qualification
  - Gives deeper subject knowledge
  - More opportunity in getting into core companies
- PCCoE's ME program is at par with NIT's
  - Highly qualified faculty
  - 24 h computational lab facility
  - Industrial Exposure
- Invest in a degree and learn new tools which will get you set into the job market
- <u>Flexible time schedules and Online Classes</u>

Why ME (Heat Power Engg.) at PCCoE?

- Industrial Internship programs leading to Placement
- Training in specialized field like CFD: Ansys Fluent, CFX, Hypermesh, and PLM: Siemens NX, etc.
- Have an innovative idea? We will help you start on your own- funding available through incubation cell
- Continue your BE Project and transform it into a product !
- Opportunities for international paper presentation and exposure to industry and academia
- Helps you shift/ make your career into research and academics
- Strong alumni network for support and career guidance

What we offer?

- *M.E.(Heat Power Engineering)*
- *Industrial Internship*
- *Scope of Employment*
  - *Design engineer in Engine design and development*
  - *Research &Development engineer in automotive industry*
  - *Project engineer in Solar Photovoltaic industry*
  - *Refrigeration and air conditioning project engineer*
  - *Energy auditor/manager*
  - *Academic and R&D institutions*
  - *Entrepreneurship training*
  - *Incubation Facility for Start-up*

University Toppers

Patil Rupali

Rank 01

(2012-2014)

Pise Gargee

Rank 01

(2013-2015)

Birendra Kumar Rajan

Rank 02

(2014-2016)

Patil Sunil

Rank 03

(2015-2017)

Patil Atul

Rank 06

(2015-2017)

Badadal Prathamesh

Rank 10

(2015-2017)

Where are our past students?

Shantanu Kale
(2014)
Mercedez Benz, Bangalore

Nikhil Ingle
(2015)
Thermax Ltd.

Gargee Pise
(2015)
Cummins India, Pune

Pramod Gunjarge
(2016)
Startup- Cosmic Solar

Ajinkya Wankhade
(2016)
Knorr Bremse, NCR

Sumedha Mohod
(2016)
Cummins India

Nikita Patil
(2017)
Mercedez Benz, Pune

Bhushan Patil
(2017)
Gram Oorja Pvt Ltd

Rahul Kadam
(2019)
Knorr Bremse, Pune

Kailas Deshmukh
(2019)
Analyzer CAE Solutions, Pune

Research competencies in Heat Power Engg.

- Computational Fluid Dynamics
- Experimental and Numerical Combustion
- Renewable Energy: Solar & Wind Energy
- Heat Transfer
- Refrigeration and Air-Conditioning and HVAC

Facilities

Core Facilities:

- Variable compression Diesel Engine Test Rig
- Battery Testing Laboratory
- Mini Power Plant
- Wind Tunnel
- Weather station with 12 channel datalogger
    - Wind resource analysis
    - Design of renewable energy based systems
    - Power generation forecasting and planning

Computational Facilities:

- Ansys – Structural 19.0 + CFD (Fluent 19.0, CFX)
- CATIA V5
- AutoCAD 13.0
- Matlab 2010B
- ADAMS
- NASTRAN & PATRAN

Battery Lab at Pimpri Chinchwad College of Engineering

Solar PV system

2 numbers 1.2 KW_P

Battery :

48V 150AH @C10 tubular flooded LA battery

Inverter

3KW with 48V DC input & 230V AC single-phase output

Charge Controller types :

2 numbers simple “cut in Cut out” controller 25Amps

2 numbers MPPT controller 25A, 48VDC nominal

2 numbers PWM controller 25A, 48VDC nominal

Industry-Internship

Sr No	Year	Company name	Name of student	No of students
1	2019-20 2018-19	Customized Energy Solutions	Rupesh Shete Vinay Patil	02
2	2019-20 2018-19	Knorr Bremse	Yash Gujarathi Rahul Kadam	02
3	2019-20 2015-16 2013-14	TATA Motors	Jayraj Deshmukh Shivanand D Aglawe Kiran	03
4	2018-19	S N J Academy	Arvind Prajapat	01
5	2018-19	Cool Breeze Solutions	Subhash Salve	01
6	2016-17 2018-19	Thermax India Ltd.	MahajanPriyanka PatilAshish Anubhav Jundre	03
7	2016-17	Mahle Behr	Sunil Patil Nikita Patil	02
8	2018-19	Kirloskar Ltd, Saswad	Ajay Howal	01
9	2018-19	Henkel Adhesives, Pune	Kailas Deshmukh	01
10	2016-17	UrjaDisha Boiler Tech	Prathamesh Badadal Kailas Muke	02
11	2017-18 2016-17	SKF, Pune	AkashDagade Manoj Vhanamane	02
12	2019-20 2018-19 2015-16	Cummins India Ltd	Gouri Doijod Sumedha Mohod Snehal Patil	03

Internship leading to placement

Faculty Achievements

Prof. S P Salve won first prize in West Zone Avishkar Competition

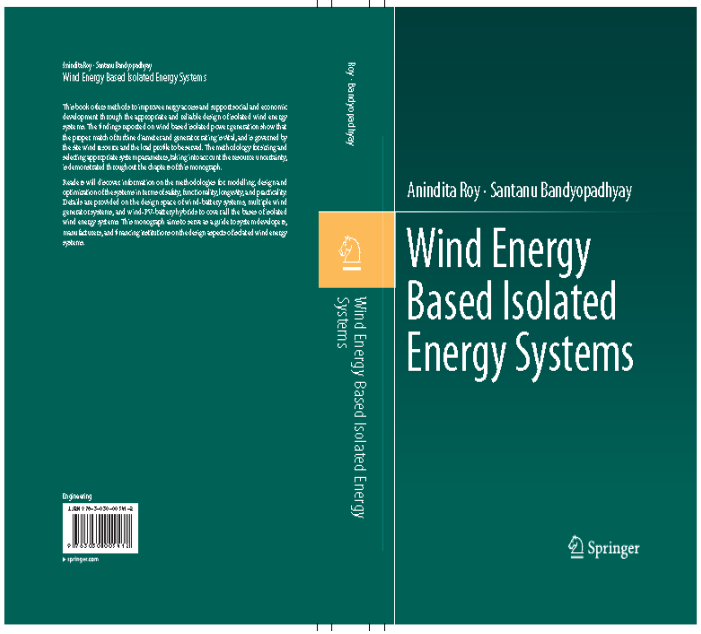
Prof A N Kore received runners up Award in Avishkar Competition

Dr P A Deshmukh received Consultancy project from Henkel Adhesives, Pune

Prof A N Kore received grant of Rs., 2.1 lacs from Dassault Systemes

Dr. Anindita Roy published a book with Springer.

Dr Anindita Roy was instrumental in the development of a fast charger for E-Rickshaws



Research Projects

Experimental Studies on Propagation of Premixed Flames in Diverging Mesoscale Channels

Principal Investigator: Dr. N.R. Deore

Total Amount Sanctioned: Rs. 1,40,000/-

Project Duration: 2013 to 2015

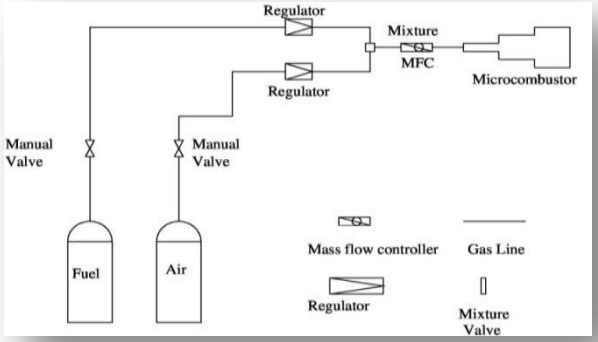
Objective

To investigate flame wall interaction

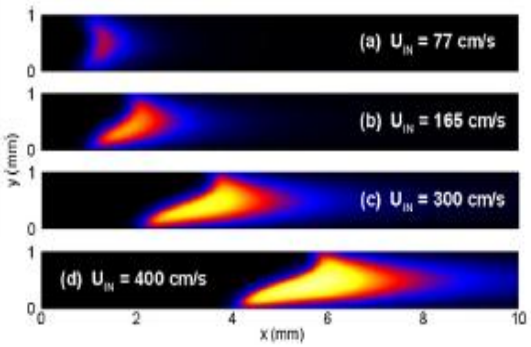
Outcome

Strong flame wall coupling gives rise to asymmetry of the flame

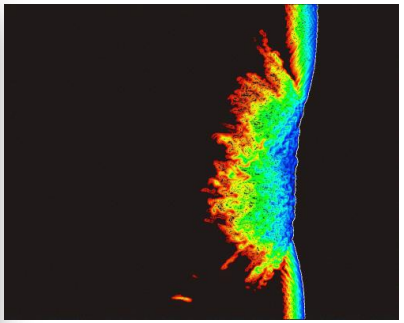
Dynamics of the flame will be controlled and analysed by inflow velocity and overall burning velocity



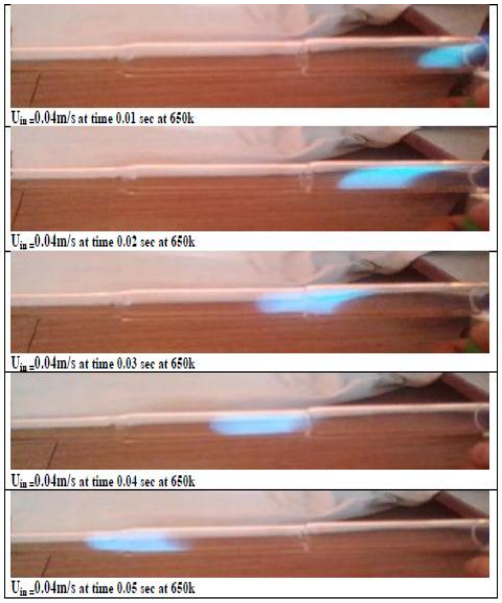
Experimental Set up



Results from literature



Flame extinction



Experimental Results

Funded Research Project

Experimental investigation for enhancement of latent heat thermal energy storage using embedded heat pipe

Principal Investigator: C. L. Ladekar

Total Amount Sanctioned: Rs. 1,90,000/-

Project Duration: 2013 to 2015

Objective

to investigate performance of latent heat thermal energy storage (LHTES) with embedded heat pipe

Outcome

Efficiency, effectiveness of LHTES with embedded heat pipe is relatively higher in comparisons with system with copper pipe.

Experimental set-up

Funded Research Project

Experimental Investigations of co-flow condition on the atomization and spray characteristics

Principal Investigator: U G Potdar

Total Amount Sanctioned: Rs. 85,000/-

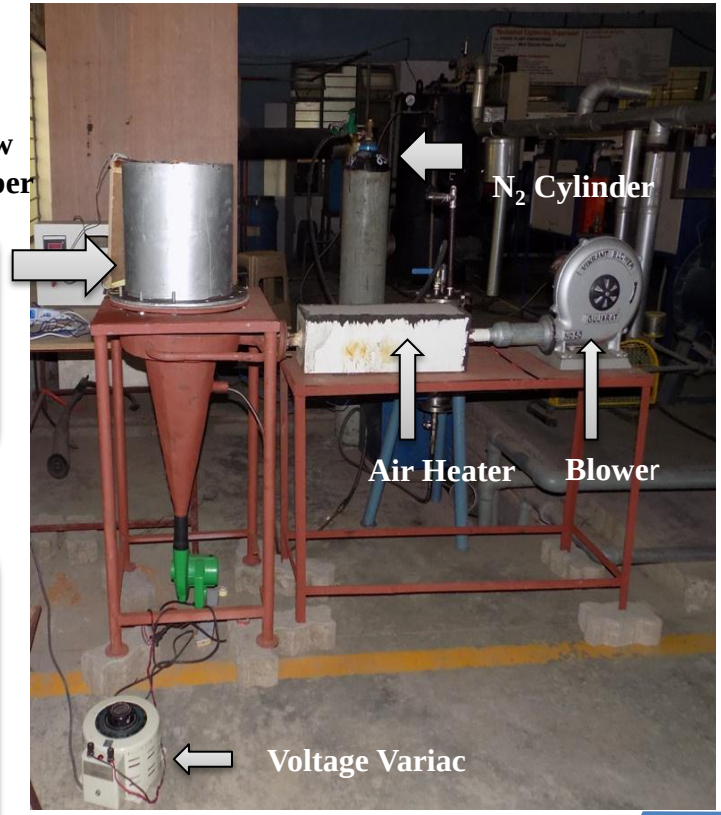
Project Duration: 2015 to 2017

Objective

To study the effect of lift off height and co-flow condition on the atomization and spray characteristics

Outcome

Average lift-off height is proportional to injection pressure. Addition of co-flow increases droplet velocity by 2 to 2.5 m/s at the outer periphery of spray leading to increase in lift-off height



Experimental set-up

Funded Research Project

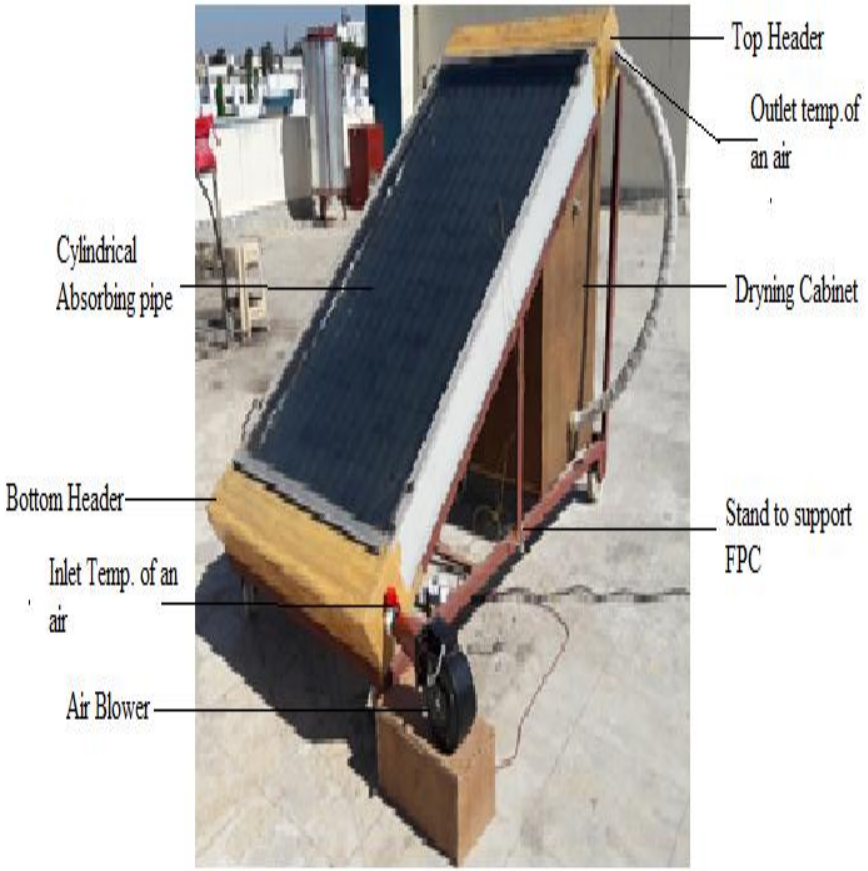
Experimental Investigations to Enhance the Performance of Solar Dryer by using PCM

Principal Investigator: Sanjay Salve
Total Amount Sanctioned: Rs. 1,40,000/-
Project Duration: 2017 to 2019

Aim: To enhance the performance of solar air dryer with waste aluminium cans, selective coating and phase change material

Outcome:
1) The total cost of this Solar dryer is Rs. 27,000/- (without Al tray)
2) The efficiency of FPC is found 41 % and drying efficiency is 21 %

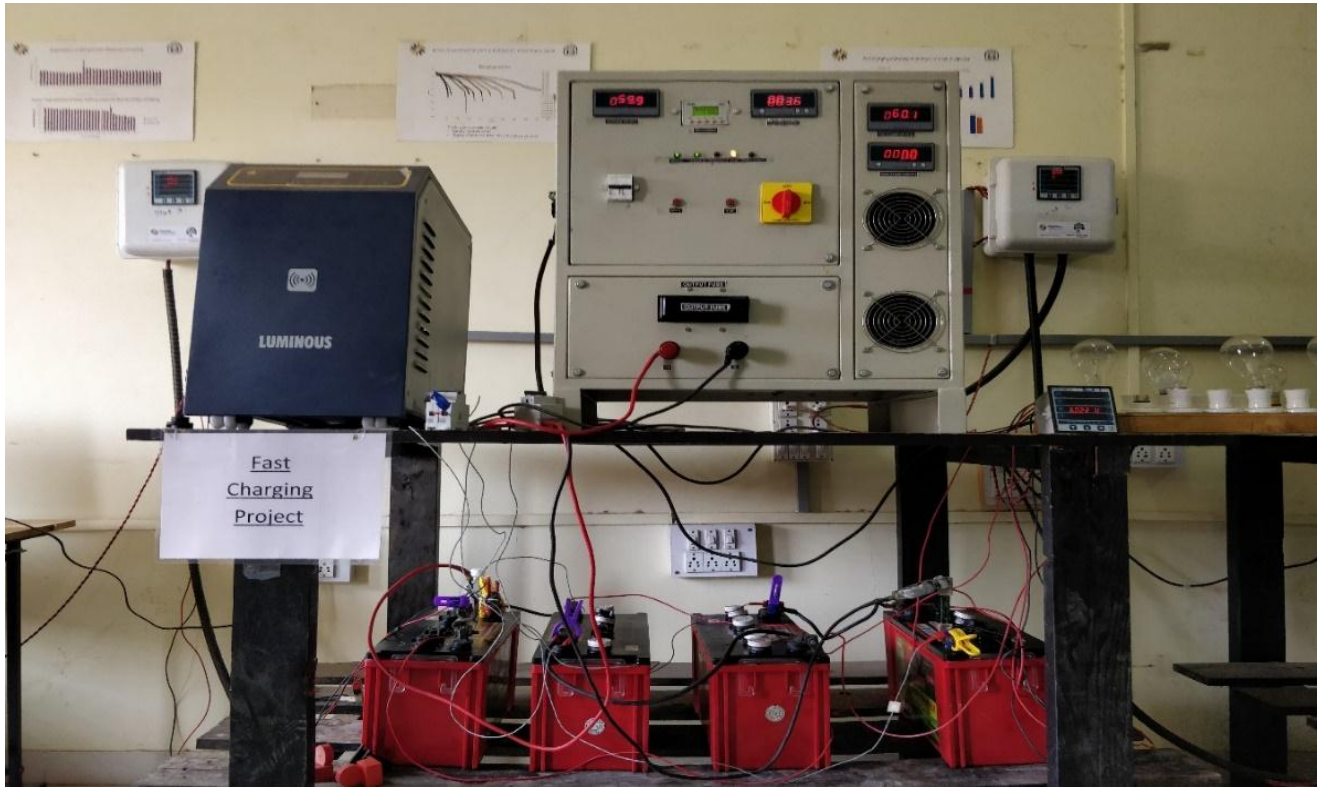
This project won the **first prize** of **AVISHKAR 2018-19** State Level Competition in Teacher Category



Experimental set-up

Distingushed Student Projects

Development of High-Performance Battery Charger for E-Rickshaws



Student :
Mr Rupesh Shete

Internal Guide
Dr. Anindita Roy

Industry Guide
Mr Rajarshi Sen

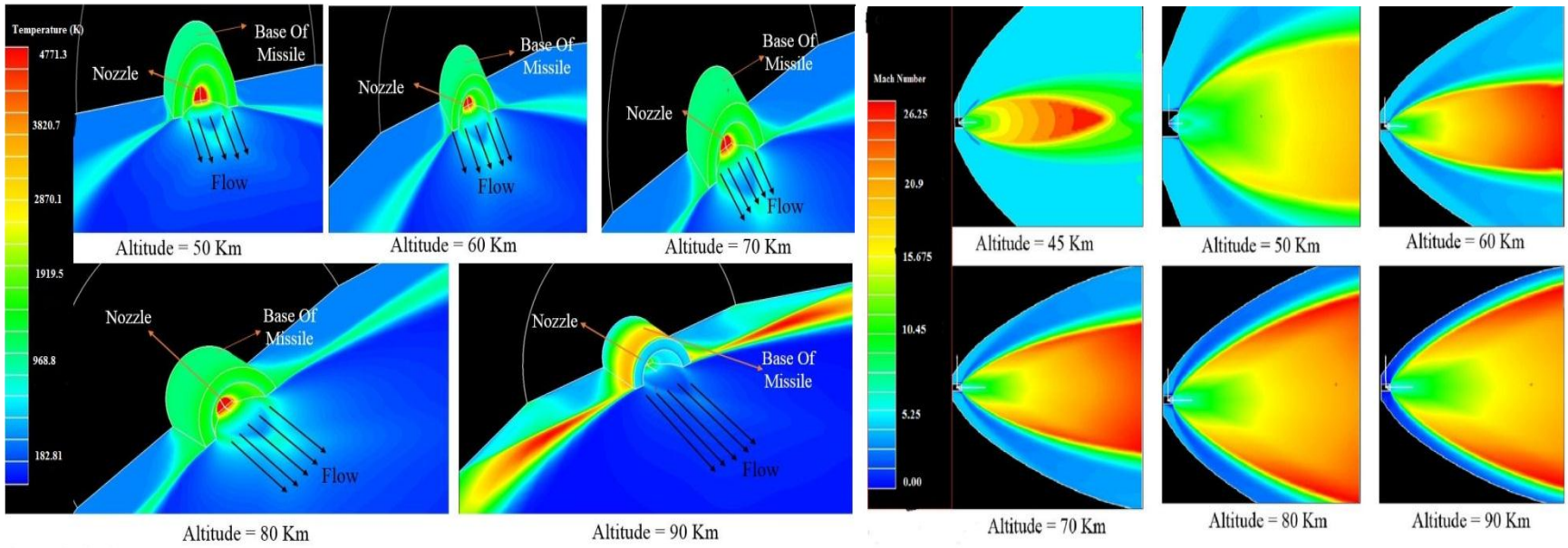
Outcome: Product developed and is in commercialization

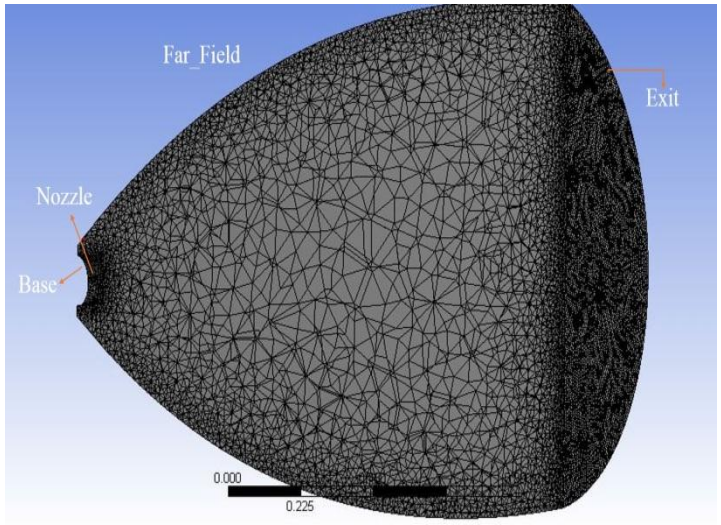
Analytical & Experimental Analysis of Thermocline Thermal Energy Storage Tank

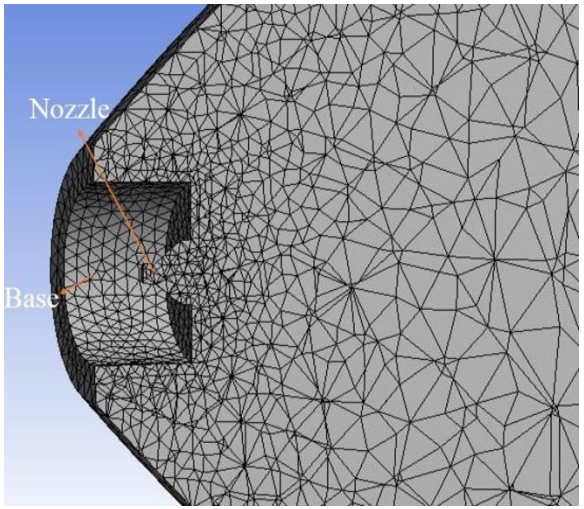
Presented By
Mr. Ramesh S. Vishwakarma

Guide
Dr. Anindita Roy

Heat Flux Estimation On the Missile Base at High Altitudes and Supersonic Speeds



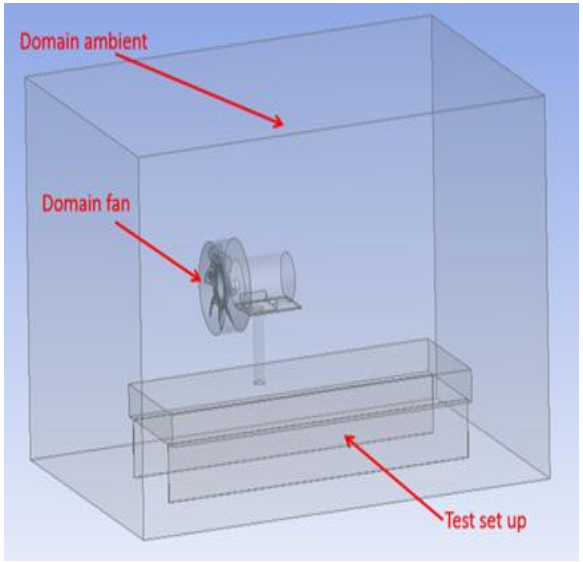


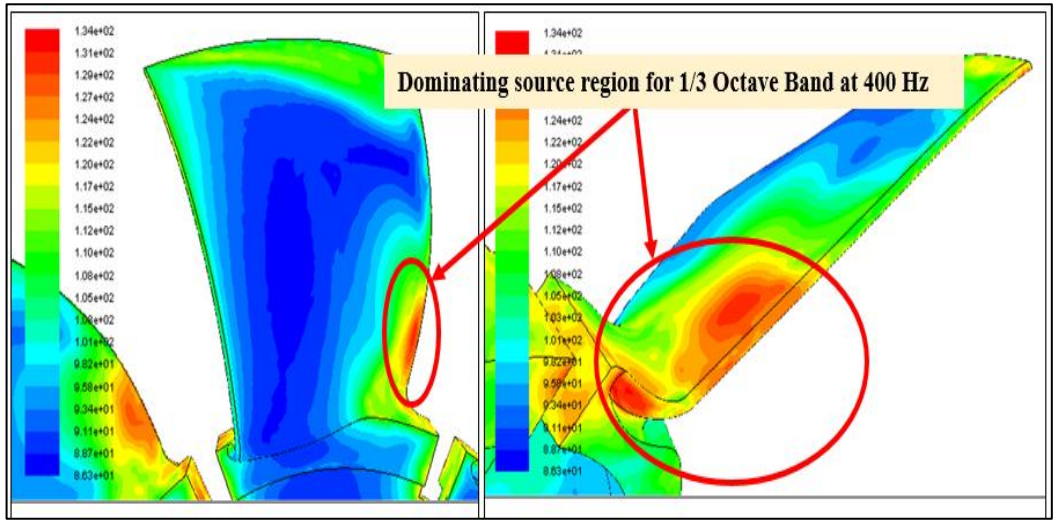


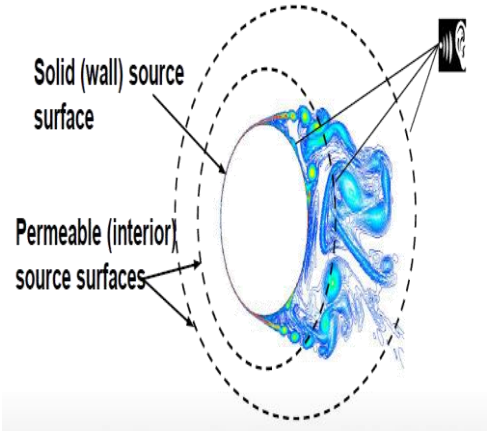
Student :
Birendra Kumar Rajan

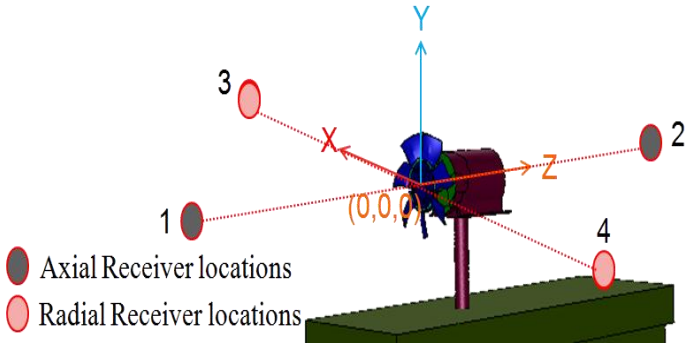
Internal Guide
Dr. N.R.Deore

Aero-acoustic Modeling of Radiator Fan









Carried out in Cummins India Ltd.

***Presented by:** Ms. Sumedha S. Mohod*

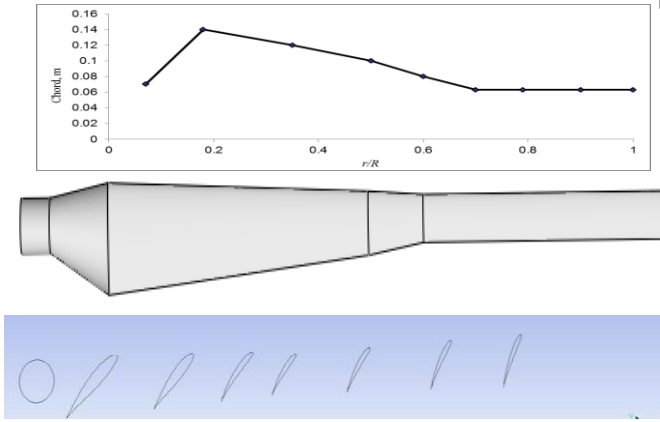
***Mentor at industry:** Mr. Abhishek Kakade*

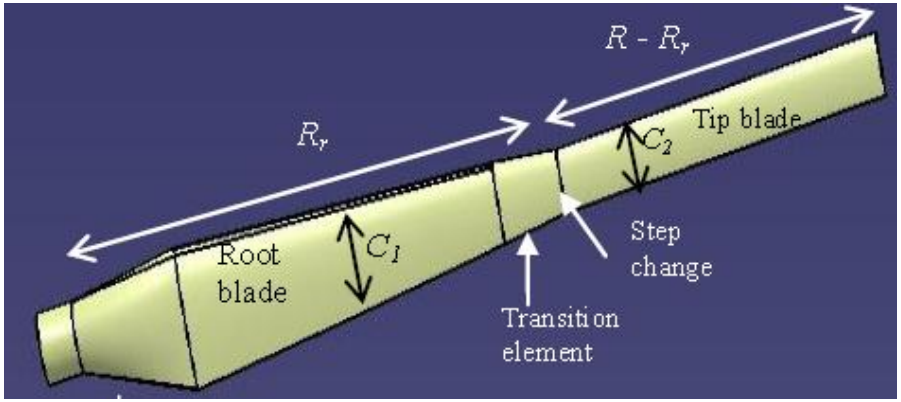
***Guided by:** Prof. Umesh G. Potdar*
***Co-guided by:** Dr. Narendra Deore*

Numerical investigation of flow over a variable length wind turbine blade

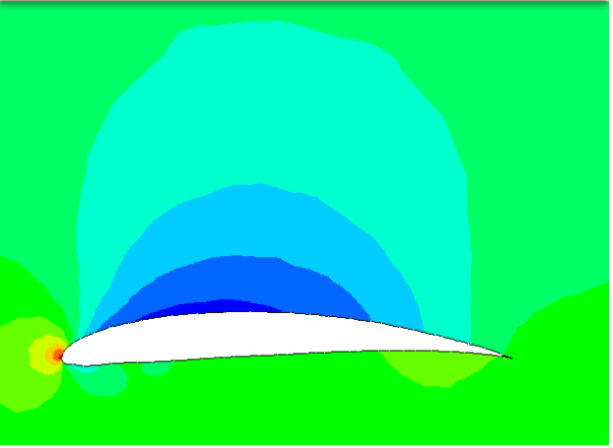
Shruti Dhone, Dr. Anindita Roy

Linked Publication : https://ieeexplore.ieee.org/document/7835498

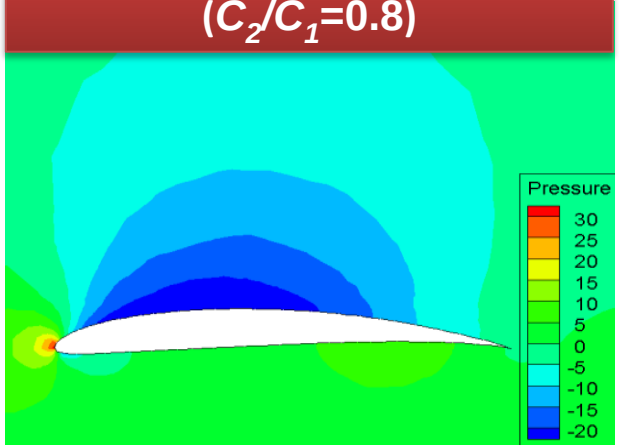




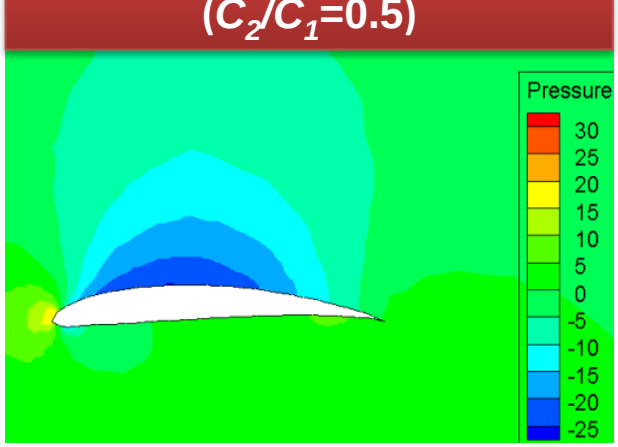
Fixed length blade



Variable length blade (C_2/C_1=0.8)



Variable length blade (C_2/C_1=0.5)



Use of variable length blade with chord ratio 0.8 is acceptable from aerodynamic point of view, whereas chord ratio lower than 0.5 significantly reducing system performance.

Design and weight minimization of small wind turbine blade for operation in low wind areas

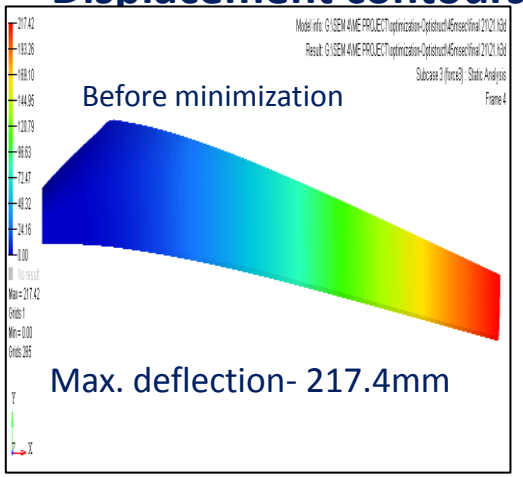
***Student* : Aarti Ajit More**
***Guide* : Dr. Anindita Roy**

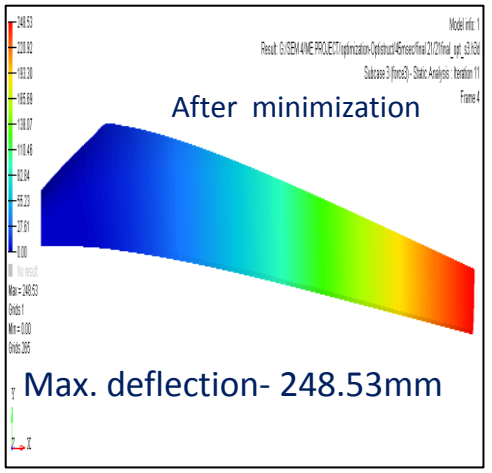
Linked Publication :
https://link.springer.com/chapter/10.1007/978-981-15-2662-6_29

- ***Objective*** *: D*esign and optimize weight of wind turbine blade, in order to reduce cut in wind speed and to maximize power output.

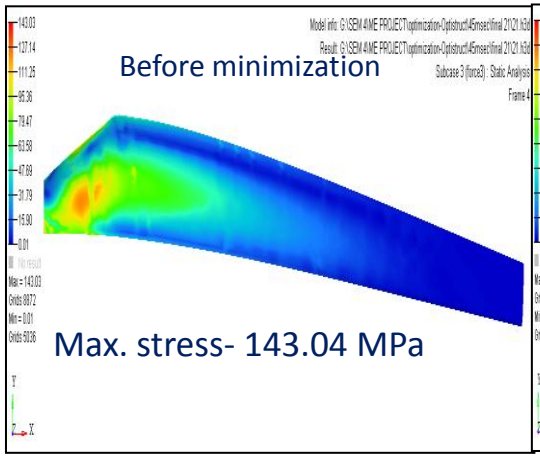
- ***Outcome*** *:*
- It is possible to minimize blade weight by optimizing the number of layers of composite fibre
- Predicted cut-in wind speed at design speed of 15 m/s : 1.95 m/s and 2.02 at 45 m/s.

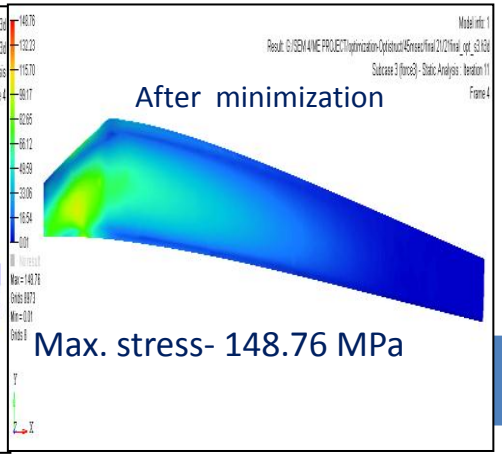
Displacement contours





Composite Stress contours





USP's of ME Heat Power Program

- Doctoral faculty with rich domain knowledge and experience
- Sponsorship for distinguished New Product Development / Research Based Projects up to 50,000/-project.
- Paid Industrial Internships leading to placement
- GATE scholarship to eligible students
- Support to Start-ups through ATAL Incubation Cell
- Computational lab availability for 24 hours
- Aptitude sessions for cracking placement interviews
- Chance to work on Interdisciplinary/Innovative /Industry sponsored projects.
- Exposure to Add-on courses by Industry Experts.

For any Queries Contact : anindita.roy@pccoepune.org
9970178175