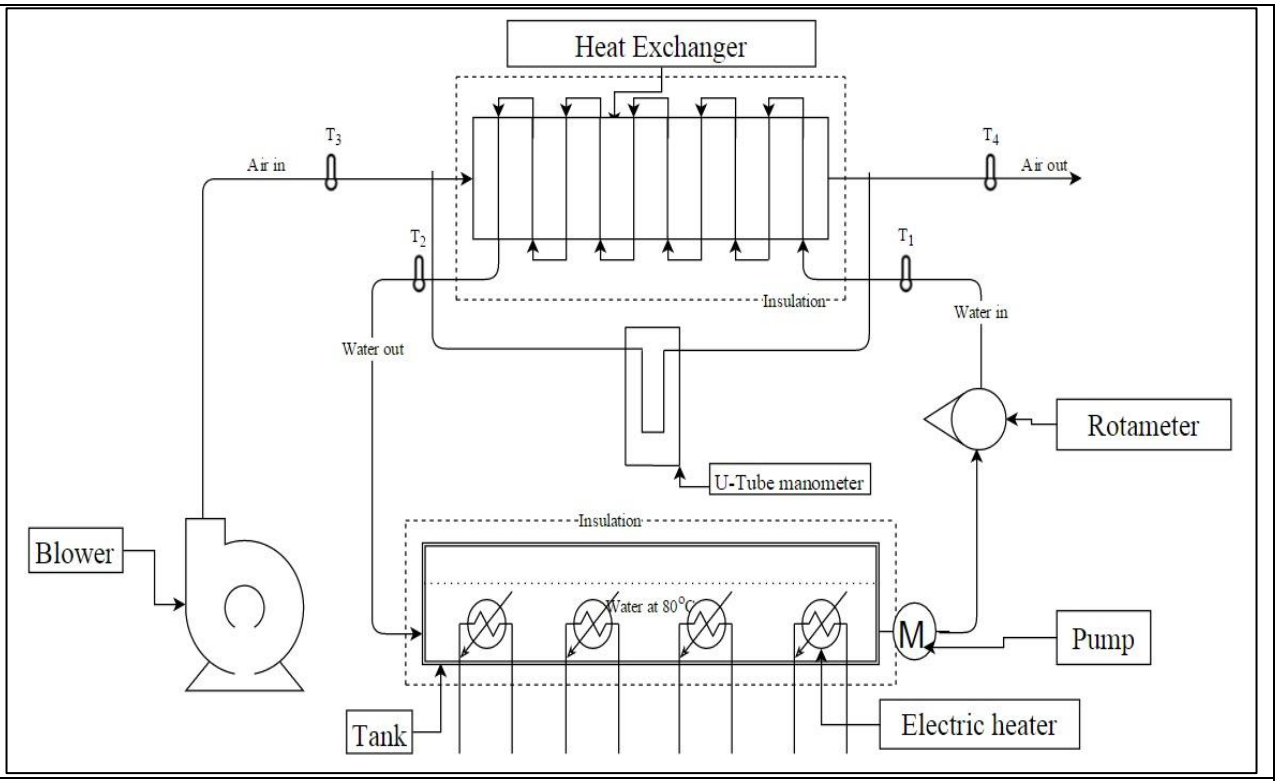
SUMMARY REPORT ON RESEARCH PROJECTS – MECHANICAL ENGINEERING 2016-18

Title of the Research Project	Study of thermal hydraulic performance of elliptical shape tube in cross flow heat exchanger
Period of Research	2016-2018
Funding Agency	Savitribai Phule Pune University
Reference Number	Ref. SCOE/Research/2016-17/461
Grant Sanctioned(Rs.)	2,30,000 /-
Objectives of the project	• To design and develop experimental test rig of cross flow heat exchanger using elliptical shape tube with inline and staggered arrangement at different angle of attack • Experimental investigation of cross flow heat exchanger under varying mass flow rate of cold fluid to study heat transfer augmentation • Develop correlation between Nusselt number, Reynolds number for different angle of attack • To compare experimental result with circular shape tube bank with inline and staggered arrangement
Number of UG/PG Project Groups	4
Publications out of this Research (if any)	S. D. Chavan, N. S. Gohel, R. S. Jha "Thermo hydraulic performance of elliptic shape staggered tube heat exchanger at 45º angle of attack International journal of current engineering and technology ISSN 2347-5161 page no 75-77, June 2016 2016/06/21. Snehal A. Powar, Ashish R. Wankhade, N. S. Gohel (2015), "Review on Thermal Performance of Cross Flow Heat Exchanger using Non-Circular Tubes"International Journal on Theoretical and Applied research in Mechanical Engineering Vol. 4(2), pp. 24-30.

Photograph of Equipment Fabricated / Instruments purchased	
Any other information Proposed experimental set up	NIL

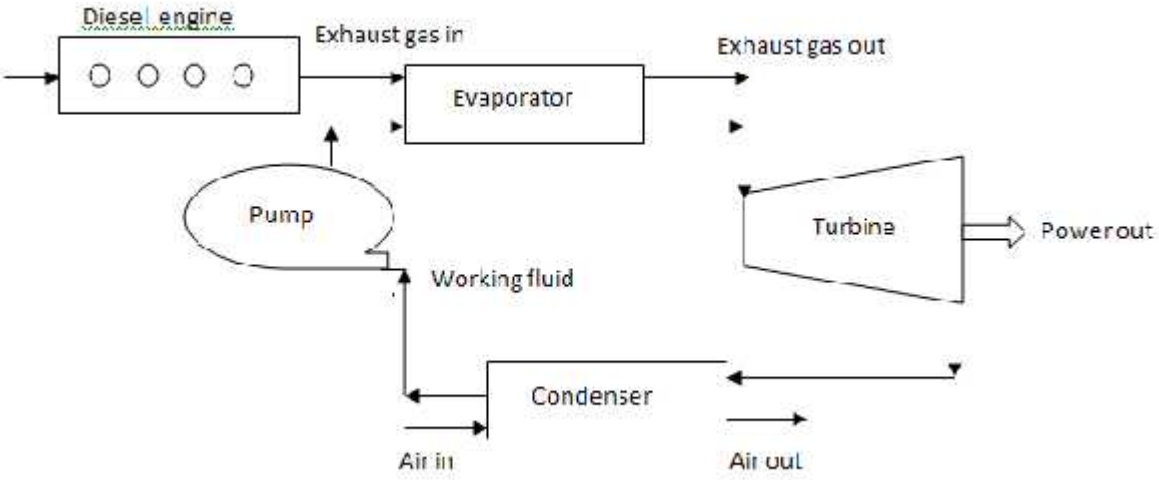
SUMMARY REPORT ON RESEARCH PROJECTS – MECHANICAL ENGINEERING 2016-18

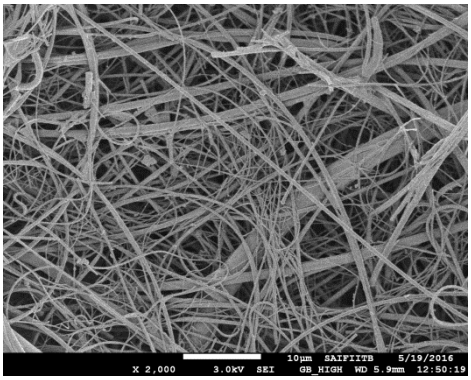
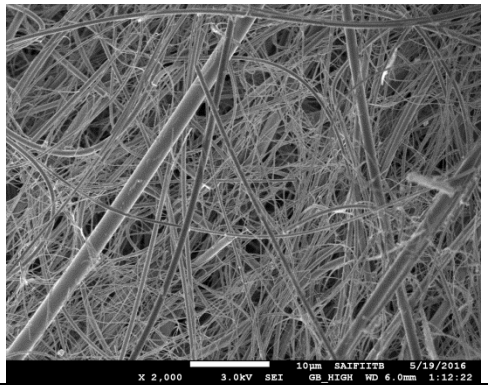
Title of the Research Project	Retrofitting of an air conditioning system with hfc-1234yf as a refrigerant
Period of Research	2016-2018
Funding Agency	BCUD , Savitribai Phule Pune University
Reference Number	SCOE/RESERCH/2016-17/461 Dtd. 25TH Aug.2016 [Proposal No- 15ENG000461]
Grant Sanctioned (Rs.)	2,50,000/-
Objectives of the project	• To design air-conditioner with HFC-1234yf as a low GWP refrigerant • Effectively incorporate low GWP synthetic refrigerant in air conditioner. • Study the impacts of Low GWP synthetic refrigerant choices on overall system efficien • To evaluate the system performance of an air-conditioning, comparison of experimental and theoretical results • To check the compatibility of material with the refrigerants.
Number of UG/PG Project Groups	02
Publications out of this Research (if any)	NIL
Photograph of Equipment Fabricated / Instruments purchased	NIL
Any other information	NIL

SUMMARY REPORT ON RESEARCH PROJECTS – MECHANICAL ENGINEERING 2015-16

Title of the Research Project	Comparative Performance Analysis for Solar Air Heating System using Artificial Roughness and Porous Media
Name of the Principal Investigator & Coinvestigator	Dr. A. B. Kanase-Patil and Prof. V. N. Kapatkar
Period of Research	18.08.2016 to 17.08.2018
Funding Agency	Savitribai Phule Pune University
Reference Number	BCUD / OSD / 220 dated 30/05/2016
Grant Received (Rs.)	200000/-
Objectives of the project	➢ Development of experimental setup. ➢ Study of experimental thermohydraulic performance for smooth plate with and without artificial roughness. ➢ Study of experimental thermohydraulic performance for smooth plate with and without porous media. ➢ Study of experimental thermohydraulic performance for roughened plate with porous media. ➢ Comparison of experimental and simulation results for all above condition. ➢ Conclusive remark with better thermohydraulic performance parameter from roughened and porous media
Number of UG/PG Project Groups	0
Publications out of this Research (if any)	0
Photograph of Equipment Fabricated / Instruments purchased	0
Any other information	NIL

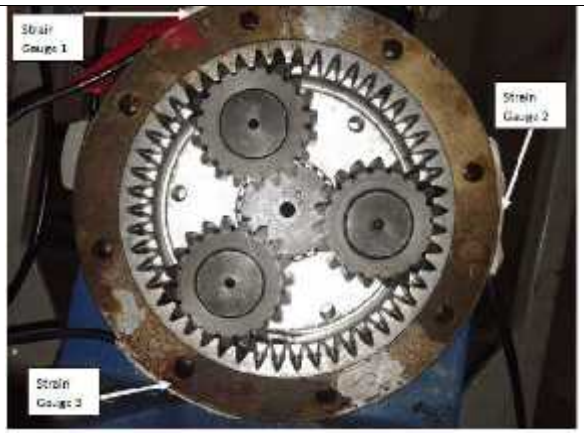
SUMMARY REPORT ON RESEARCH PROJECTS – MECHANICAL ENGINEERING 2014-16

Title of the Research Project	Investigation on waste heat recovery system for Diesel engine using an Organic Rankine cycle
Period of Research	2014-2016
Funding Agency	Savitribai Phule Pune University
Reference Number	BCUD / OSD / dated 26/5/2015
Grant Sanctioned(Rs.)	220000 /-
Objectives of the project	• To develop dynamic model of a system running on organic Rankine cycle. • To design and develop components of Rankine cycle system. • To integrate Rankine cycle system with Diesel engine. • To conduct experimentations and evaluate performance of diesel engine integrated with ORC • To compare and validate the experimental results with simulation results.
Number of UG/PG Project Groups	02
Publications out of this Research (if any)	Poster Presentation at INOVATION 2015.
Photograph of Equipment Fabricated / Instruments purchased	NIL
Any other information Proposed experimental set up	

Title of the Research Project	**Development of Homogeneous Mixture Preparation Unit for Diesel Fuelled Homogeneous Charge Compression Ignition (HCCI) Engine**
Period of Research	2013-2015
Funding Agency	Savitribai Phule Pune University
Reference Number	OSD/BCUD/360/164 dated 27.11.2013
Grant Received (Rs.)	215000/-
Objectives of the project	• To develop an experimental setup for achieving HCCI Combustion by external mixture preparation technique • To critically investigate the combustion, performance and emission characteristics of HCCI Engine by external mixture preparation technique
Number of UG/PG Project Groups	Nil
Publications out of this Research (if any)	**Proceedings of the 23rd National Heat and Mass Transfer Conference and 1st International ISHMT-ASTFE Heat and Mass Transfer Conference IHMTC2015 17-20 December, 2015, Thiruvananthapuram, India** "Experimental Investigation On Diesel Engine Using Garcinia Indica And Rice Bran Oil Based Methyl Esters As Fuels With New Combustion Approach"
Photograph of Equipment Fabricated / Instruments purchased	
Any other information (SEM analysis from IIT Bombay)	 

SUMMARY REPORT ON RESEARCH PROJECTS – MECHANICAL ENGINEERING 2012-14

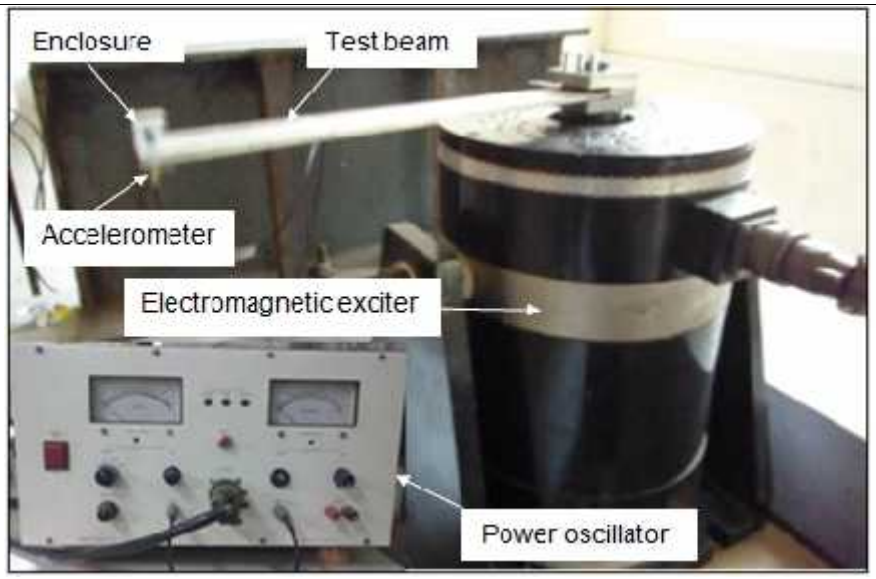
Title of the Research Project	Experimental And Theoretical Investigation Of The Influence Of Design Parameters On Planetary Gear Stresses
Name of the Principal Investigator & Coinvestigator	Dr. S. B. Wadkar and Prof. S. B. Patil
Period of Research	01.04.2012 to 31.03.2014
Funding Agency	BCUD, Savitribai Phule Pune University
Reference Number	OSD/ BCUD / 230/149 dated 14/05/2012
Grant Received (Rs.)	2,59,775.00
Objectives of the project	• Experimental and theoretical investigations, of the influence of several design level parameters on root stresses and deformations • Impact of these design parameters on the resultant bending fatigue life predicted
Number of UG/PG Project Groups	UG-02, PG-02
Publications out of this Research (if any)	Rim Stress Analysis of Epicyclic Gear Box, *International Journal of Current Engineering and Technology*, Aug 2014, Vol 4, No 4, pp 2684-2692
Photograph of Equipment Fabricated / Instruments purchased	 Experimental Set-up

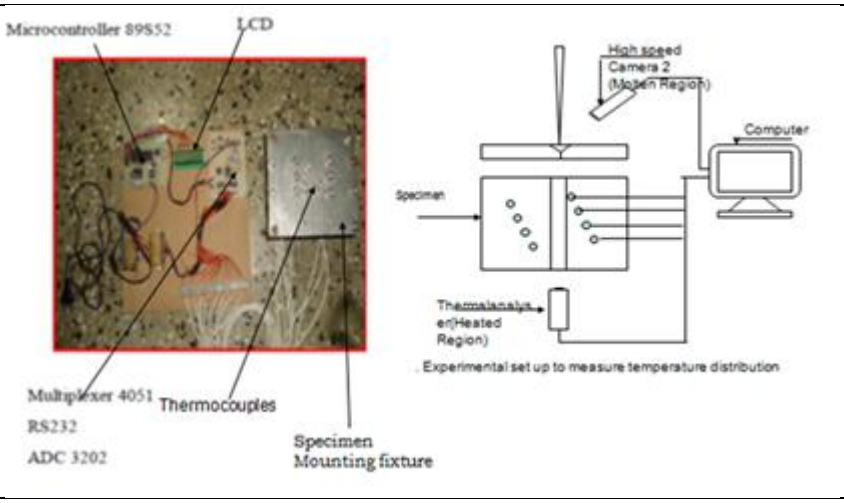
	 Strain Gage Locations on Ring Gear
Any other information	Participation in AVISHKAR 2012, INNOVATION 2013 and INNOVATION 2014.

SUMMARY REPORT ON RESEARCH PROJECTS – MECHANICAL ENGINEERING 2009 - 12

Title of the Research Project	Experimental Analysis of Buffer Impact Damper
Period of Research	01.04.2009 to 31.03.2012
Funding Agency	Savitribai Phule Pune University
Reference Number	BCUD / OSD / 184 dated 11/05/2009
Grant Received (Rs.)	150000
Objectives of the project	• To study the effect of axial vibration of a cantilever rod with and without impact damper. • To develop the set up of Buffer Impact Damper. • To study the different parameter like clearance, mass ratio etc. to reduce the vibrations.
Number of UG/PG Project Groups	03
Publications out of this Research (if any)	INNOVATION 2010, INNOVATION 2012
Photograph of Equipment Fabricated / Instruments purchased	
Any other information	---

SUMMARY REPORT ON RESEARCH PROJECTS – MECHANICAL ENGINEERING

Title of the Research Project	**Experimental Studies on the Method of Particle Damping for Alleviation of Vibration and Noise Harshness in Mechanical System**
Name of the Principal Investigator & Coinvestigator	T. A. Jadhav and P J Awasare
Period of Research	2009-2011
Funding Agency	Savitribai Phule Pune University
Reference Number	*BCUD / OSD / 184 dated 11/05/2009*
Grant Received (Rs.)	175000/-
Objectives of the project	• To develop greater insight into the behavior of the particle damper • To develop suitable single cell and multiple-cell type particle dampers • To develop a suitable experimental set-up to carry out the characterization of various damper and system parameters. • To identify and characterize key design variables that influences the effectiveness of a particle damper.
Number of UG/PG Project Groups	UG-2 and PG-2
Publications out of this Research (if any)	T. A. Jadhav and P. J. Awasare, Parametric studies of particle damper effectiveness under harmonic excitation, The Institution of Engineers (I) Pune Local Centre, Vol 37, ISBN No.: 978-81-924990-1-7 Nov 2013, pp 253-256.
Photograph of Equipment Fabricated / Instruments purchased	 Figure 1 Experimental set-up
Any other information	**Patent filed (Provisionally)** Tushar A. Jadhav and Pradeep J. Awasare "Novel System of Damping using Multiple-Cell Enclosure" Application No.2231/MUM/2011,dated 08 Aug 2011.

Title of the Research Project	Scaling down effect on residual stresses in laser welding process
Period of Research	01.04.2009 to 31.03.2012
Funding Agency	Savitribai Phule Pune University
Reference Number	BCUD / OSD / 184/03 dated 11/05/2009
Grant Received (Rs.)	175000
Objectives of the project	The issues related to the multi scale modeling approach, development of mathematical model to predict Melting efficiency and effect of process parameters on efficiencies
Number of UG/PG Project Groups	03
Publications out of this Research (if any)	03
Photograph of Equipment Fabricated / Instruments purchased	
Any other information	NIL