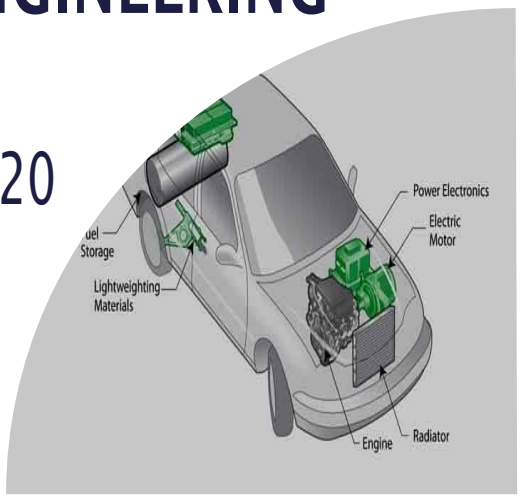
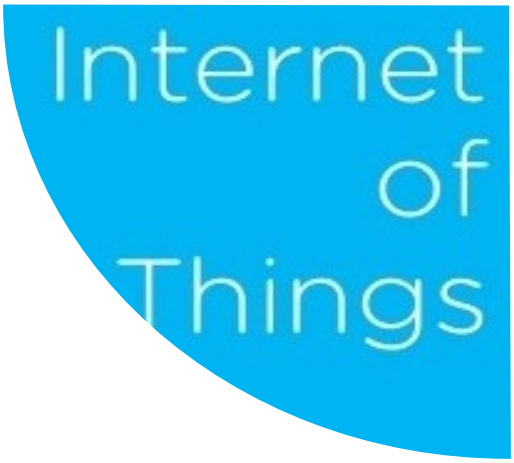
Shanti Education Society's

A. G. PATIL POLYTECHNIC INSTITUTE, SOLAPUR

DEPARTMENT OF MECHANICAL ENGINEERING NEWSLETTER

ISSUE 6 : SUMMER 2020





INSIDE THIS ISSUE :

News from the Head of Department

How's everyone doing? We hope that you and your family are doing well and taking care in this difficult period of pandemic. We are proud that our mechanical program is NBA accredited and also awarded as "Excellent" grade by Maharashtra State Board of Technical Education, Mumbai. Mechanical department has 60 intake of students. Total 12 faculties are working in our department out of which 85 % faculties completed their post graduation with different specialization.

Three AQIS (AICTE quality improvement scheme, New Delhi) Proposal were sanction and funded by AICTE for Mechanical Engineering Department.

1. Skill & personality development program center (SPDP) for SC/ST students
2. Short term training program (STTP) on Teaching Learning Pedagogies
3. MODROB

Under Industry supported lab we have received Parts of Eddy current dynamometer form SAJ test plant Pvt. Ltd. Pune.

During this academic year Mechanical Department arranged different activities for students, to enhance their skills and performances in academic, sports & co-curricular activities. We have conducted SAP Training Program and Entrepreneurship Awareness Camp for third year students. students had taken active participation in different sports category arranged by Inter Engineering Diploma Student Sport Association (IEDSSA) and grabbed prizes. This year also we've conducted our national level technical event called Annum and Accretion.

As we all know this year didn't end the way we all wanted it to because of the COVID 19 pandemic situation but we continued our efforts to teach our students through online modes despite this difficult time. We have used different online platforms such as google meet, zoom meetings, google classroom etc. Faculties are participated in 260 different online faculty development programs, STTP's and webinars during this lockdown period to add value to their knowledge. Every year we conduct Annual Prize Distribution ceremony "Bharari". This year also we've conducted "Bharari" but in different manner as "E-Bharari" due to lockdown restrictions. Students has shown active participation to make this E-Bharari Successful. It is hard to believe that this is the end of 2019-20 academic year It will definitely be one that we will not soon forget. I hope that you have the opportunity to relax and spend some quality time together as a family.

Please take care of yourselves and your families while you enjoy this lockdown period!

Thank You,
Mr. S. K. Mohite
H. O. D.

	FIRST	SECOND	THIRD
F.Y.	 Mr. Mane Vikram 87.26%	 Mr. Kanade Sangameshwar 84.23%	 Mr. Ekmalle Nagendra 83.23%
S.Y.	 Mr. Walke Shubham 87.59%	 Mr. Sarvade Pavankumar 86.06%	 Mr. Shaikh Mustafa 85.76%
T.Y.	 Mr. Jahagirdar Aniruddha 88.71%	 Mr. Bewoor Jitesh 88.47%	 Mr. Jinde Ashutosh 88.41%

Co and Extra Curricular

- **Mr. Parappa Patil stood runner up in IEDSSA Table Tennis event, Solapur**
- **Mr. Chidambar Akkal got second prize in CAD Expert event of "Accretion" held in AGPPI, Solapur.**
- **Mr. Samarth Kulkarni got first prize in Paper Presentation Event "Technowave 2020" held at SPM Poly, Solapur**

- **Mr. Viraj Jadhav got first prize in Tech Quiz competition held at Maulana Azad Polytechnic, Solapur.**
- **Mr. Samarth Kulkarni got second prize in National Level Technical Paper presentation "Annum" held in AGPPI, Solapur.**
- **Mr. Deepak Nargunde got first prize in Lathe Mania Event of Accretion 2020 held at AGPPI, Solapur**

Expert Lectures

1. Recent Trends in Automobile Industry and Opportunities by Mr. Umesh Yadav, CEO Nikola Technology, Pune
2. Conflict and Conflict Management by Mrs. S. R. Sakhare, Associate Prof. A. G. Patil Institute of Technology, Solapur
3. Entrepreneurship Development by Mr. Suyog Kalani, Owner, Shrijeet Telecom, Solapur
4. Piping Design Engineering by Mr. Pramod Deshmukh (Head, Learning and Development)




Industrial Visits

Third Year Student Industrial Visits

1. Crown Metal Industries, Industrial Estate, Hotgi Road , Solapur
2. Chavan Motors, Hotgi Road, Solapur
3. Baba Ice Factory, Hotgi Road, Solapur

Second Year Student Industrial Visits

1. Shri Siddheshwar Sugar Factory, Hotgi Road, Solapur
2. Shriram Industries, Hotgi Road, Solapur
3. Leena Engineering Works, Industrial Estate, Hotgi Road, Solapur

Second and Third Year Student were jointly visited the Larsen and Toubro Ltd., Ahmednagar






MotoGine Hybrid Scooter

This paper aims at the new concept of "MotoGine Hybrid scooter" which is a combination of two systems i.e. petrol engine and electric system. In this project work we have converted Tvs- scooty-pep+ scooter into hybrid vehicle. This hybrid vehicle will make use of both technologies. Petrol engine system will be used for rear wheel drive and the electric system for front wheel drive. The batteries will be automatically charged when the vehicle runs on petrol engine system and that stored power will further be used for running the vehicle on electric system and so running of vehicle on electric system will be free from pollution and it will also save cost of petrol fuel. In case of failure of engine vehicle can be operated using motor power or in case of failure of motor vehicle can be operated using engine power. During operating of scooter either engine power or motor power can be utilized to propel the same.

Published by Mr. J. G. Mulla, Mr. Malgonda S. M., Mr. Pandhare R. A., Mr. Malewadi S. S.

Design of Basic Axial Flux Permanent Magnet Generator

There are still some areas in India where electricity is not reach easily. We can use renewable energy sources such as wind, sun, water etc. to produce electricity for such areas, because these are chip and clean sources of electricity. Design of such generator which generates electricity from wind is explained in this paper. A Basic topology of Axial Flux Permanent Magnet (AFPM) generator is selected for design. The design is explained with the help of mathematical equations and basic assumptions. Manufacturing images and testing of generator is also mentioned in this paper. Amongst lot of configurations of AFPM generators such as Double stator single rotor (slotted or slotless), double rotor single stator, multi stator multi rotor etc. Every configuration has its own advantages and disadvantages, so we must select the one which is best suited to selected application. In this paper the selected configuration is single rotor single stator. This configuration is selected for design because of its simplicity in construction and working.

The selected generator is slot less and coreless. The simple design steps and procedure is described in this paper which can help any beginner to understand and design their own AFPM generator configuration. For manufacturing of proposed generator tool and material selection is done first. After that with the help of CAD images of stator and rotor fabrication of AFPM generator was finished. We have manufactured stator and rotor as well as their assembly.

Published by Mrs. R. D. Chavan, Mr. J. P. Pinjar and Mrs. D. A. Jhaveri

Experimental Analysis on Vapor Compression Refrigeration System by Using Eco friendly Refrigerant Mixtures

This experimental investigation deals with the evaluation of the performance of a refrigeration system by using different eco friendly refrigerant mixtures. The refrigeration system used for the evaluation works on vapor compression cycle on the principle of heat is absorbed in the evaporator by evaporation process. Now days it is very important to increase the COP of the refrigeration system and to increase the COP lot of researches are done. The eco friendly refrigerants used in the system to enhance the performance are R134a (Tetrafluoroethane), R290 (Isobutane). This experimental study deals with deals with a comparison of the performance of different refrigerant mixtures mentioned below with R134a kept as a comparison parameter. The above refrigerants are mixed based on weight proportions in different ratios, and their following mixtures used are:

Test-1: R134a

Test-2: R134a - 80% and R290 - 20%

The usage of all CFC refrigerants are already phased out and according to Kyoto Protocol due to its high global warming potential (GWP) of 1300 R134a may be phase out in upcoming days. So present experimental investigation has been conducted with hydrocarbon refrigerant mixtures as an alternate to R134a.

Published by Mr. S. K. Mohite, Mr. R. S. Motgi, Mr. J. G. Dhalait and Mr. B. E. Narote

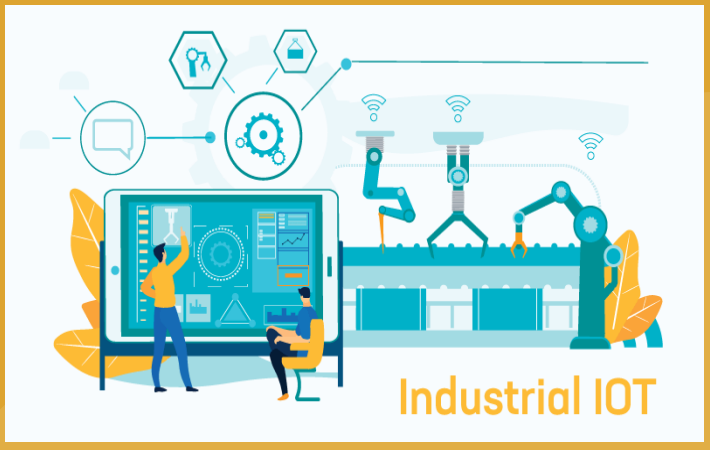
Experimental Analysis of Thermal Energy using Phase Change Material

This experimental investigation deals with the evaluation of the performance of a phase change material (PCMs) using Copper tubes and using this energy to heat water and store it for domestic purposes. The storage unit stores the heat in PCMs effectively due to Copper tubes. The water in the storage unit receives heat form the heater and transfers it in less time due to Copper tube to the PCM. The PCM undergoes a phase change by absorbing latent heat, excess heat being stored as sensible heat. The comparison is made between arrangements of a tank which can be used as normal domestic tank and the same can be used as PCM tank with copper tubes. The results based on the Temperature, Time, Heat stored is elaborated.

Experimental setup consists of a Water Heater of 2000 watt, two Latent Heat Thermal Energy Storage Tanks of diameter 280 and height of 290 mm, one having Phase changing material Paraffin and copper tubes and the other without PCM and copper tubes. The stainless steel TES tanks have capacity of about 20 liters, excluding volume of copper pipes. With an internal diameter of 280mm and a height of 290mm, it houses the copper pipes and PCM which allows heat transfer between the copper pipes having PCM and water. Precaution is taken for PCM present in the copper tube of the tank will not be mix with water. To confirm maximum heat transfer between water and PCM copper tubes of ASTM standard with 99.9 % purity is used. These copper tubes are joined to tank by brazing. The PCM used in the Tank is industrial grade granulated paraffin wax with a melting point range of 50-55°C and water is used as the HTF. Thermometer is provided at the head of the storage tank. The temperatures of the water are continuously measured by digital thermometer. The tank setup is covered with insulation of glass wool to avoid any heat loss.

Published by Mr. R. S. Motgi, Mr. S. K. Mohite , Mr. J. G. Dhalait and Mr. B. E. Narote

IoT in Industrial Automation : Application and Benefits



Gartner defines the market for industrial Internet of Things (IIoT) platforms as a set of integrated software capabilities. These capabilities span efforts to improve asset management decision making, as well as operational visibility and control for plants, depots, infrastructure and equipment within asset-intensive industries. These efforts also occur within related operating environments of those industries. This platform may be consumed as a technology suite or as an open and general-purpose application platform, or both in combination.

Internet of Things (IoT) has a major role in making this possible. All industries are doing automation through IoT devices are making remarkable changes in daily processes.

Application of IoT in Industrial Automation: Security

IoT devices are capable of continuously monitoring the safety indicators to save the workforce from all kinds of accidents. They are also capable of checking and tracking the illness and injury rates, Indicators can provide a safe and healthy environment in industries.

Application of IoT in Industrial Automation: Automation of Processes

Smart sensor networks that are connected to a cloud system can offer great amount of control on your process. This will decrease the need to hire employees for such tasks. Today, restaurants are automating the process of detecting food wastage with the help of AI technology.

Benefits of Industrial IoT Platform

An industrial IoT platform centralizes the entire management process reducing a great deal of the burden and cost. Some of the industrial IoT platforms enable the providers to deliver pay-as-you-go pricing models.

Published by Mr. B. E. Narote and Mr. R. P. Mhanta

CO & PO in reference to NBA Accreditation Procedure

It is critically important to enhance the quality of technical education in India. The National Board of Accreditation, New Delhi (NBA) is putting the efforts since 1994. The Self Assessment Report (SAR) for Diploma Engineering Institutes includes the calculation of Attainments of Course Outcomes (COs) and Program Outcomes (POs). CO & PO relates to the "KSA" that is Knowledge, Skills and Attitude that students acquire during the study. The program outcomes can be attained through the attainment of Course Outcomes of individual courses included in particular program. This paper demonstrates the contribution of Course Outcomes to program outcomes for a sample course "Metrology & Quality Control". Also it highlights the process involved in the attainment of Course Outcomes.

The analysis of CO-PO attainment helps to get an idea about the understanding level of students getting passed out. It also helps the faculty to rectify the teaching methodology, if required. Attainments are indices for domain knowledge along with overall professional development.

Published by Mr. G. M. Kulkarni and Mrs. C. S. Dhepe

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COURSES OFFERED IN DIPLOMA ENGINEERING

Discipline	Intake Capacity	Duration of Course	Accreditation Status
Electrical Engineering	60	3 years	New Course
Mechanical Engineering	60	3 years	NBA Accredited
Electronics and Telecom. Engineering	60	3 years	NBA Accredited
Civil Engineering	60	3 years	NBA Accredited
Computer Engineering	60	3 years	NBA Accredited
Total Intake	300