

SUMMER 2018

NEWSLETTER

Department of Mechanical Engineering

Accredited By

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OF ACCREDITATION**



Shanti Education Society's

**A. G. PATIL POLYTECHNIC
INSTITUTE, SOLAPUR**

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Welcome



It gives me immense pleasure to introduce you to this next edition of newsletter of department for the academic year 2017-18.

The objective of department is to prepare students for successful career in Industry, Research and Academics to meet the needs of growing technology. To fulfill this we arranged different activities for students to enhance their skills and performances in

academic, sports and co curricular activities. During this academic year we gone through NBA accreditation process and it is proud feeling moment to say that our program is accredited by National Board of Accreditation, India. It signifies the assurance of quality and relevance of education of the program in technical disciplines.

Department has a setup of smart class room with interactive board to improve teaching learning process.

Also to build the professional strength, department joined the hands with Institute of Engineers, India (IEI). With this joint venture we have conducted one day seminar on "Non Destructive Testing".

Finally I just want to say that instead of perfection, we are striving for continuous improvement.

Best wishes and Stay Connected!

Mr. S. K. Mohite
Head of Department

Vision

To provide technical education and values in areas of Mechanical Engineering to create professionals to meet the needs of industry, business and society

Mission

- 1.To provide skilled manpower to the industry
- 2.To educate students to be Entrepreneurs and Team leaders with ethics
- 3.To motivate students for research and innovation for humanity

Find us....

18/2/2 A,Vijapur Road, Opp. SRP Camp,
Solapur-413008

Tel: 0217-6450740, 2341899

Web: www.agppi.com

Program Educational Objective (PEOs)

- 1.To develop ability to work as Supervisor, Manager and Entrepreneur
- 2.To present themselves as responsible Mechanical Engineering professionals with ethics
- 3.To inculcate ability to develop mechanical product and processes by considering social and environmental aspects

Academic Performance:

Third Year -

- Mr. Gavandi Sourabh Dattatray stood 1st with 89.06 %
- Mr. Shaikh Aman Bandenavaj Stood 2nd with 88.24 %
- Mr. Shaikh Amir Bandenavaj Stood 3rd with 87.47 %

Second Year -

- Mr. Khasnis Omkar Suresh Stood 1st with 91.49 %
- Mr. Palankar Guruprasad Ulhas Stood 2nd with 89.30 %
- Mr. Manure Shreyash Pramod Stood 3rd with 82.54 %

First Year -

- Mr. Hulgeri Shubham Sharnappa Stood 1st with 90.34 %
- Mr. Koli Akash Revappa Stood 2nd with 88.88 %
- Mr. Randive Mohnish Rajendra Stood 3rd with 88.21 %



CO Curricular and Extra Curricular Activities:

1. Mr. Shaikh Shakir won First Prize in State Level Technical Event CAD Expert in "Accretion 2K 18".
2. Mr.Gawali Mayuresh won Third Prize in State Level Technical Event CAD Expert in "Accretion 2K 18".
3. Mr.Gawali Mayuresh won First Prize in State Level Technical Event "Abhi Vyakti 2K 18" at Brahmadev Mane Polytechnic, Solapur.
4. Mr.Gawali Mayuresh won First Prize in State Level Technical Event "CAD War" at Brahmadev Mane Institute of Technology, Solapur
5. Mr. Kadganchi Rutwik won Second Prize in State Level Technical Event CAD Expert in "Accretion 2K 18".
6. Mr. Rawale Akash R., Mr. Dabade Baburao R., Mr.Mamdya Vinay S., Mr. Pagul Govindraj S. had participated in "SAN-ISPE-2K18", Science Project Exhibition held at Sangameshwar College, Solapur.
7. Mr. Bewoor Jitesh J. & Mr. Thombare Prajwal J. achieved Third Prize in National Level Technical Paper Presentation program "Annum 2K18".
8. Mr. Bewoor Jitesh J. & Mr. Thombare Prajwal J. achieved Second Prize in State Level Technical Paper Presentation program "Techno Wave 2018". at S.P.M. Polytechnic, Solapur.
9. Mr. Rawale Akash, Mr.Maske Onkar, Mr. Sankalp Jadhav had stood Winner in IEDSSA Sport Event- Table Tennis at Government Polytechnic, Solapur.



Got 1st prize in Lathe Mania



Got 3rd prize in Lathe mania



Accretion-Lathe Mania



Accretion-Lathe Mania



Accretion-CAD Expert



Got 1st prize in CAD Expert



Engineers Day Function



Entrepreneurship Awareness Camp

Master Talks:

1. "Manufacturing of Automobile Components" by Mr. Rajendra Mandal, Samrat Industries, Pune for third year students
2. "Entrepreneurship and Start-Up" by Mr. Azar bagwan, Founder and CEO, Hoodler for third year students
3. "Personal and Professional Growth" by Mr. Abhijeet Kamble, MD, Freelance corporate and personal consultant, Pune for second year students
4. "Hyperloop Technology" by Mr. Akshay Joshi, CAD-CAM Guru solutions, Pune for third year students.
5. "Foundry Technology" by Mr. Girish Sakhare, Manager, Vendor Development, LDK Pvt. Ltd., Solapur.



Expert Lecture



Students Listening to Guest

Industrial Visits:

Third Year students visited the following industries.

1. Super Bright Electro-Plates, Hotgi Road MIDC, Solapur
2. Shree Industries, Hotgi Road MIDC, Solapur
3. Leena Engineering Works, Hotgi Road MIDC, Solapur
4. Gurukrupa Motors, Hotgi Road, Solapur

Visits for second year students were carried out to following industries

1. Shri Siddheshwar sugar factory, Hotgi Road, Solapur
2. Science Exhibition, Sangmeshwar College, Solapur
3. Irshad Industries, Hotgi Road MIDC, Solapur
4. Shree Industries, Hotgi Road MIDC, Solapur
5. Prabhu Rockshape Machinery Pvt. Ltd., Chincholi MIDC, Solapur
6. Om Pipe Industry, Chincholi MIDC, Solapur
7. Water Treatment Plant, Pakani, Solapur



Leena Engineering Works

Faculty Achievements:

Workshops/ Training Attended

1. Mr. Mohite S. K. attended one day seminar on recent advances in Non Destructive Testing.
2. Mr. Mulla J. G. attended one day seminar on recent advances in Non Destructive Testing.
3. Mr. Jadhav C. P. attended Industrial training program on Introduction to design and drafting through PRO-E/CATIA held at Nashik.
4. Ambigar V. G. attended 5th Techno Societal Theme Meeting on Advance Technologies in Service of Rural India at SVERI's College of engineering, Pandharpur.
5. Patil N. P. attended 5th Techno Societal Theme Meeting on Advance Technologies in Service of Rural India at SVERI's College of engineering, Pandharpur.
6. Rathod S. B. attended Service Training on Faculty Development for Polytechnic Members.
7. Mr. Narote B.E. attended Short Term Training Program on Emerging Trends in Refrigeration Systems Design and Development.

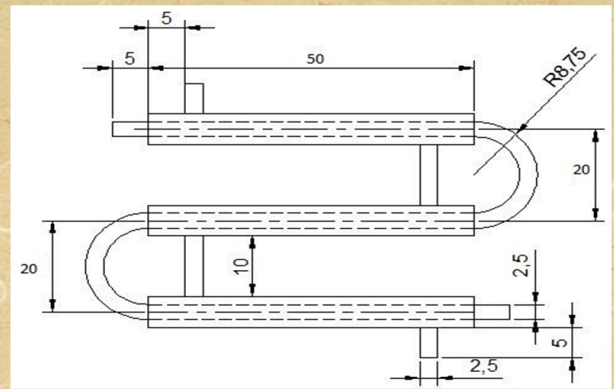
Other Achievements

Our faculties are always motivated to achieve the landmarks in order to do their up gradation along with their academic achievements.

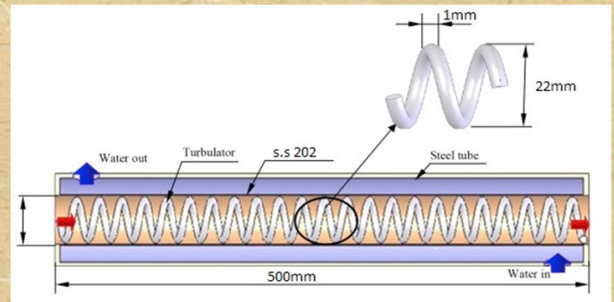
1. Mr. G. M. Kulkarni worked as a "NBA Coordinator" for Institutes NBA accreditation Process.
2. Mr. Motgi R. S., Mr. Ambigar V. G., Mr. Pinjar J. P. completed their post graduation in ME mechanical Design engineering.
3. Mr. jadhav C. P. got best library user award.
4. Mr. G. M. Kulkarni awarded as "Best Coordinator" for SAP training program.
5. Mr. Rathod S.B. worked as a "Judge" for National Level Technical Paper Presentation program "Annum 2K18"
6. Mr. Mulla J.G. worked as Event Coordinator for State Level Technical Event, Accretion2K18.
7. Mr. K.N. Sutar has been awarded as "Best Employee" of the Institute in "Bharari" Prize Distribution Program.
8. Mr. Motgi R.S. and Mr. Dhalait J.G. worked as Co-ordinator for National Level Technical Paper Presentation Program "Annum 2K18".

PERFORMANCE EVALUATION OF TUBE IN TUBE HEAT EXCHANGER BY INSERTING TURBULATOR

AUTOCAD
Drawing of Heat
Exchanger



Turbulator
Design



Heat exchangers are devices used to transfer heat energy from one fluid to another. Now-a-days conventional Heat exchangers are the essential engineering systems with wide variety of applications

Now-a-days conventional Heat exchangers are the essential engineering systems with wide variety of applications including many power sectors, nuclear reactors, refrigeration and air-conditioning systems, waste heat recovery systems, chemical and food industries. But these conventional heat exchangers are very larger in size. These heat exchangers have very low heat transfer rate. Due to continuous flow fluid in the tubes of heat exchangers scales are formed so that dead zone is produced. This scale acts as insulating material which reduces overall efficiency of heat exchanger. To reduce it turbulent flow is better than that of laminar flow. To create this turbulent flow turbulators are used. Turbulator may be spring type, taped type or baffle type. This report deals with changing laminar flow of liquid into turbulent flow results in increase in heat transfer rate. Due to turbulent flow scale formation is also reduced.

Heat exchangers are devices used to transfer heat energy from one fluid to another. Typical heat exchangers experienced by us in our daily lives include condensers and evaporators used in air conditioning units and refrigerators. A heat exchanger is a device that is used to transfer thermal energy (enthalpy) between two or more fluids, between a solid surface and a fluid, or between solid particulates and a fluid, at different temperature and in thermal contact.

Details of Tubes -

Dimensional parameter	Heat exchanger
di	25.2 mm
do	27.2 mm
Di	50.4 mm
Do	52.4 mm
Curvature radius	87.5 mm
Overall length of outer pipe	1500 mm
Overall length of inner pipe, mm	2600 mm
Thickness of wire	2 mm

Hot Water		Cold Water	
Inlet °C	Outlet °C	Inlet °C	Outlet °C
62	54	27	32
62	51	27	34
62	51	27	34
62	50	27	35
62	53	27	35

Readings without Turbulator

Hot Water		Cold Water	
Inlet °C	Outlet °C	Inlet °C	Outlet °C
62	45	27	37
62	44	27	38
62	47	27	37
62	46	27	36
62	47	27	40

Readings with Turbulator

The use of turbulators used in tube in tube heat exchangers results in increase in heat transfer rate and LMTD.

Kairamkonda D. R. Kashette V. R.
Khasnis O. S. Kulkarni S. U.

Mr. Mohite S. K.

EXPERIMENTAL ANALYSIS OF THERMAL ENERGY BY USING PHASE CHANGE MATERIAL

The project work has been undertaken to study the feasibility of storing thermal energy using Phase Change Materials (PCMs) using Copper tubes and using this energy to heat water and store it for domestic purposes. This ensures that hot water is available throughout the day.

Now a day, due to increase in energy consumption, a great deal of fossil fuels is being used. This latter is a consequence of the present environmental problems, such as global warming, acid rain, etc. In order to decrease these problems, the use of renewable energy sources is being promoted.

Latent heat storage materials or Phase Change Materials (PCMs) can store relatively large amounts of energy in small volumes, and thus have some of the lowest storage material costs. Most PCMs operate between solid-liquid transitions, and is therefore most suitable as an indirect storage concept. The PCM undergoes a phase change by absorbing latent heat, excess heat being stored as sensible heat.

The Experimental setup will then help to store heat energy in maximum amount inside the tank. This isothermal heat energy is known as latent heat and will give it to the water even when it is at normal atmospheric temperature and the outlet water will thus get heated. This is needed so as to give hot water supply even when there is No electricity available.

Time (min)	Temp (°c)
0	70
15	64
30	61
45	57
60	53
75	49
90	45
105	40
120	35

←
Sensible Heat Thermal Energy Storage tank readings

Latent Heat Thermal Energy Storage tank readings →

Time (min)	Temp (°c)
0	70
15	68
30	65
45	63
60	62
75	61.5
90	60.5
105	58
120	58

Experimental setup consists of a Water Heater of 2000 watt, two Latent Heat Thermal Energy Storage Tanks of 280x290 mm, one having Phase changing material Paraffin and copper tubes and the other without PCM and copper tubes. The stainless steel TES tanks has capacity of about 20 liters, out of which 20 liters is stored with water and this arrangement is capable of supplying water for a family of four. With an internal diameter of 280mm and a height of 290mm, it houses the copper pipes and PCM and allows for heat transfer between the copper pipes which has inside inserted PCM and water.

In this way PCM which is in the copper tube of the tank will not be in any means in contact with the water. To give its maximum possible heat to the water as its density goes on decreasing, hence the decision of placing the PCM in the copper tube is taken.

Thermometer is provided at the head of the storage tank. 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. The temperatures of the water are to be continuously measured by Thermometer.

Component Experimental Setup

	Outer Diameter	Inner Diameter	Length	Thickness
Tank	290	280	290	3
Copper tube	17	16	28	1
M S plate	270	-	-	3

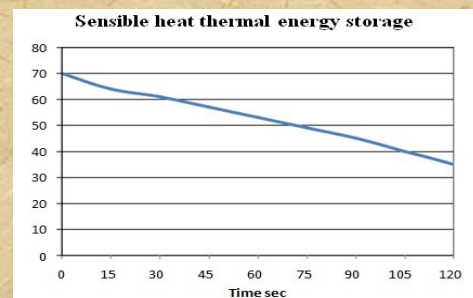


Fig 1: Time vs Temp (SHTES)

From this we understood that water temperature continuously decreases with respect to time.

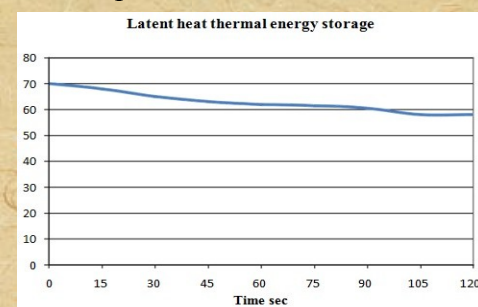


Fig 2: Time vs Temp (LHTES)

From this we understand that by using LHTES the temperature will remain constant for longer time. Therefore temperature of water doesn't suddenly drop.

From theoretical calculations we found that tank can store water upto 6.64 hours at 40°C and from actual setup it is found that we can store water for upto 5 hours

Hannure S. S.

Huchche G. S.

Jadhav C. L.

Kamble A. A.

Halkhede B. S.

Ms. KAZI J.Y

AUTOMATIC (MOTORIZED) SHUTTER LIFTER



Considering the problems related to manual shutter lifting system, it is important to design a motorized system which can facilitate the opening and closing of shutter by the press of the button and thus reduce the back injuries.

Over the years roller shutters have been used for security purpose with opening and closing feature in every commercial as well as residential areas like doors for vans, garages, shops, schools, prisons and warehouses, if not maintained properly it gets rusted, and it takes a lot of effort to lift them, usually this effort is so high that it can cause back injury to the operator. Even for large size shutters it is impossible to lift them without any mechanism. Considering these problems it is important to design a motorized system which can facilitate the opening and closing of shutter by the press of the button and thus reduce the back injuries. Thus it is important to design such mechanism for safety purpose. In this project keeping in mind those problems, we have designed Gear Motor system assembly to automate the Rolling shutter operation that can provide safety to the operator.

After studying different types of shutters available in the market and accumulated of design specification for selected shutter from the manufacturer, a CAD model of Gear motor system assembly of rolling shutter is prepared in CAD software solid works.

In this project there is a 0.5 HP electric motor, chain and sprocket arrangement and one pedestal bearing. The pedestal bearing is used to give support to the input shaft of the shutter. This whole assembly is supported on a metallic frame and this frame is supported on the concrete.

Main Parts

1. Electric motor
2. Gear Box
3. Pedestal Bearing or Plummer Block
4. Chain and Sprocket Arrangement
5. Rectangular Concrete Frame
6. Switch Box

Advantages

1. Human efforts are reduced to a very great extent.
2. Quicker in operation than human beings.
3. Unskilled operators can also operate this system.
4. Its construction is simple.
5. Its cost is moderate.

Limitations

1. It operates only when the electricity is available.
2. Monthly maintenance is required.
3. It occupies some space.

Applications

1. Used for workshop or garage shutters.
2. Used in the warehouses.
3. Used in small scale industries.
4. Same system is used in automobile glass windows.

Toggi S. K.	Biradar B. K.
Jawalkote A. D.	Karpe N. C.

Mr. Patil N. P.



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COURSES OFFERED IN DIPLOMA ENGINEERING

Discipline	Intake Capacity	Duration of Course	Accreditation Status
Mechanical Engineering	120	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		

