JUNE-DEC 2015, Vol-1, Issue-1

NEWSLETTER

2015 - 2016

VISION

The Mechanical Engineering department strives to produce quality engineers to enable them pursue diverse careers with professional standards and ethical values

MISSION

- To provide relevant and quality education to meet needs of industry and society.
- To equip with requisite set of skills and knowledge to succeed and thrive as engineers and leaders.
- To provide a continuous learning environment for promoting research activities
- To provide a competitive atmosphere to encourage innovative and original thinking.

DEPARTMENT OF MECHANICAL ENGINEERING

Faculty Corner

Faculty Publications

- Professor Dr. D.HANUMANTHA RAO published a technical paper entitled “Optimization And Investigation Into The Effect Of Cutting Conditions On Surface Roughness In Turning Of Ti-6AI-4V Alloy Under Different Machining Environments” Journal for Manufacturing Science and Production Vol-15 Issue -2, pages 197-204, ISSN:2191-0375
- Professor Dr. D.HANUMANTHA RAO published a technical paper entitled “Optimization Of EDM Process Parameters And Graphite Powder Concentration On Electrical Discharge Machining Of Ti-6AI-4V Alloy Using Taguchi Method” International Journal Of Advances In Production & Mechanical Engineering (IJAPME) ISSN:2394-6202, Vol.-I , Issue 5,2015, pages 31-44
- Mr.M.V.KISHORE, Assoc. Professor, Professor Dr. D.HANUMANTHA RAO published a technical paper entitled Experimental Study on the Effect of Mechanical Stirring in Semisolid Processing of Aluminum Alloys at Thixo-Temperatures Material Science Forum Volume 830-831, pages 41-44; ISBN-13:978-3-03835-536-6 Sep 2015
- Mr. C. VENKATESHWAR REDDY Asst. professor ,presented a technical paper entitled “A Study on effect of filler (Sio2) on mechanical properties of Glass /epoxy (HT) Cure Composites” International journal of research in engineering technology (IJRET) e-ISSN 2319-1163, p-ISSN 2321-7308
- Mr. A Kalyan Charan Asst.Professor, Mrs V Poojitha Asst. professor ,presented a technical paper entitled " Finishing of Steels Through Hydraulics International Journal of Engineering Sciences & Research Technology” ISSN: 2277-9655 (I2OR), Sept’15] Publication Impact Factor: 3.7
- Mr. A Kalyan Charan Asst.Professor, Mrs V Poojitha Asst. professor ,presented a technical paper entitled “Study on Vertical Machining Center" International Journal of Engineering Research, Sciences & Technology ISSN 2319-5991 Vol. 4, No. 4, November 2015
- Mr. A Kalyan Charan Asst.Professor, Mrs V Poojitha Asst. professor ,presented a technical paper entitled “Design of HVAC For A Corporate Building Using AHU" International Journal of Engineering Research, Sciences & Technology ISSN 2319-5991 Vol. 4, No. 2, November 2015
- Mr. A Kalyan Charan Asst.Professor, Mrs V Poojitha Asst. professor ,presented a technical paper entitled “Design and Analysis of Chassis Frame of A Truck" Journal of Engineering Today Quarterly September 2015 Volume 17 ISSN : 0974-8377

FDPs / STTPs / Workshops attended by the Faculty

- Mr. M.V. Kishore Asst.Professor has attended "Three day workshop on Computational Methods in Fluid Dynamics (CMFD-2015)" held at MVSREC, Hyderabad conducted from 16.12.2015-18.12.2015
- Dr. J Hussain Assoc.Professor has attended "Three day workshop on Computational Methods in Fluid Dynamics (CMFD-2015)" held at MVSREC, Hyderabad conducted from 16.12.2015-18.12.2015
- Mr. M.Krishna Asst.Professor
  - ✓ "Three day workshop on Computational Methods in Fluid Dynamics (CMFD-2015)" held at MVSREC, Hyderabad conducted from 16.12.2015-18.12.2015

- ✓ Two day FDP On Production Tech & Metrology JNTU, Hyderabad conducted from 4.12.2015-5.12.2015

- Mr. C Venkateshwara Reddy Asst.Professor
  - ✓ "Three day workshop on Computational Methods in Fluid Dynamics (CMFD-2015)" held at MVSREC, Hyderabad conducted from 16.12.2015-18.12.2015
- Mr. V Harinath Asst.Professor
  - ✓ "Three day workshop on Computational Methods in Fluid Dynamics (CMFD-2015)" held at MVSREC, Hyderabad conducted from 16.12.2015-18.12.2015
  - ✓ Entrepreneurship Development Program at MECS, Hyderabad conducted on 28.8.2015
- Mr. T.Somashekar Asst.Professor
  - ✓ "Three day workshop on Computational Methods in Fluid Dynamics (CMFD-2015)" held at MVSREC, Hyderabad conducted from 16.12.2015-18.12.2015
  - ✓ Engineering Graphics using AUTOCAD at OUCET, Hyderabad conducted on 9.10.2015
- Mr. P Naveen Kishore Asst.Professor
  - ✓ "Three day workshop on Computational Methods in Fluid Dynamics (CMFD-2015)" held at MVSREC, Hyderabad conducted from 16.12.2015-18.12.2015
- Mrs.V Poojitha Asst.Professor has attended " Two day FDP On Production Tech & Metrology " at JNTU, Hyderabad conducted from 04.12.2015- 05.12.2015
- Mr. A Kalayan Charan Asst.Professor has attended -Engineering Graphics using AUTOCAD at OUCET, Hyderabad conducted on 9.10.2015
- Mrs.B.Laxmi Asst.Professor has attended-Two day FDP On Production Tech & Metrology JNTU, Hyderabad conducted from 4.12.2015-5.12.2015

Events Organized

- ✓ Deptartment of Mechanical Engineering has organized a seminar on “Entrepreneurship development “ by Srinivas Rao, NSIC, Hyderabad, on 15th September 2015.
- ✓ Deptartment of Mechanical Engineering has organized a seminar on “Entrepreneurship development “ by NSIC, Hyderabad, on 28th August 2015.

Events Organized in association with Professional Society’s

- ✓ Department of Mechanical Engineering has organized a Guest lecturer in "Advanced Composite Materials" in association with SAE on 15TH OCT 2015.
- ✓ SAE Tier 1 technical events held at Matrusri Engineering College on October 2015

Faculty Achievements

- ❖ Ms V Poojitha has registered PhD in JNTU Anantapur in Production on June 2016

Students' corner:

Participationof Students in with in the state and outside the state events

- Y.Prashanth, Nikhil M, J Prashanth, Sai Ram, Surya Chaitanya, Manaswini, of 1ME has participated in Micro MouseWorkshop Conducted By MVSR Hyderabad from 25-26th Sept 2015
- Prathima of 2ME has participated in Udbhav 2015 National level Technofest, Hydrebad from 21-22nd Sept 2015
- K Srinath, Abhinay D of 3ME has participated in QUADCPOTER workshop by ELAN,IIT Hyderabad from 22nd-23rd August 2015
- Abhiram D, Mahesh M, Nagavenkat, Partha, of 3ME has participated in Efficyclic, Lovely Professional University, Punjab from 15TH-18TH OCT 2015
- B Rahul, Sai Nitin, G Krishna teja, Ch Akhil, Adarsh. H of 2ME has participated in SAE tier 2(Aero-Modeling) at VIT, Tamilnadu from 18TH-19TH Sept 2015
- V Shivarama, Thrilochan of 2ME has participated in SAE tier 2(Reverse Engineering) at VIT, Tamilnadu from 18TH-19TH Sept 2015
- V Shivarama, Krishna Teja, Thrilochan of 2ME has participated in SAE tier 2(Sheet Metal) at VIT, Tamilnadu from 18TH-19TH Sept 2015
- Thrilochan of 2ME has participated in SAE tier 2(Technical paper presentation) at VIT, Tamilnadu from 18TH-19TH Sept 2015
- John wesley, Mahesh M, Nagavenkat, Partha of 2ME,3ME has participated in Vayuputra: Efficyclic,held at INDORE from 11th -12th July 2015

Prizes/ Awards received by students

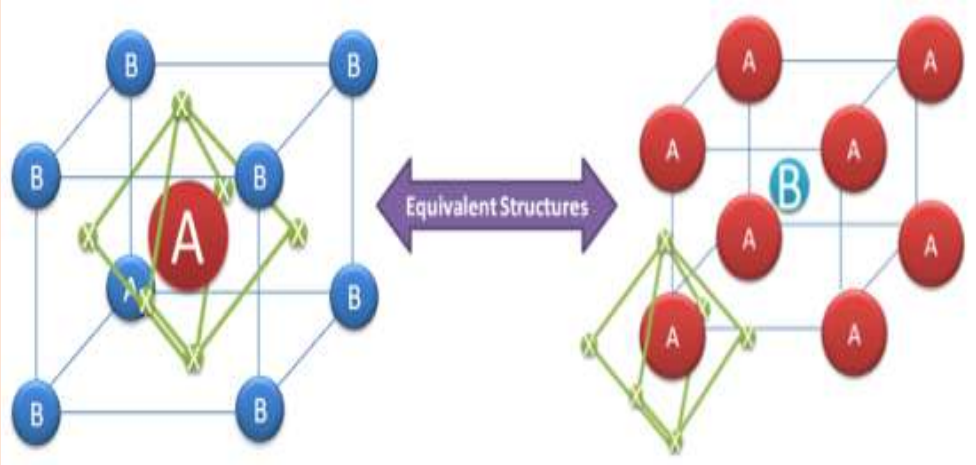
- Y Prashanth, Nikhil, K Sruya chaitanya, Sai Ram of 1ME has awarded 3rd prize in MICROMOUSE 2k16 held at MVSR Engineering College Hyderabad from 25th-26th Sept 15
- Akhil Chintala, H.Adarsh, Sai Nithin, B Rahul, Krishna Teja of 2ME has awarded 3rd prize in SAE Tier 2 events(Design and Fabrication)18th-19th Sept 2015 held at VIT,Vellore, Tamilnadu from 18th-19th Sept 2015

Student Articles

UPCOMING SOLAR CELL

Perovskite -

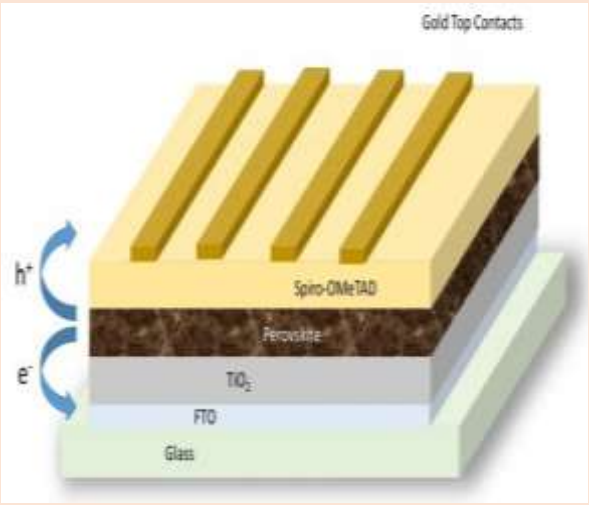
A perovskite is a material that has the same crystal structure as the mineral calcium titanium oxide (also known as Perovskite). True perovskite (the mineral) is composed of calcium, titanium and oxygen in the form CaTiO3. A perovskite structure has the generic crystal structure ABX3 , molecular cation (positively-charged) of type A in the center of a cube. The corners of the cube are then occupied by atoms B (also positively-charged cations) and the faces of the cube are occupied by a smaller atom X with negative charge (anion).



Perovskite's potential applications are varied and include uses in sensors and catalyst electrodes, certain types of fuel cells, solar cells, lasers, memory devices and spintronic applications.

Perovskite Solar Cells -A perovskite solar cell is a type of solar cell which includes a perovskite structured compound, most commonly a hybrid organic-inorganic lead or tin halide-based material, as the light-harvesting active layer. Perovskite materials such as methylammonium lead halides are cheap to produce and relatively simple to manufacture. Perovskites possess intrinsic properties like broad absorption spectrum, fast charge separation, long transport distance of electrons and holes, long carrier separation lifetime, and more, that make them very promising materials for solid-state solar cells. From the below figure , Titanium Dioxide(n-type semiconductor conducts electrons)and Foreign doped Tin Oxide (FTO) forms anode and spiroOMeTAD (p-type semiconductor conducts holes) and gold contacts form cathode in between Perovskite is sandwiched which absorbs sunlight to generate electrons and holes and later working similar to conventional solar cells to generate electricity .

Perovskite solar cell schematic structure –



Perovskite has a theoretical efficiency limit of 33% vs 29% for silicon cells. Conventional silicon solar cells require an expensive, multi-step manufacturing process that utilizes a lot of energy. Perovskite solar cells, on the other hand, can be manufactured using a simple solution deposition technique for a fraction of the cost and energy. Moreover, they offer flexibility, semi-transparency, tailored form factors, light-weight and more. While major challenges indeed exist, Perovskite solar cells are still touted as the PV technology of the future, and much development work and research are put into making this a reality. Scientists and companies are working towards increasing efficiency and stability, prolonging lifetime and replacing toxic materials with safer ones. Researchers are also looking at the benefits of combining perovskites with other technologies, like silicon for example, to create what is referred to as "tandem cells".

Perovskite solar cells are, without a doubt, the rising star in the field of Photovoltaics.

V Karthik BE 2/4 Mech.Engg

Regenerative Energy Braking System in Trains

Introduction

There has been a continuous effort in reducing the power consumption in traction system by using various Methods. In a conventional braking system, the energy is dissipated as heat in the braking resistors. In a regenerative braking system the kinetic energy is converted to electric energy by the same traction motor which acts as a generator while braking. A part of this regenerated energy is used by other trains which are in the power mode . This reduces the consumption of net grid electrical energy required for powering trains there by conserving electrical energy and also reducing the energy bills. The advantage of using regenerative braking is that unlike the normal braking system there is no heat generated and this will in turn reduce the heat produced in Underground section of the Metro Rail route. The best ways to use the regenerated power is to feed it back to auxiliary power requirement and also to powering trains. This paper deals with the various technologies that can be used for effective utilization of regenerative energy and also the advantageous it will give to the system

Regenerative Energy

Till recently the regenerative power generated during the braking was utilized by the powering trains in the same route. This is known as receptivity and is affected by a number of variables, including location, traffic density and line voltage if there are no powering trains the generated power is dissipated as heat. So if the service frequency is less then, the utilization of regenerated power can drop to even 5%. In general the regenerated energy in a metro is 45- 47% of motoring power and about 20% of this is consumed in traction system the other 20- 27% increases the DC line bus voltage. Studies have shown that regeneration technologies could potentially reduce the energy consumption of urban rail between 10% and 45%, depending on the track gradients and the service characteristic

Methods to recover regenerated energy

Two systems have developed over the years to utilize the regenerated energy from the Rolling Stock

- Energy conversion system by converting the DC power to AC power through inverters
- Energy Storage system

Advantages:

1. Can be installed on new and old substations
2. Low maintenance costs and easy control
3. Improves quality of power
4. Can be used by all vehicles on the line
5. Energy efficient due to fewer transformation losses than in storage applications
6. Potential downsizing of the line side braking resistors
7. Lower safety constraints in comparison with onboard systems
8. Implementation, maintenance and repair do not affect operations

Disadvantageous

Fine tuned analysis for choosing the right locations

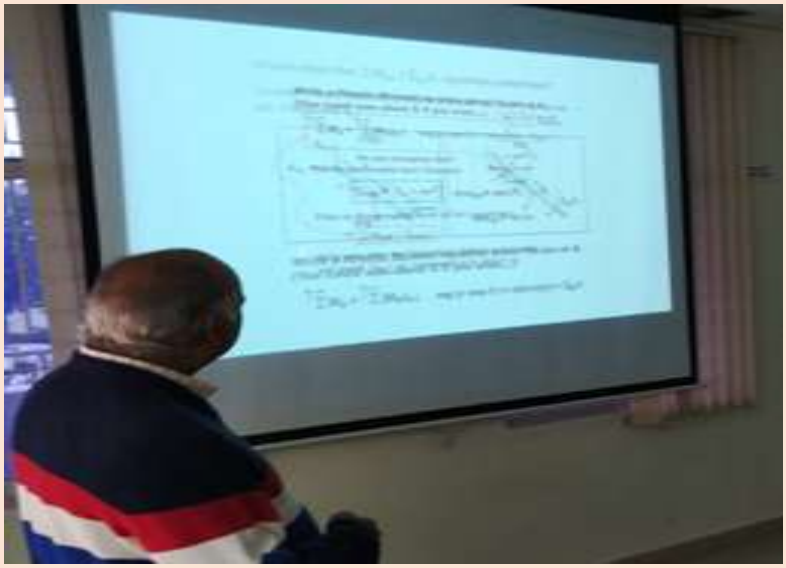
1. Place availability in the substations or along the line
2. No reduction in number of traction substation

K Srinath
E 2/4 Mech.Engg

Gallery

“Entrepreneurship Development “By Srinivas Rao, NSIC, Hyderabad

A Guest Lecture was conducted by the Department of Mechanical Engineering in Association with SAE by Professor Mr. V. Nageswara Rao, Professor, Department of Mechanical Engineering, Osmania University on the topic “Advanced Composite Materials”.



Students of BE 3rd & 4th Year have Designed and fabricated Efficycle vehicle and successfully participated (both static and dynamic rounds) in Efficyle National level Event 2015 held at LPU Jalandher conducted by SAE INDIA in October 2015