

Activities done under ASME-VNRVJIET & Department Of Mechanical Engineering.

1. ASME HPVC 2018

“PEGASUS” is the vehicle that the “Team Cruzers” of VNR Vignana Jyothi Institute of Engineering and Technology came up with, for entering the 2018 ASME HPVC Asia Pacific. PEGASUS was intended and accordingly designed to be compact, agile and innovative while maintaining reliable safety conditions. PEGASUS is fabricated with utmost priority to the riders comfort. Design, Comprehensive Analysis and Physical Testing of PEGASUS ensure that the vehicle meets the American Society of Mechanical Engineering. Human Powered Vehicle Challenge safety and design requirements. Various factors were taken into the consideration for material selection in order to the vehicle to be agile, light in weight. This comes a cost efficient substitute for carbon fiber. The structural frame of PEGASUS was made of CHROMOLY 4130, which is tough, hard and strong. Selection of components and corresponding design of frame was done with an intention of ready availability and replacement. Safety was given the utmost priority while designing PEGASUS. The vehicle comes with braking lights, disc brakes for effective braking, 3 point harness was incorporated which is the epitome of safety for the rider. Compact and robust rollover protection system protects the rider from top and sides.

2. ESVC- ELECTRIC SOLAR VEHICLE CHALLENGE 2018

“Energy -Demand” is one of the major threads in our country. Finding solutions, to meet the energy demand is the greatest challenge for Social Scientist, Engineers, Entrepreneurs and Industrialists of our Country. Now-a-days the Concept and Technology employing this renewable energy becomes very popular for all kinds of development activities It's a proactive approach to shift our source.



The chief objective is to create a strong and well balanced skeleton for the vehicle to provide proper support structure and a rigid means for all the other mountings on the vehicle. The chassis has been designed using highly durable and considerably light, AISI 4130 steel suitable to absorb all the real-time impacts and roll over loads.

The Solar Vehicle was designed and fabricated by students of Mechanical Engineering under the guidance of the faculty. The total expenses were provided by the college for the fabrication and competition. The solar vehicle was awarded the best idea in the open house of the National level Technical Symposium- CONVERGENCE- '17 at VNRVJIET. The competition was conducted by ISIE at Bhimavaram with teams from all over the country.

Our team SOLARIANS was awarded the best vehicle dynamic design at the competition, along with appreciation for the driver.

3. One Day Workshop on Advanced Engineering Materials and Applications (31/01/2017).

Eminent Scientists from various divisions of **Defence Research and Development Organization (DRDO)** delivered the lectures for the workshop.

The workshop was Organized by the Department of Mechanical Engineering, with the funding of TEQIP-II under ASME-VNRVJIET.

The Eminent resource persons of the workshop from the DRDO included:

- Dr. K. Veerabrahmam, Scientist, ASL, DRDO.
- Shri. M. Murali Mohan, Scientist, RCI, DRDO.
- Shri. A. O. Siddiqui, Scientist, ASL, DRDO.
- Dr. Sanjay Khalane, Scientist, ASL, DRDO.

Research organizations in the country are strenuously working on development and testing of functional materials with enhanced mechanical, electronic and thermal properties for wide range of applications. This workshop was “Advanced Engineering Materials & Applications” was organized to address the development of such advanced materials and their applications in numerous areas. The workshop essentially discusses the advances in composite materials, nanomaterials, smart materials and their preparation and characterization.



This workshop provided an excellent platform to learn the concepts and advances in advanced engineering materials from eminent experts working in the field and to interact with them directly. With over 300 participants including students, research scholars, professionals from the industries and faculty from various colleges and universities attended this workshop.

4. HPVC -Human Powered Vehicle Challenge 2017 (03/03/2017 – 05/03/2017).

“ALPHA” is the vehicle that the “Infinity Racing” of VNR Vignana Jyothi Institute of Engineering and Technology came up with, for entering the 2017 ASME HPVC Asia Pacific. ALPHA was intended and accordingly designed to be compact, agile and innovative while maintaining reliable safety conditions. ALPHA is fabricated with utmost priority to the riders comfort. Design, Comprehensive Analysis and Physical Testing of ALPHA ensure that the vehicle meets the American Society of Mechanical Engineering. Human Powered Vehicle Challenge safety and design requirements. Various factors were taken into the consideration for material selection in order to the vehicle to be agile, light in weight. The fairing material used is polycarbonate which is a strong, stiff, corrosion resistant and durable in all weather conditions. This comes a cost efficient substitute for carbon fiber. The structural frame of ALPHA was made of chromoly 4130, which is tough, hard and strong. Selection of components and corresponding design of frame was done with an intention of ready availability and replacement. Safety was given the utmost priority while designing ALPHA. The vehicle comes with braking lights, disc brakes for effective braking, 5 point harness was incorporated which is the epitome of safety for the rider. Compact and robust rollover protection system protects the rider from top and sides.



The vehicle was designed and fabricated by II & III B.Tech mechanical engineering students with all the industrial practices and were able to make this a LOW cost project by utilizing several innovative manufacturing processes. This vehicle represented the college at an International Platform The *ASME E-FEST ASIA PACIFIC 2017* where the team was awarded 4th position in Innovation and 8th position for the design of the vehicle.

5. Three day National Workshop on "Additive Manufacturing: Shaping the Future - Trends, Opportunities, Challenges & Applications" (03/05/2016).

The Department of Mechanical Engineering and the ASME VNRVJIET organized a National Workshop on Additive Manufacturing: Shaping the Future - Trends, Opportunities, Challenges & Applications" (3D Printing) on 3rd -5th August 2015 at VNRVJIET, Hyderabad. Keeping in view the latest trends in the area of manufacturing, the Workshop imparted a fundamental understanding on a range of topics within the domain of additive manufacturing, exploring the current state of research and development.

The Workshop intensively covered additive manufacturing (AM) which has gained much attention over the last decade and has now been identified by all major Medical, Defense, Consumer Products and Electronics, Aerospace and Automobile Agencies as a key enabling technology. A talk on “Multi-station multi-axis metallic 3D printing” on “Reverse engineering and 3D printing of medical implants along with experts from the Industry.” Design Tech Systems gave a 3D Printing demonstration and injection moulding and the participants were also given hand-on



experience on 3D Printing during the workshop. Possibilities of joint efforts in Teaching and Research were also discussed during the workshop. A few critical issues and new research direction on AM technologies were identified during the workshop and a tentative road map also established among different premier institutes in India and abroad.

6. A Guest Lecture on “Additive Manufacturing” (25/10/2016).

Additive Manufacturing (also known as 3D-printing or ALM additive layer manufacturing) is a production technology which involves highly complex processes, dependent upon many process parameters. Compared to conventional manufacturing processes, AM parts may result in different microstructures, defect species, residual stresses, inspectability, post-processing requirements, ultimately structural performance and durability. The requirements for design, structural assessment, quality assurance, and on-going manufacturing quality control need review and careful consideration to ensure that qualification processes for AM parts are safe and robust enough to guarantee repeatable good material quality.

The workshop primarily aimed at providing an update on aviation industries status on AM technology and as well the current technical and functional support of 3D-printing machine vendors to the aviation industry.