



AVIT
AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY



VINAYAKA MISSION'S
RESEARCH FOUNDATION
(Deemed to be University under section 3 of the UGC Act 1956)



Accredited by NAAC



Approved by AICTE

DEPARTMENT OF MECHANICAL ENGINEERING

Association with

ENERGY AND FUEL USERS' ASSOCIATION (ENFUSE) Organizes

Employability Enhancement Skill Development Course on "NON DESTRUCTIVE TESTING, BIO FUELS AND SOLAR ENERGY" (From 20.6.2022 TO 24.6.2022-30 Hours)

The Department of Mechanical Engineering in association with Energy and Fuel users' Association & Institution's Innovation Council (IIC)organised a five day's **Employability Enhancement Skill Development Course** on " **NON DESTRUCTIVE TESTING, BIO FUELS AND SOLAR ENERGY** " **From20.6.2022 TO 24.6.2022 -30 Hours**). The program was inaugurated by **Dr. L. Prabhu, HOD / Mech.** Totally 10 sessions were conducted for five days with various resource persons. Around 128 Mechanical and Automobile Engineering students have participated.

The students had an interaction with the experts and the following topics were discussed.

SESSION 1: NON DESTRUCTIVE TESTING (9 AM to 12PM)

The first session on Non destructive resting was conducted by Dr.Saranraj Assoc.Prof/Mech.Engg, CEG campus Anna University He has shared his magnificent proficiency on

- Non-destructive testing (NDT) analysis and technique used in industry
- Non-destructive testing methods like Eddy current, Ultrasonic testing, Radiography testing, Magnetic particles etc
- Non-destructive testing usages for industries, Aerospace, Automotives, Marine and oil and gas industries
- Applications –Surface condition, Alignment of surfaces, Shape of the component and internal side defects



SESSION 2: BOSCH LAB (1 PM to 4 PM)

The Second session on Bosch lab was conducted by Dr.M.Saravana kumar,AP/Mech, AVIT.

He has shared his outstanding presentation on

- The present engineering industries are rapidly moving to adopt Industry 4.0 approach.
- The Automation in present engineering practices
- Vehicle air-conditioning systems
- Engine diagnostics
- Auto electrical test bench
- Industrial Sensors
- Industrial Mechatronics and Robotics



SESSION 3: WIND ENERGY (9 AM to 12PM)

The third session on Wind energy was conducted by Mr.R.Mahesh AP/MECH/AVIT.

He has shared his magnificent speech on

- Production of Wind Energy - Wind turbines use blades to collect the wind's kinetic energy. The blades are connected to a drive shaft that turns an electric generator, which produces (generates) electricity.
- Design parameters - The turbine performance has been varying with the design parameters such as, pitch angle, number of blades, airfoil type, turbine radius and its chord length.
- Availability - If the turbine is “available” and grid-connected, and the wind and other conditions are within the turbine specification, then power will be generated.
- Types of axis in wind turbines - Horizontal-Axis Turbines and Vertical-Axis Turbines
- Employment opportunities in Wind Energy system - The partial list of the **types** of engineers employed in the **wind** power industry: aerospace engineers, civil engineers, computer engineers, electrical engineers, environmental engineers, health and safety engineers, industrial engineers, materials engineers, and mechanical engineers.



M54H+HM8, Pattipulam, Tamil Nadu 603104, India

Latitude
12.656646666666665°

Longitude
80.179318333333334°

Local 10:48:20 AM
GMT 05:18:20 AM

Altitude -60.1 meters
Tuesday, 21-06-2022

SESSION 4: VCR ENGINE (1 PM to 4 PM)

The Fourth session on Variable compression ratio engine testing was conducted by Mr.B.Samuvel Micheal, AP/MECH/AVIT

He has shared his fine presentation on

- The VCR engine operating on liquid fuels and dual-fuel mode,
- Different compression ratios
- Combinations with different blends
- Various Nozzles usage in VCR engine
- Multi-fuel capability, Increasing of fuel economy and reduction of emissions
- Gas Analysers



CIVIL LAB, AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY, Tamil Nadu
603104, India

Latitude
12.658263333333332°

Longitude
80.179769999999999°

Local 12:11:33 PM
GMT 06:41:33 AM

Altitude 7.4 meters
Tuesday, 21-06-2022

SESSION 5: SOLAR ENERGY (9 AM to 12PM)

The Fifth session on Solar Energy was conducted by Mr.K.Gokulakrishnan MD- NESTLIVES Pvt ltd

- Energy production from solar – How Solar radiation is converted directly into electricity by solar cells.
- Methods of energy production from Solar - The two main methods: photovoltaic cells and solar thermal collectors.
- CSP System - How plants use mirrors to concentrate the sun's energy to drive traditional steam turbines or engines that create electricity.
- Solar Collectors – How the Flat plate collectors and Concentrator collectors works
- Energy storage systems - The capture of energy produced at one time for use at a later time to reduce imbalances between energy demand and energy production.
- Solar power plant - The type of facility that converts sunlight either directly, like photovoltaics, or indirectly, like solar thermal plants, into electricity



SESSION 6: BIOMASS (1 PM to 4 PM)

The sixth session on Biomass was conducted by Mr.A.Elanthiraiyan, AP/Mech AVIT.

He has shared his outstanding presentation on

- Biomass - Plant or animal material used as fuel to produce electricity or heat.
- Biomass collection – Biomass is collected from waste of Grasses, agricultural crops (such as corn and sugar cane), landfill waste, and manure.
- Energy production from waste- There are number of ways of generating energy from waste. These include combustion, gasification, Pyrolysis, anaerobic digestion and landfill gas recovery.
- Opportunities in waste technology- The prospects of Waste Management in our country have reached its highest level today and the field is considered to be a great career option.,
- Biogas preparation from Animal waste, Food waste .wood waste etc – The method of using anaerobic digestion of organic waste (food waste and animal manure) to produce biogas as an alternative process to reduce food waste and generate energy.

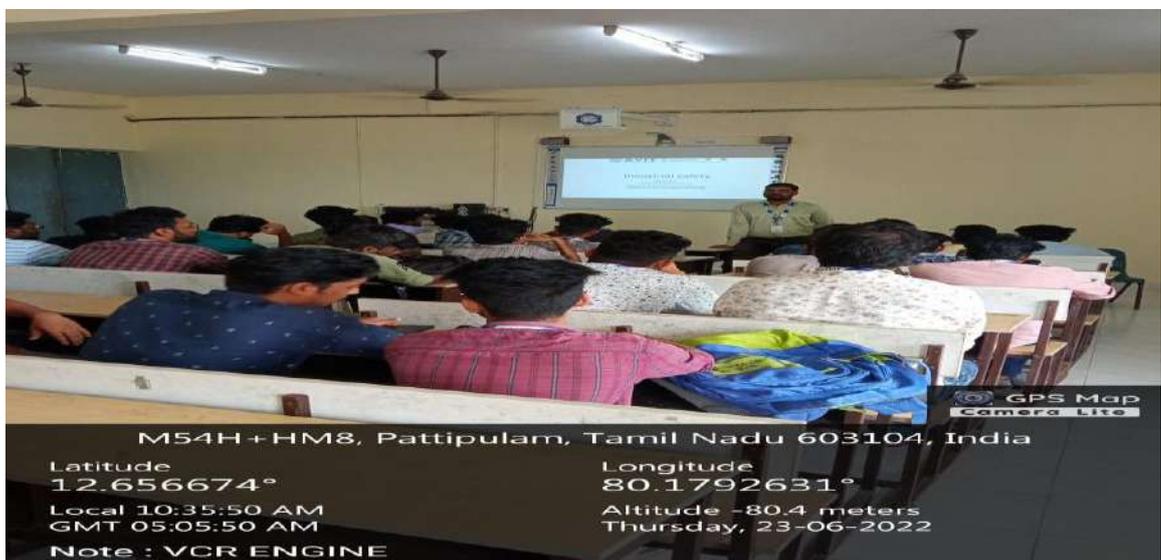


SESSION 7: INDUSTRIAL SAFETY(9 AM to 12PM)

The seventh session on Industrial safety was conducted by Dr.S.Prakash AP/Mech AVIT.

He has shared his spectacular articulation on

- Safety management practices that apply to the industrial sector
- To protect industrial workers, machinery, facilities, structures, and the environment.
- General safety, Material safety, Fire safety, Electrical safety, Building and Electrical safety and Environmental safety
- The Importance of Industrial Safety
- Industrial safety planning-Plant layout, Fire prevention systems, Health and hygiene, Safety training, Alarms and warning systems



SESSION 8: ENERGY AUDITING (1 PM to 4 PM)

The eighth session on Energy Auditing was conducted by Mr.K.Vijayakumar AP/Mech, AVIT. He has shared his outstanding speech on

- Energy audit - An inspection survey and an analysis of energy flows for energy conservation in a building.
- Purpose of Energy Auditing- To determine whether your home wastes energy, and to pinpoint where energy is being lost so you can evaluate what measures you can take to make your home more energy efficient.
- Methods and Instruments of Energy Auditing- Like Flue Gas Analysers, Temperature Indicators , Infrared Thermometers , Thermal Insulation scanner ,Steam Trap Monitor Energy consumables
- Utilization of Energy in Industries - Energy is used in the industrial sector for a wide range of purposes, such as process and assembly, steam and cogeneration, process heating and cooling, and lighting, heating, and air conditioning for buildings

Employment opportunities in Energy Auditing – Job such as assisting in identifying energy efficiency projects, their estimated cost, estimated energy savings, and estimated return on investment for clients.



SESSION 9: ALTERNATIVE FUELS (9 AM to 12PM)

The ninth session on Alternative fuels was conducted by Dr.M.Prabhakar Prof/Mech AVIT. He has shared his spectacular articulation on

- Biodiesel production- the process of producing the biofuel, biodiesel, through the chemical reactions of transesterification and Esterification.
- Ethanol preparation- The steps in the ethanol production process include milling, Liquefaction, Saccharification , Fermentation Distillation and Dehydration

- Methodology for biodiesel - Various biodiesel production methods have been introduced, such as direct use and blending, microemulsion, transesterification, and pyrolysis.
- Energy production from Waste- Waste-to-energy plants burn municipal solid waste (MSW), often called garbage or trash, to produce steam in a boiler that is used to generate electricity.
- Usage of Ethanol in I.C.Engines- Pros and cons of ethanol usage.



SESSION 10: RENEWABLE ENERGY (1 PM to 4 PM)

The tenth session on Renewable energy was conducted by Mr.B.Selvababu AP/Mech, AVIT
He has shared his awesome speech on

- Non-Conventional Energy sources - sources that are continuously replenished by natural processes like solar energy, wind energy, bio-energy - bio-fuels grown sustainably), hydropower etc.,
- Tidal Energy - Power produced by the surge of ocean waters during the rise and fall of tides.
- Geothermal Energy- Heat is continuously produced inside the earth which can be used for electricity production.
- Hydel Energy - The use of falling or fast-running water to produce electricity or to power machine.
- Open and closed systems of OTEC – The process that can produce electricity by using the temperature difference between deep cold ocean water and warm tropical surface waters.



End of the session:

Online test was conducted at the end of tenth session.

Outcome:

The programme was conducted on the employability enhancement for Mechanical and Automobile students. The students gained knowledge in Production of energy, Utilisation of energy, Estimation and Cost return investment on Energy Auditing, Bio-fuels, Wind Energy, Solar systems, and various renewable resources. They received information on various job opportunities in Wind power industry, Aerospace areas, Environmental, Health areas, solar power plants and Energy production Industries. They were provided adequate details on self employment in the same field.

The Employability Enhancement Skill Development Course was conducted by Mr.R.Mahesh,AP/Mech,AVIT.