Department: ME | Date: Aug. 23-27, 2021

ONLINE FACULTY DEVELOPMENT PROGRAMME

on

EMERGING TRENDS IN AUTOMOTIVE AND ENERGY SYSTEMS

(August 23-27, 2021)

A Five day online Faculty Development Programme (FDP) on "**Emerging Trends in Automotive and Energy Systems**" is organized by Department of Department of Mechanical Engineering, SreeVidyanikethan Engineering College (Autonomous), Tirupati, Andhra Pradesh. India during August 23-27, 2021.

The online FDP is organized through Zoom plat farm. A total of 43 participants from different states of the country participated in this FDP. The participants are the faculty and research scholars of various engineering colleges and government institutions across the country. The FDP has received an overwhelming response from the participants. A total of 5 sessions are conducted.

The main objective of the FDP is to provide awareness for faculty on automotive and energy systems.

The outcomes of FDP are as follows:

- Acquire Knowledge on advances in automobile sector.
- Acquire knowledge on applications of advance control techniques in automobile.
- Gain knowledge on energy systems and its applications.
- Gain knowledge on thermal energy storage systems.
- Gain research exposure on emerging trends in Automobile and energy systems.

The inaugural function of the online FDP is scheduled on August 23, 2021 at 6:30 PM. In the inaugural function, the Convener **Dr.R.L.Krupakaran**, Associate Professor, Department of Mechanical Engineering welcomed the chief guest and resource person **Dr.V.Ganesan** Retd Professor IITM,chennai and all the participants to the online FDP.

Our beloved principal **Dr.B.M. Satish** address the participants on importance of the five day FDP on "**Emerging Trends in Automotive and Energy Systems".** Further **Dr.R.Satyameher** delivered a speech on introduction about the college and department.

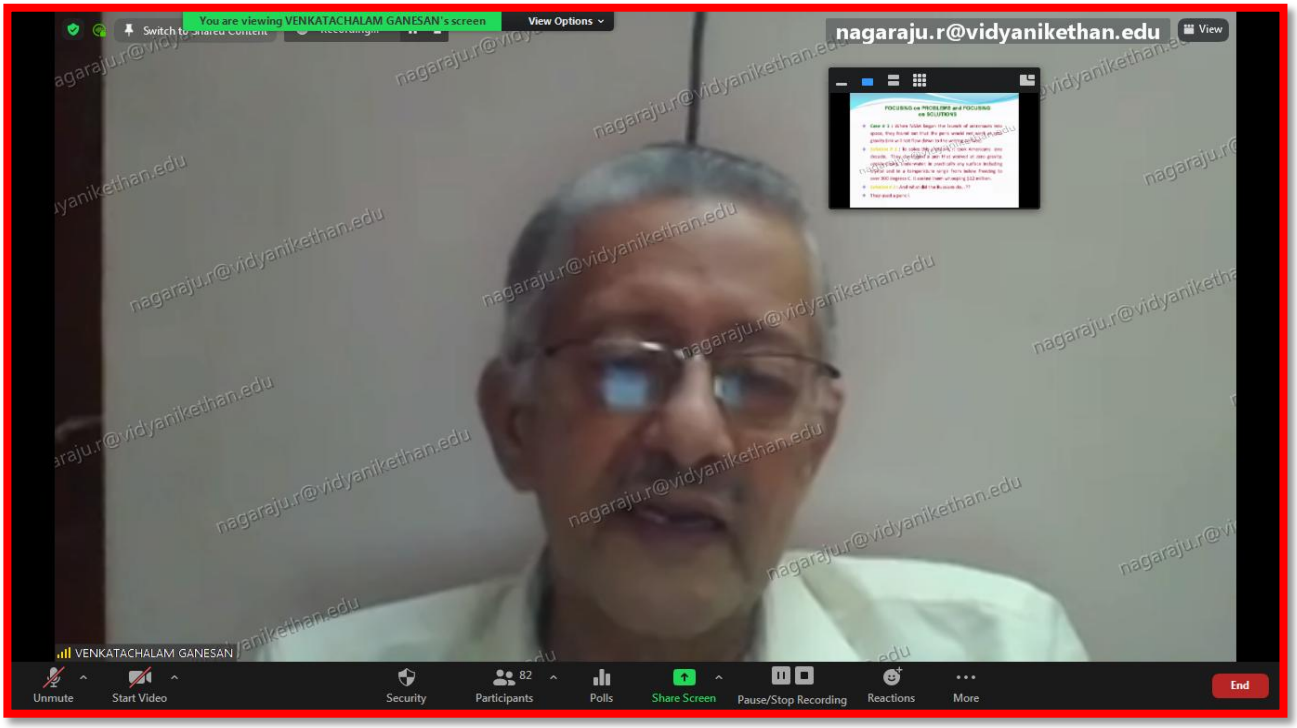
Dr. G. Vidyasagar Reddy Coconvener of five day FDP highlighted the objectives of the FDP, the topics to be discussed, the various applications of automotive and Energy systems and the outcomes of the FDP. Later, introduced the chief guest and resource person Dr.V.Ganesan to the participants.

The details of technical sessions are as follows.

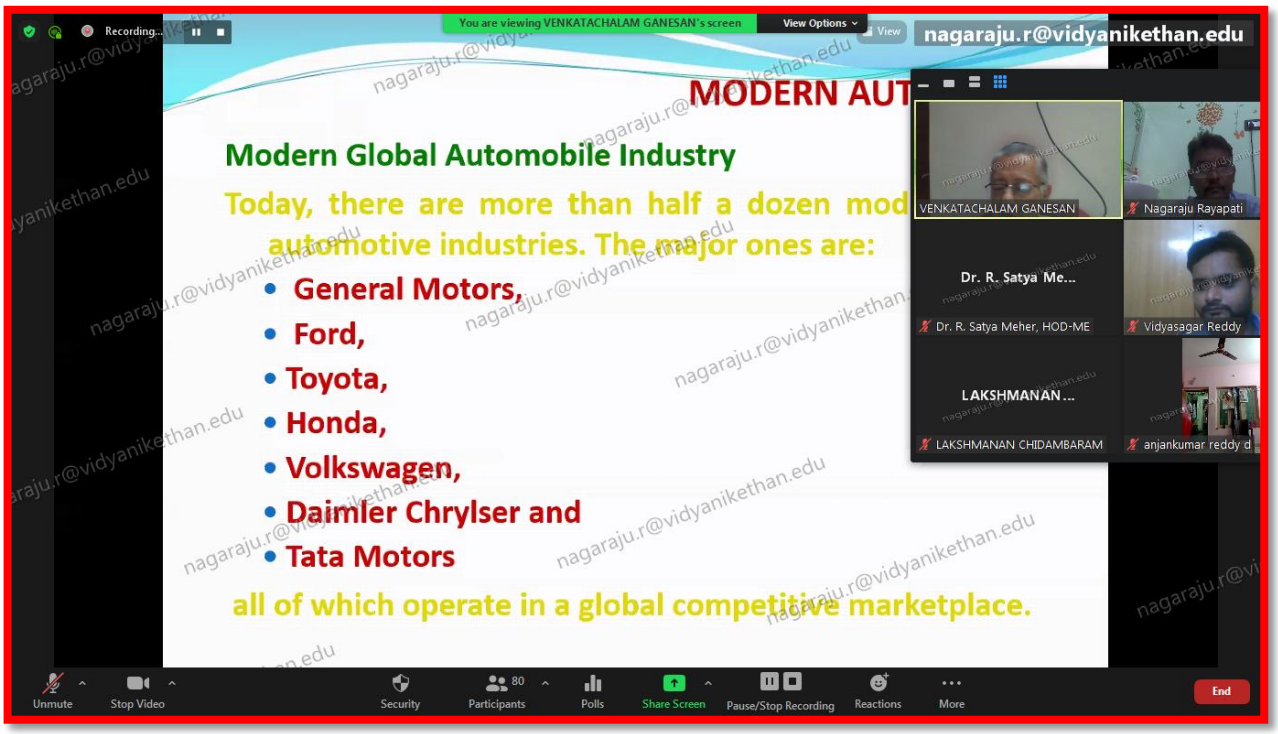
August 23, 2021 (Day – 1)

Dr.V.Ganesan, Retd Professor,IITM,Chennai acted as a resource person for the Day-1 session to deliver the fundamental concepts of automobile. The first session of Day-1 is started at 6:30 PM. The participants gained knowledge on the following concepts.

- Modern Global automobile industry
- Transport in the 21st Century
- Future of Hydrogen fuel
- How do Hydrogen fuel cell work?
- Importance Electric Vehicle(EV)
- Importance of battery Weight and tyres and rate of improvements
- Focused and explained the car for the future.
- Focused on problems and its solutions.



Dr.V.Ganesan , Retd Professor IITM,chennai, is addressing the participants.



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Dr.V.Ganesan , Retd Professor IITM,chennai, is addressing the participants on modern automobile industry.

Our today's resource person discussed the availability of funding agencies on automotive and Electrical vehicles. Dr V.Ganesan sir emphasize on empowerment for SC/ST community in fabricating batteries,not only for EVs but also for power generation.

August 24, 2021 (Day – 2)

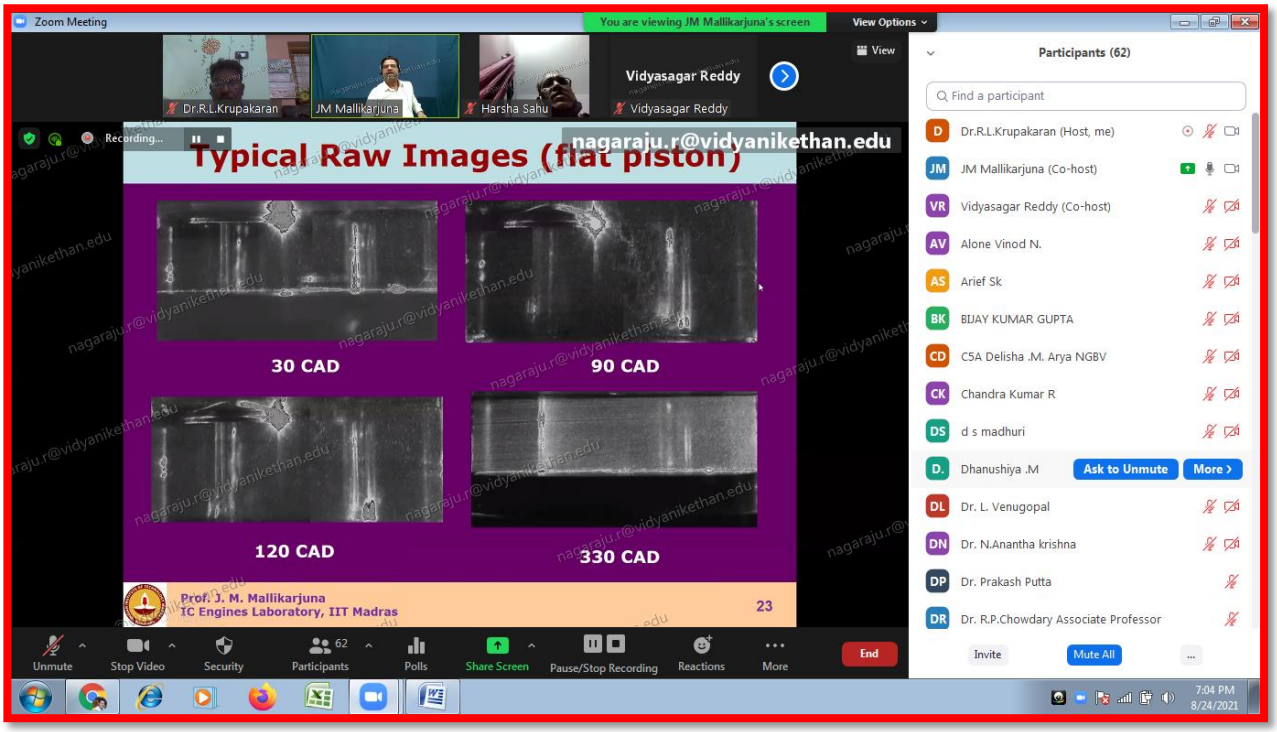
Dr. R.L.Krupakaran, Convener of the FDP welcomed the resource person and participants. **Dr.Vidyasagar Reddy** co- convener introduced the day-2 resource person to the participants.

Dr.G.Vidyasagar Reddy , Co-Convener is introducing the resource person.

Dr.J.M.Mallikarjuna, Professor, Department of Mechanical Engineering,IITM,Chennai acted as a resource person for Day-2 to deliver the fundamental concepts of In-cylinder flow studies in IC engines using PIV . The session of Day-2 is started at 6:30 PM. The participants are gained the knowledge on the following concepts.

- Introduction about modern SI engines like stratified charge and direct injection SI(DISI)
- In cylinder flows-swirl and Tumble: particle image velocity Principle
- About Turbulent Kinetic energy
- Delivered the concept of Variation of TR with CAD for flat piston, inclined piston with central

cavity, Dome piston , and pentroof piston with central cavity with test conditions.



Dr.J.M.Mallikarjun , explaining the typical images (pistons) to the participants.

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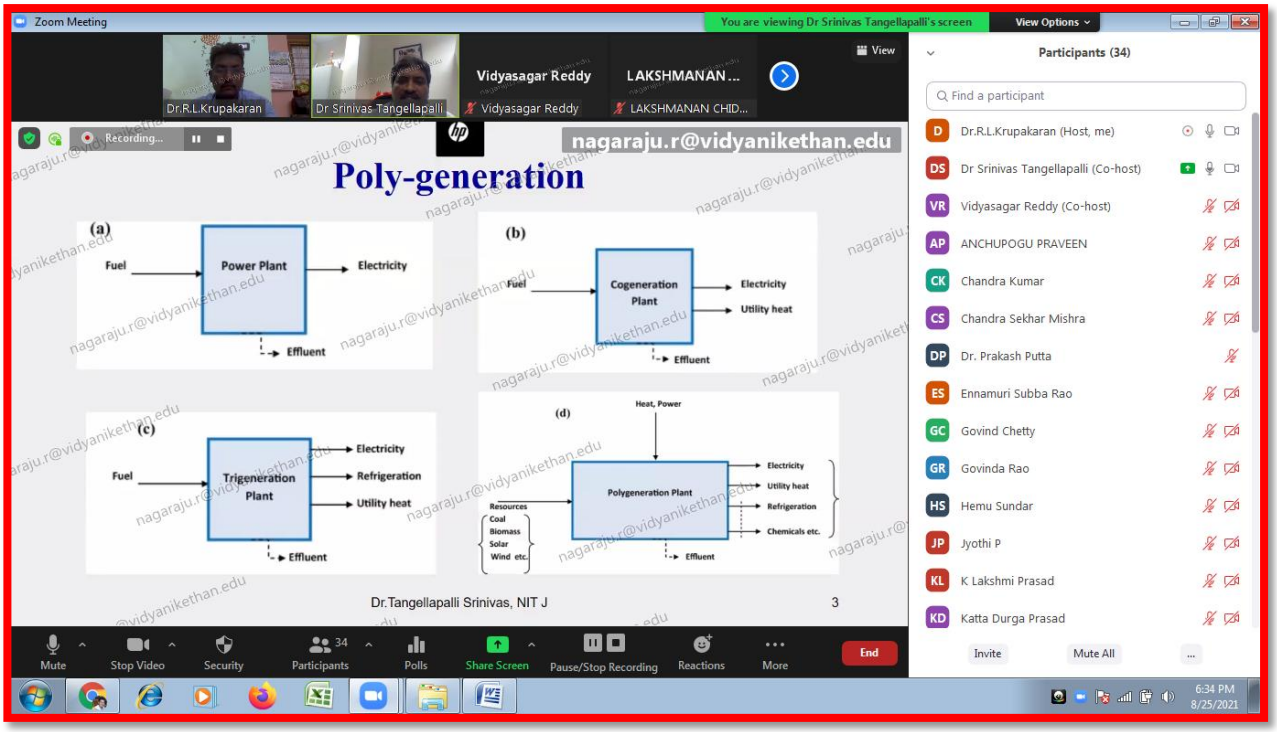
August 25, 2021 (Day – 3)

Dr. R.L.Krupakaran, Convener of the FDP welcomed the resource person and participants. **Dr.Vidyasagar Reddy** co- convener introduced the day-3 resource person to the participants.

Dr.Srinivas Tangellapalli, Associate Professor, Department of Mechanical Engineering, NIT Jalandhar, acted as a resource person for Day-3 to deliver the fundamental concepts of Solar Thermal Polygeneration. The session of Day-3 is started at 6:30 PM. The participants are gained the knowledge on the following concepts.

- Introduction and benefits of solar thermal poly-generation
- Delivered the concepts of poly-generation gasification
- Thermal desalination and hybidization
- Delivered the concept of proposed combined power and cooling
- Explained the concepts of Flexible cooling Cogeneration cycle with experimental setup
- Delivered tower type water purified air conditioner.
- Freezing Desalination and Air conditioning.



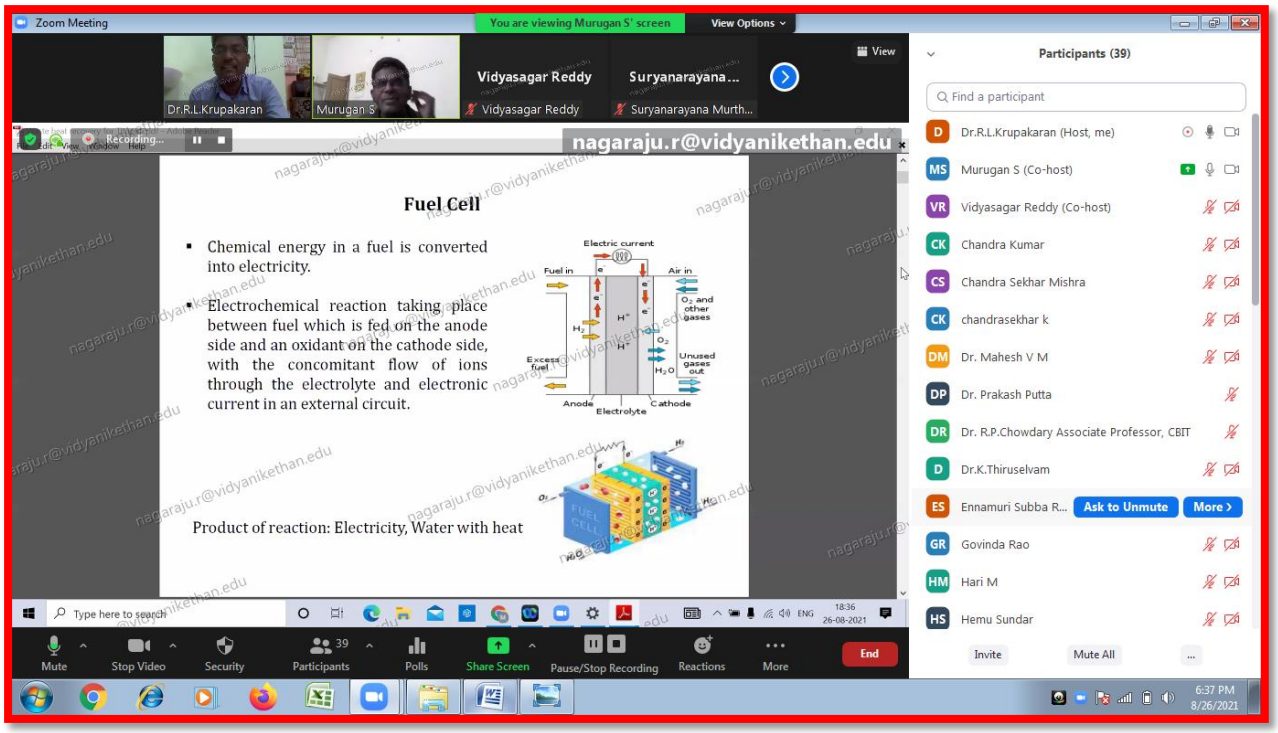
Dr.T.Srinivas , delivering the concept of poly-generation to the participants.

August 26, 2021 (Day – 4)

Dr. R.L.Krupakaran, Convener of the FDP welcomed the resource person and participants. **Dr.Vidyasagar Reddy** co- convener introduced the day-4 resource person to the participants.

Dr.S.Murugan, Professor, Department of Mechanical Engineering, NIT Rourkela, acted as a resource person for Day-4 to deliver the fundamental concepts of Potential methods for waste heat recovery from fuel cells. The session of Day-4 is started at 6:30 PM. The participants are gained the knowledge on the following concepts.

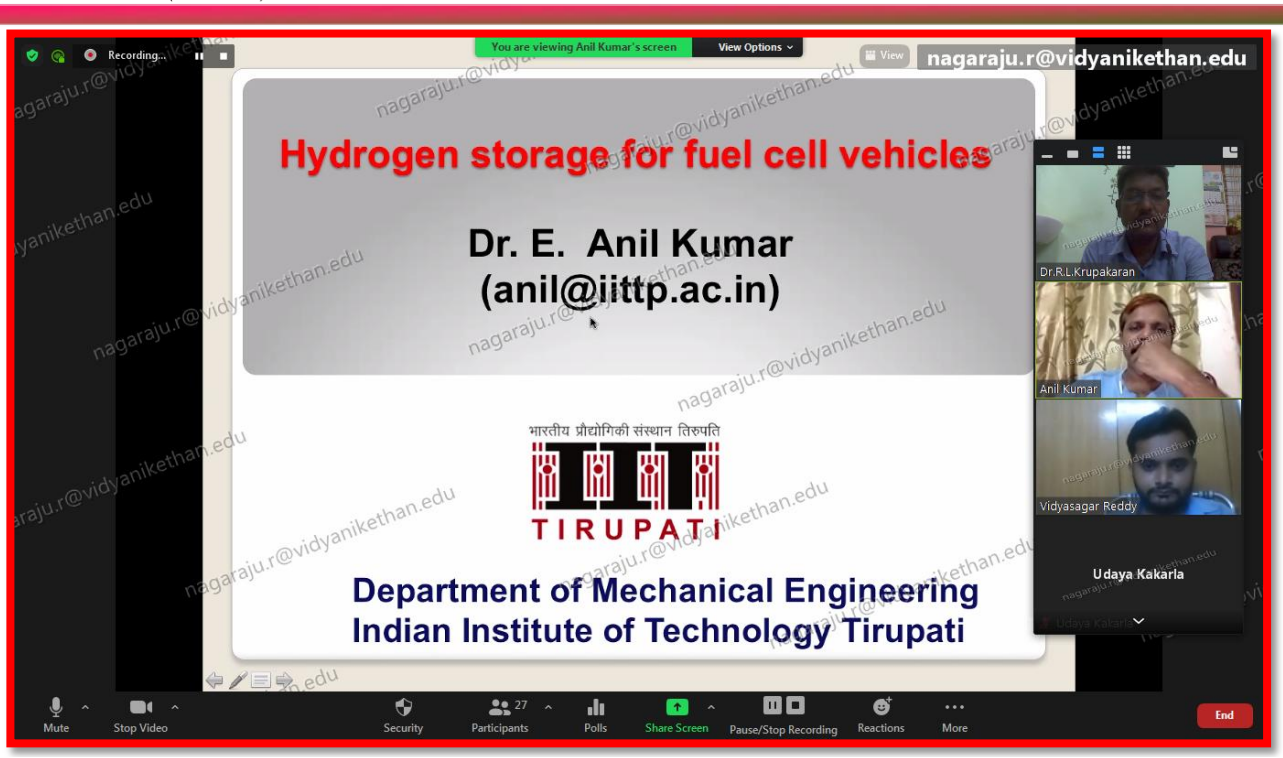
- Introduction and classification of Fuel cell
- Fuel cell types and power outputs and its applications
- Explained the comparision of ICE hybrid Vehicle and Toyota Fuel cell Hybrid Vehicle
- Delivered the concepts of Expander for organic Rankin cycle
- Delivered the concept of MCFC-GT hybrid system
- Explained the concepts of FC-GT system topping and bottoming cycle.
- Delivered the concept of Heat recovery system in PEM fuel cell based organic Rankin cycle.



Dr.S.Murugan , delivering the concept of fuel cell types and power outputs to the participants.

August 26, 2021 (Day – 5)

Dr. R.L.Krupakaran, Convener of the FDP welcomed the resource person and participants. **Dr.Vidyasagar Reddy** co- convener introduced the day-5 resource person to the participants.



Dr.E.Anil kumar , delivering the concepts of Potential Hydrogen storage for fuel cell vehicles to the participants.

Dr.E.Anil Kumar, Professor, Department of Mechanical Engineering, IIT Tirupati, acted as a resource person for Day-5 to deliver the fundamental concepts of Potential Hydrogen storage for fuel cell vehicles. The session of Day-5 is started at 6:30 PM. The participants are gained the knowledge on the following concepts.

- Focused on possible alternatives and necessity of hydrogen fuel
- Hydrogen production and high pressure gas storage
- Explained the hydrogen storage in solid materials-different Mechanism
- Physical models recently studied.
- Types of fuel cells and efficiency of fuel cells
- Explained the major players in the world scenario.
- Delivered the importance of n alternative Energy system of future (Hydrogen and Electricity Energy Economy).

Dr.E.Anil kumar , Interacting with participants during the queries session .

Dr. R.L.Krupakaran, Coordinator, Five day FDP on "Emerging Trends in Automotive and Energy Systems" has proposed a Vote-of-Thanks. Initially, the coordinator thanked the Resource persons for their support to organize this FDP at national level and also for their suggestions, support and guidance to conduct the FDP. Later, he thanked the participants of various engineering colleges and government institutions across the country for their enthusiastic participation. At the end, he conveyed his heartfelt thanks to the management, Sree Vidyanikethan Engineering College (Autonomous), Tirupati, Andhra Pradesh, the Principal, Head of the Department, Mechanical Engineering , **Dr. G.Vidyasagar Reddy**, Co-convener for their constant support to make this event a grand success.

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