



VIGNAN'S

Foundation for Science, Technology & Research

(Deemed to be University)

-Estd. u/s 3 of UGC Act 1956

A Report on One Day Webinar

Role of Power Electronics in Electric vehicles and charging Infrastructure

Organized by

Department of Electrical and Electronics Engineering

28th May 2021 (2:00 to 4:00 PM)

Resource Person: Dr A.V Jaya Sai Praneeth working as a senior engineer in Advance Engineering BorgWarner Inc Luxembourg. At present he is working on the design and development of 800 V SiC Inverter and on-board battery Charger and the high frequency DC-DC Converter for electric vehicle applications.

Description of the Program:

EEE department organized a one-day webinar on “Role of Power Electronics in Electric vehicles and charging Infrastructure”. This webinar has received an overwhelming response 210 out of 257 registered participants turned up during the session. Faculty members, research scholars, students from of various educational institutions and industry people have participated and made it grand success. E-Certificates are issued to all the 257 registered participants.

Dr. Y srinivasa Rao Coordinator, introduced the resource person Dr A.V Jaya Sai Praneeth and welcomed all the delegates and participants to the webinar. He conveyed the motivation to conduct this webinar.

Dr A.V Jaya Sai Praneeth explained the stages involved in designing the electric vehicles. He also explained the importance of keeping the temperature in control in the process of charging the batteries. He mentioned the Existing charging techniques for lithium-ion batteries use a largely open-loop approach, where the charge profile is pre decided based on a priori knowledge of cell parameters. There is a need for closed-loop charging techniques that use instantaneous cell voltage and/or temperature to modulate the charging current magnitude.

Dr A.V Jaya Sai Praneeth explained his key contribution in Battery Management system (BMS) by showing their experimental setup as well as their improved performance results. Considering cell temperature as a key degradation metric, he proposed and experimentally validated a CT-CV

charging technique for Li-ion cells. His proposed method achieved 20% faster charging with the same total temperature rise as a CC-CV technique. He also shown the images of future charging infrastructure based on inductive and capacitive transfer techniques. He also explained the current charging infrastructure in European countries.

Dr A.V Jaya Sai Praneeth pointed out recent shift in Electric vehicles in experiencing a vast expansion of their technology in vehicle variants from two wheelers to mass utility public transportation. One outstanding key challenge is to establish an efficient charging infrastructure for various voltage levels. Moreover, the paradigm shift in the automotive industry from low_voltage/high_current systems to high-voltage/low_current (usually identified as 800 V) systems enables many novel topologies and control strategies in the power converters. This transition to a 800 V system reduces the amount of copper, cost, and losses to improve the overall efficiency. Advances in wide bandgap (WBG) semiconductor technology enhances the development of compact-sized converters.

Dr. Y Srinivasa Rao, Program Coordinator thanked the resource person for his valuable, outstanding, and overwhelming presentation. He expressed this webinar has given insights of applicability of Power Electronics in Electric Vehicles and charging Infrastructure. He thanked Dr A.V Jaya Sai Praneeth for his valuable thoughts, and this program has opened up the different directions to scholars and students for further application in research areas.

He also thanked every participant for their active participation during entire session. Also, he expressed his sincere thanks to Dr. L. Rathaiah Garu Chairman, Vignan's group of institutions, Vice-Chancellor Dr. M.Y.S. Prasad and Dr. G Srinivasa Rao HOD EEE for given an opportunity to organize this webinar.

Feed Back:

All the participants actively participated and expressed very positive feedback. They expressed its an outstanding and as an innovative research area. This webinar "Role of Power Electronics in electric vehicles and charging Infrastructure" met its objective and all the participants appreciated the efforts spent by the Resource Person in covering the recent charging technologies.

Snapshots of the Program:

1. Brochure of the Webinar



VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be University)
-Estd. u/s 3 of UGC Act 1956

**The Department of Electrical and Electronics Engineering (EEE)
at VFSTR
WELCOMES YOU**

to the one day Webinar topic on
**Role of Power Electronics in
Electric Vehicles and Charging Infrastructure**



Resource Person

Dr. JAYA SAI PRANEETH A.V.
Senior Engineer,
Advance Engineering BorgWarner Inc,
Luxembourg

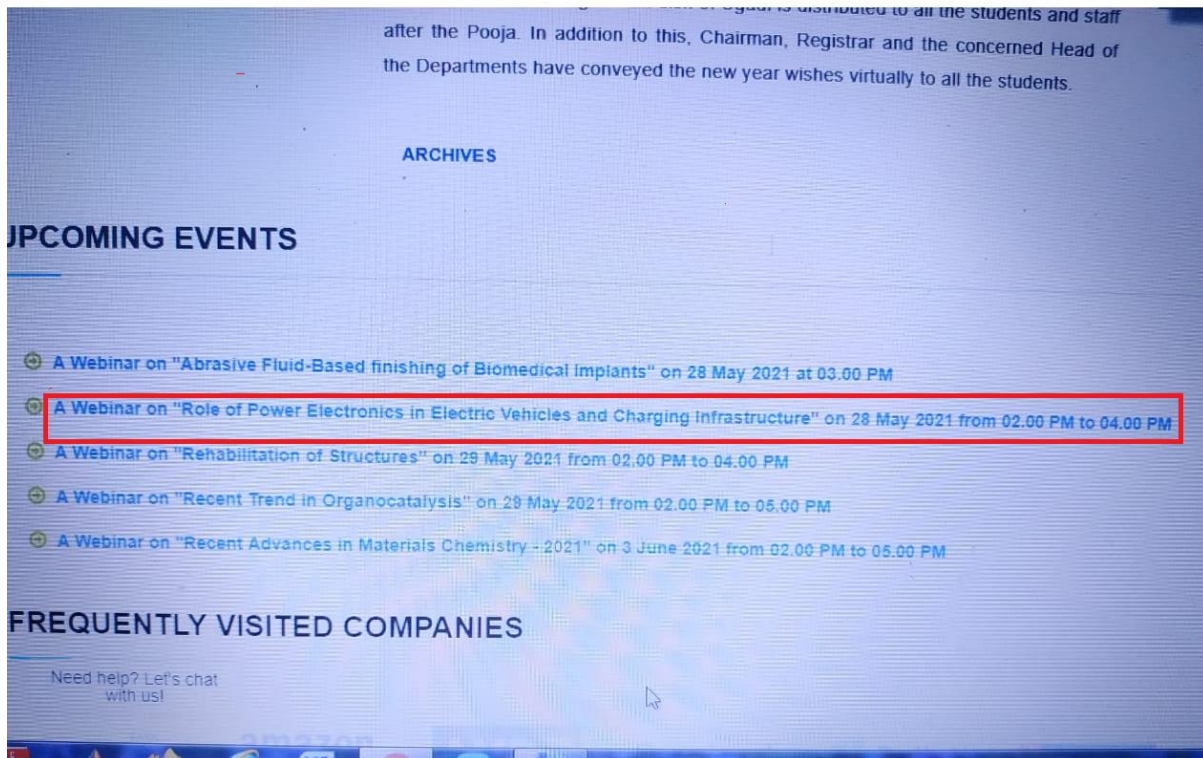
Date and time:
28th May 2021 (2.00 PM - 4.00 PM)

The link of the webinar will be sent to registered participants.
The participants will be given an e-certificate after the completion of the webinar.

<p>Chief Patrons</p> <p>Dr. L. Rathaiah, Chairman, Vignan Group</p> <p>Mr. L. Sri Krishnadevarayalu, Vice-Chairman, Vignan Group</p> <p>Patrons</p> <p>Dr. K. Rama Murthy Naidu, Chancellor, VFSTR</p> <p>Dr. M.Y.S. Prasad, Vice-Chancellor, VFSTR</p> <p>Cmde. Dr. M.S. Raghunathan, Registrar, VFSTR</p> <p>Dr. G. Srinivasa Rao, Dean, R&D, VFSTR</p>	<p>Organizing Committee</p> <p>Dr. P.V.S. Sobhan, Associate Professor, VFSTR</p> <p>Dr. K. Mercy Rosalina, Professor, VFSTR</p> <p>Dr. M. Subba Rao, Associate Professor, VFSTR</p> <p>Mr. Ch.UmaMaheswaraRao, Assistant Professor, VFSTR</p> <p>Mr. A. Sri Hari Babu, Assistant Professor, VFSTR</p> <p>Mr. N. Narasimha Rao.Ch., Assistant Professor, VFSTR</p> <p>Mr. N. Bharath Kumar, Assistant Professor, VFSTR</p> <p>Dr. Bala Krishna Kethineni, Assistant Professor, VFSTR</p> <p>Dr. Attuluri R. Vijay Babu, Assistant Professor, VFSTR</p> <p>Ms. K Rachananjali, Assistant Professor, VFSTR</p> <p>Dr. P.M. Venkatesh, Assistant Professor, VFSTR</p> <p>Dr. Y. Srinivasa Rao, Assistant Professor, VFSTR</p> <p>Mr. V.B. Thurai Raaj, Assistant Professor, VFSTR</p> <p>Mr. Umamaheswara Rao. M., Assistant Professor, VFSTR</p> <p>Mr. P. Lakshmi Narayana, Assistant Professor, VFSTR</p>
---	--

**For any other quires, please contact
Dr. Y. Srinivasa Rao (cnuiitr@gmail.com, Ph:8865042446)**

2. Display of the webinar in website



3. Gallery of Session

UNIVERSAL OUTPUT VOLTAGE CHARGER

Objective: Universal Output Voltage (50-500 V)

Possibilities: AC-DC PFC Stage
DC-DC Converter Stage

Constraints: Size of Magnetics, Input Power Quality (Unity Power Factor), Efficiency (>94%)

Optimal Solution: Variable DC-Link Voltage

Block diagram showing: Input → EMI FILTER → AC-DC PFC STAGE → DC LINK (150-450 V) → DC-DC CONVERTER → BATTERY (50-500 V)

Audi Pudi, Andhra Pradesh, India
 Unnamed Road, Audi Pudi, Andhra Pradesh 523190, India
 Lat N 15° 54' 11.754"
 Long E 80° 13' 43.7124"
 28/05/21 03:39 PM

KEY COMPONENTS IN ELECTRIC VEHICLES

- Battery Pack
- Motor Drive Technology
- Low Voltage Power Electronics
- Charging Infrastructure

Battery

- Cylindrical
- Prismatic
- Pouch

Ultracapacitor (Courtesy of Maxwell)

(Courtesy of Panasonic) (Courtesy of Calb) (Courtesy of VPW-LLC)

praneeth avjs' screen

BorgWarner