

Department of Electrical & Electronics Engineering

AICTE sponsored six days online Short Term Training Programme (STTP)

On

“ELECTRIC VEHICLE EVOLUTION - IMPACT ON POWER GRID”

Phase-I: February 8th to 13th 2021 Phase-II: March 22nd to 27th 2021

Phase-III: April 19th to 24th 2021

Chief Patron

Dr. M. Sivanandham, Secretary, SVEHT

Patron

Dr. S. Ganesh Vaidyanathan, Principal

Convener

Dr. KR. Santha, Vice-Principal

Coordinators

Dr. KR. Santha, Professor & Head / Dept. of EEE

Dr. S. G. Bharathidasan, Asso. Professor/EEE

Dr. M. Sankar, Asst. Professor/EEE

Mr. S. Kumaravel, Asst. Professor/EEE

Mr. S. S. Sethuraman, Asst. Professor/EEE

Mr. S. Thamizmani, Asst. Professor//EEE

ABOUT THE INSTITUTION

Sri Venkateswara College of Engineering (SVCE), a premier self-financing Engineering College was started in the year 1985 and is managed by Sri Venkateswara Educational and Health Trust. The college conducts 11 B.E / B.Tech Degree Courses and 8 PG Courses in Engineering. The college has 11 Research Centers approved by Anna University cater to MS (by Research) and PhD programmes. The courses are approved by AICTE and affiliated to Anna University, Chennai. The college received Autonomous status in 2016. The college is accredited by National Assessment and Accreditation Council (NAAC). The college is situated in serene environment about 37 km from Chennai and situated on the way of Chennai – Bangalore National Highway (NH4) at Pennalur, Sriperumbudur, in Kanchipuram district.

ABOUT THE DEPARTMENT

The Department of EEE was started in the year 1994. The post graduate program (M.E) in Power Electronics and Drives was started in 2002. The department has secured permanent affiliation with Anna University and accredited by National Board of Accreditation (NBA) for the third consecutive time of Full Accreditation for five years. The Department has well equipped state-of-the-art laboratories and recognized as a Research Centre by Anna University. The Department has well qualified and experienced faculty and staff of proven ability and profound skills.

ABOUT THE STTP

The future Electrical Power System operation and control has to be restructured to face the challenges of plug-in Electric Vehicles (EV) evolution. The knowledge in EV drive, Battery Energy Storage (BES), Fast-charging circuitry, Battery Management System (BMS) and its impact on smart and micro grid dynamics, coordinated BMS, control, protection and communication protocols are imperative for Engineers working in these domains. This STTP is aimed at training the participants on the present procedures and future expectations in the aforementioned areas by experts from Industry & Institutions. This STTP will also facilitate the participants to acquire hands-on training in this field through various related systems modeling and simulation. After attending workshop, Participants will be able to select and design suitable motors, Battery management system and power converters for Electric Vehicles. They can also identify the changes to be done in Power System after EV incorporation in Micro and Smart grid environments.

OBJECTIVES

- ❖ Familiarize the participants about EV configuration/ components and its interaction with power grid.
- ❖ Creating awareness on impact of EV evolution on operation and control of Electrical Power System.
- ❖ Inculcate charging/discharging of aggregated EV and its impact on micro grid.
- ❖ Training the delegates in design and analysis of EV drive motor using MAGNET, simulation of EV with battery energy storage (BES) using PWSIM, MATLAB and DIGSILENT.
- ❖ Offering expertise to the participants on operation of micro and smart grids with EV.

STTP TOPICS

- ❖ EV evolution - Challenges to Power System Operation and Control - Utility Preparedness
- ❖ Configuration and components of EV-Overview
- ❖ EV drive motor design aspects - Hands on session using MAGNET software
- ❖ Electric Vehicle Charging Station Requirements and Battery Management Systems (BMS)
- ❖ Battery Energy Storage Technologies for Electric Vehicle and Issues in Integration with Power Grid
- ❖ Electric Vehicle and Power System Operation and Control - a perspective
- ❖ Coordination of multiple EVs, Renewable Energy Sources and Battery Energy Storage Systems in Smart Grid
- ❖ Impact of EV Evolution on Electrical Power System Dynamics
- ❖ Design and implementation of controllers and control strategies for Electric Vehicle
- ❖ Electric Vehicle add-on micro-grid - Protection studies
- ❖ Hands on Training on Micro/Smart grid Power System using DIgSILENT
- ❖ Smart Grid controls - Operation and Control with Electric Vehicle
- ❖ Electric Vehicle – Future perspectives and preparedness
- ❖ Hands on Training to realize the impact of Electric Vehicle on Power System Dynamics

INDUSTRY RESOURCE PERSONS

Mr.S.Sankara Narayanan, General Manager, Tamilnadu Energy Development Agency, Govt. of Tamilnadu

Mr.S.Jayakrishnan, General Manager, Hyundai Motor India Ltd

Dr.R.Kathiravan, AEE, TANGEDCO, TNEB

Dr.S.Sudhakar, Senior Scientist, CSIR - Central Electrochemical Research Institute, Karaikudi

Dr.N.Sivakumar, Global Technical lead, Rolls-Royce, Singapore.

Mr.Nandhakumar, Design Engineer, Power Grid Corporation of India.

Dr.B.Chandra Sekhar, Technical Lead, TCS, Bangalore.

Mr.B.Saravanan, Lead-Traction control, Alstom, Bangalore.

Dr.A.Deepak, EM Design Engineer, ePropelled systems Pvt Ltd.

Dr.V.P. Boopathi, Sr. Appn. Engineer, PWSIM Engg. Solns Pvt Ltd.

Mr.Balasubramanian Ananthraman, Scientist, CSIR - Central Electrochemical Research Institute, Chennai

ACADEMIC RESOURCE PERSONS

Dr.K.Shanti Swarup, Professor, Indian Institute of Technology Madras.

Dr. R.Jayashri, Professor, School of Electrical Engineering and Telecommunications, UNSW SYDNEY, AUSTRALIA.

Dr.R.P.Kumudinidevi, Professor, EEE Dept, Anna University Chennai.

Dr.D.Kalpana, Asst. Prof., Dept. of Instrumentation Engg, Madras Institute of Technology.

Dr.S.Kumaravel, Asso. Prof., EEE Dept., National Institute of Technology, Calicut.

Dr.P.Raja, Asso. Prof., EEE Dept., National Institute of Technology, Tiruchirappalli.

Dr.V.Gomathi, Asso. Prof., EEE Dept, Anna University, Chennai.

Dr.C.Christober Asir Rajan, Professor, EEE Dept, Pondicherry Engineering College.

Dr.D.Maharajan, Asso. Prof., EEE Dept., SRM University

Dr.V.Saravanan, Professor, EEE Dept., AEC.

ADVISORY COMMITTEE

Dr.N.K.Mohanty, Professor

Dr.Sudhakar K Bharatan, Professor

Dr.R.Karthikeyan, Asso. Professor

Dr.C.Gopinath, Asso. Professor

ORGANIZING COMMITTEE

Ms. S.Arulmozhi AP/EEE

Ms.M.Sasikala AP/EEE

Ms. N.Shanmugavadivu AP/EEE

Mr.C.Venkatesan AP/EEE

Ms.K.Suganthi AP/EEE

Mr.S.Sudharsanam AP/EEE

Dr.T.Annamalai AP/EEE

Ms.D.Amudhavalli AP/EEE

Mr.M.Ranjithkumar AP/EEE

Mr.D.S.Purushothaman AP/EEE

Ms.S.Anitha AP/EEE

Ms.S.Sinthamani AP/EEE

Ms.K.S.Pavithra AP/EEE

Mr.V.Mohanraj AP/EEE

Mr.G.Vinoth kumar AP/EEE

Ms.M.Rajalakshmi AP/EEE

Mr.C.Kamal AP/EEE

Ms.M.Maadhuri AP/EEE

Dr.R.Kannadasan AP/EEE

ELIGIBILITY

This AICTE sponsored STTP is open to Faculty members of AICTE approved Institutions, Research scholars and persons from Industries from all over the country. As per AICTE guidelines no registration fee will be charged from the participants.

Registration link: <https://forms.gle/cEdKcypoasR51xM18>

Scan QR Code



CERTIFICATE

A test shall be conducted by Project Monitoring Committee (PMC) at the end of the STTP and the certificates shall be issued to those participants who have attended all the sessions of the STTP and have qualified in the test. The number of participants will be limited to 100 for each Phase. Online meeting link will be sent to Whatsapp contact /Registered email. **For any queries:** svceesttp2021@gmail.com

ADDRESS FOR COMMUNICATION

The Co-ordinator,
AICTE-EEE-STTP,
Department of Electrical and Electronics Engineering,
Sri Venkateswara College of Engineering,
Irungattukottai post, Pennalur,
Sriperumbudur Taluk, Tamilnadu-602 117,
Ph.No: 044-27152000 Ext.:251,
Mobile: 9994423534/9500837386/9940695670.





Report
of
AICTE sponsored Online Short Term Training Programme
on
**“ELECTRIC VEHICLE EVOLUTION –
IMPACT ON POWER GRID”**

Phase-I: February 8th to 13th 2021 Phase-II: March 22nd to 27th 2021

Phase-III: April 19th to 24th 2021



CONTENTS

Acknowledgement	3
Organizing committee	4
Abstract	5
Objectives	6
Expert speakers	7
STTP details	9
Session details	11
Participants list	47
Participants feedback	57
Conclusion	58
Appendices	59
Brochures	
Schedule (Phase-1, 2 & 3)	
Inaugural invite & agenda	
Valedictory invite & agenda	
Participant certificate sample	

ACKNOWLEDGEMENT

We thank All India Council for Technical Education (AICTE) for granting fund of Rs.316667/- (Rupees Three Lakh Sixteen Thousand Six Hundred and Sixty seven only) for this conduct of Short Term Training Program (STTP).

We thank Dr.A.C. Muthiah, Chairman, Sri Venkateswara Educational and Health Trust, Prof. Muthukumaran Sivanandham, Secretary, Sri Venkateswara Educational and Health Trust and Dr.S.Ganesh Vaidyanathan, Principal, Sri Venkateswara College of Engineering for facilitating us with this opportunity.

We thank the expert speakers from industry and academia for accepting our invite and sharing their valuable expertise with the participants.

We thank the participants from industry and academia for their enthusiastic participation and overwhelming feedback.

We thank all the faculty members involved in day-to-day activities of pre-event, during the event and post-event proceedings of the STTP.

Dr. KR. Santha
Vice-Principal
Professor and Head / EEE
Convener & Coordinator
Sri Venkateswara College of Engineering

&

Co-coordinators

ORGANIZING COMMITTEE

Chief Patron

Dr. M. Sivanandham, Secretary, SVEHT

Patron

Dr. S. Ganesh Vaidyanathan, Principal

Convener & Coordinator

Dr. KR. Santha, Vice-Principal

Co-coordinators

Dr. S. G. Bharathidasan, Asso. Professor/EEE

Dr. M. Sankar, Asst. Professor/EEE

Dr. S. Kumaravel, Asst. Professor/EEE

Mr. S. S. Sethuraman, Asst. Professor/EEE

Mr. S. Thamizmani, Asst. Professor//EEE

ABSTRACT

The future Electrical Power System operation and control has to be restructured to face the challenges of plug-in Electric Vehicles (EV) evolution. The knowledge in EV drive, Battery Energy Storage (BES), Fast-charging circuitry, Battery Management System (BMS) and its impact on smart and micro grid dynamics, coordinated BMS, control, protection and communication protocols are imperative for Engineers working in these domains. This STTP was aimed at training the participants on the present procedures and future expectations in the aforementioned areas by experts from Industry & Institutions. This STTP also facilitated the participants to acquire hands-on training in this field through various related systems modeling and simulation. After participating in this STTP, participants gained the expertise to select and design suitable motors, Battery management system and power converters for Electric Vehicles. They also gained expertise in identifying the changes to be done in Power System after EV incorporation in Micro and Smart grid environments.

OBJECTIVES

- ❖ Familiarize the participants about EV configuration/ components and its interaction with power grid.
- ❖ Creating awareness on impact of EV evolution on operation and control of Electrical Power System.
- ❖ Inculcate charging/discharging of aggregated EV and its impact on micro grid.
- ❖ Training the delegates in design and analysis of EV drive motor using MAGNET, simulation of EV with battery energy storage (BES) using PWSIM, MATLAB and DIgSILENT.
- ❖ Offering expertise to the participants on operation of micro and smart grids with EV.

EXPERT SPEAKERS

Industry Experts:

Dr.S.Sankara Narayanan,

General Manager, Tamilnadu Energy Development Agency, Govt. of Tamilnadu

Dr.C.Veeramani,

Chief Engineer (Retd), TANGEDCO (formerly TNEB)

Mr.S.Jayakrishnan,

General Manager, Hyundai Motor India Ltd

Dr.R.Kathiravan,

Assistant Executive Engineer, TANGEDCO

Dr.S.Sudhakar,

Senior Scientist, CSIR - Central Electrochemical Research Institute, Karaikudi

Dr.N.Sivakumar,

Global Technical lead, Rolls-Royce, Singapore.

Mr.Nandhakumar,

Design Engineer, Power Grid Corporation of India.

Dr.B.Chandra Sekhar,

Technical Lead, TCS, Bangalore.

Mr.B.Saravanan,

Lead-Traction control, Alstom, Bangalore.

Mr.Rathnakumar Devaraj,

Industrial & Systems, Development Engineer, CE+T Power, Wandre, Belgium

Dr.A.Deepak,

EM Design Engineer, ePropelled systems Pvt Ltd.

Dr.V.P. Boopathi,

Sr. Appn. Engineer, PWSIM Engg. Solns Pvt Ltd.

Mr.Balasubramanian Ananthraman,

Scientist, CSIR - Central Electrochemical Research Institute, Chennai

Academia Experts:

Dr.K.Shanti Swarup,

Professor, Indian Institute of Technology Madras.

Dr.R.P.Kumudinidevi,

Professor, EEE Dept, Anna University Chennai.

Dr.Sankara Narayanan,

*Professor & Head, EEE Dept., National Institute of Technology,
Tiruchirappalli*

Dr.S.Chandramohan,

Prof. & HOD/EEE Dept., Anna University, Chennai.

Dr. R.Jayashri,

*Professor, School of Electrical Engineering and Telecommunications, UNSW
SYDNEY, AUSTRALIA.*

Dr.P. Somasundaram,

Prof. EEE Dept., Anna University Chennai.

Dr K.Rathnakannan,

Asso. Prof., EEE Dept., Anna University Chennai.

Dr.D.Kalpana,

Asst. Prof., Dept. of Instrumentation Engg, Madras Institute of Technology.

Dr.S.Kumaravel,

Asso. Prof., EEE Dept., National Institute of Technology, Calicut.

Dr.P.Raja,

Asso. Prof., EEE Dept., National Institute of Technology, Tiruchirappalli.

Dr.V.Gomathi,

Asso. Prof., EEE Dept, Anna University, Chennai.

Dr.C.Christober Asir Rajan,

Professor, EEE Dept , Pondicherry Engineering College.

Dr.D.Maharajan,

Asso. Prof., EEE Dept., SRM University

Dr.V.Saravanan,

Professor, EEE Dept., Arunai Engineering College.

STTP details

The AICTE sponsored STTP on ‘Electric Vehicle Evolution – Impact on Power Grid’ was organized by the Department of Electrical and Electronics Engineering, Sri Venkateswara College of Engineering in ONLINE mode in three phases as detailed below:

Phase-1: 8th February 2021 – 13th February 2021

Phase-2: 22nd March 2021 – 27th March 2021

Phase-3: 19th April 2021 – 24th April 2021

The brochure, schedule, inaugural invite and agenda of all the three phases are given in the Annexure 1, 2 and 3 respectively.

The Phase-1 of this STTP was hosted online on 8th Feb 2021 at 9.30 AM. The STTP started with a prayer song. **Dr.KR.Santha, Vice Principal, Professor and HOD/EEE** delivered the welcome address and briefed about significance and objectives of the STTP. **Prof. Dr. S. Ganesh Vaidyanathan, Principal, Sri Venkateswara College of Engineering** delivered the presidential address.

The Phase-1 of STTP was inaugurated by **Dr.S.Sankara Narayanan, General Manager, Tamil Nadu Energy Development Agency**. The Phase-2 of STTP was inaugurated by **Er.C.Veeramani, Chief Engineer Regulatory Cell (Retd), TANGEDCO**. The Phase-3 of STTP was inaugurated by **Dr.R.Kathiravan, Executive Engineer, TANGEDCO**. Following the inaugural address the dignitaries delivered an expert lecture on the topic “Impact of Renewable Energy Generation and Electric Vehicle on Power Grid – Future perspective and Preparedness”.

In all the phases of the STTP, the participants from industry and academia were trained in the area of '**Electric Vehicle Evolution and its Impact on Power Grid**' through 18 sessions of expert lectures and hands-on by Eminent Industry and Academic experts as given in schedule (Annexure 1). 85 Participants attended Phase-1, 42 Participants attended Phase-2 and 79 Participants attended Phase-3. The participants' certificate sample is given in Annexure 5.

The valedictory of the AICTE-STTP was held on 24th April 2021 at 3.30 PM. **Dr.KR.Santha, Vice Principal, Professor and HOD/EEE** delivered the valedictory address. The valedictory invite & agenda is given in Annexure 4.

SESSION DETAILS



Welcome address by **Dr.KR.Santha, Vice Principal, Professor and HOD/EEE**



Inaugural address by **Dr.S.Sankara Narayanan, General Manager, Tamil Nadu Energy Development Agency** followed by expert lecture on the topic **“Impact of Renewable Energy Generation and Electric Vehicle on Power Grid – Future perspective and Preparedness.”**

Phase-1 (Day-1, 08/2/2021, Monday), Inauguration & session-1, Video link:

<https://drive.google.com/file/d/1YZpgipURtCJ-Ajo-xbs6fZUvDHmHJ4E2/view?usp=sharing>

Components of EV – Total vehicle resistance

- Each resistance can be calculated manually by a series of different equations.
- The total resistance acting on a vehicle is the sum of all the individual resistances involved.
- The general resistance equation of resistance can be given as:

$$R_t = a + bv + cv^2$$

- Here, R_t - Total resistance
 a, b & c - Coefficients of resistance
 v - Velocity of the vehicle.
- Hence we can see that the Total vehicle resistance is a function of velocity.

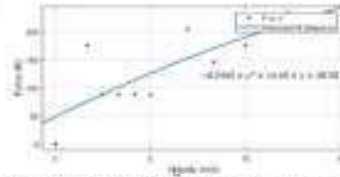


Figure 10: Graph plotted between total force and vehicle velocity

Experimental Procedure for calculating vehicle total resistance

Coast down test

- Coast down test is a test that can be conducted to calculate the Resistance equation.
- By conducting this test we can derive it.

SVCE- STTP day-1 (2021-02-07 at 21:39 GMT-8)

Reuse – Second life

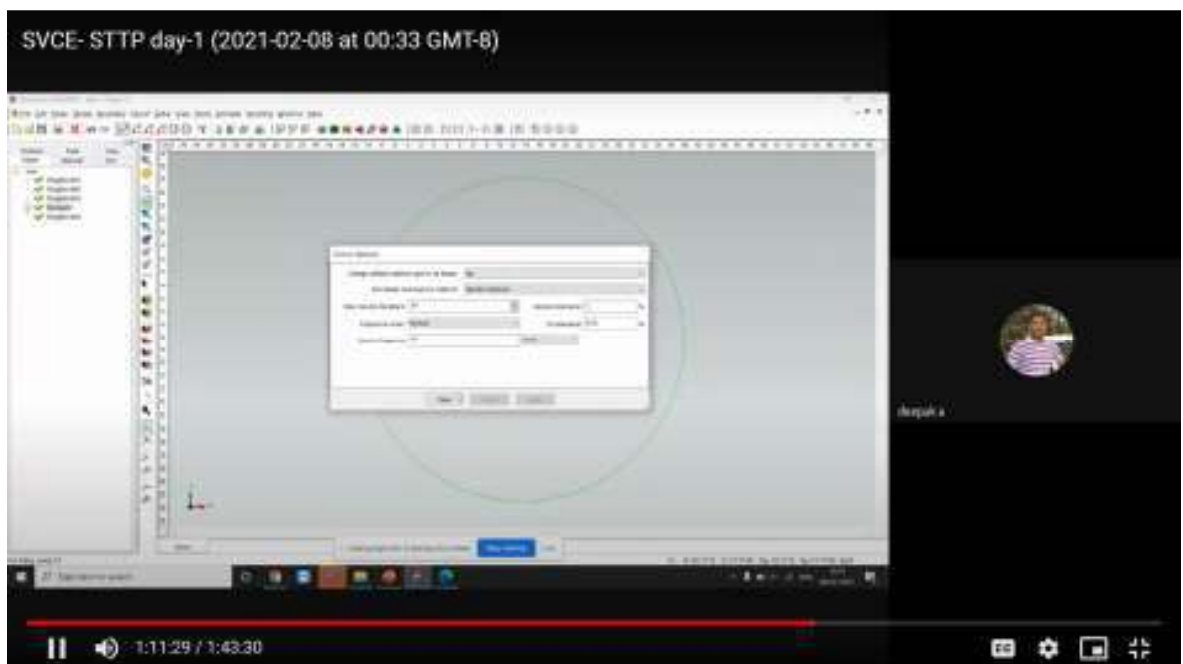


1:01:13 / 1:43:20

Phase-1 (Day-1, 08/2/2021, Monday), Session-2: Expert lecture by **Dr.V.Ganesh, ASP/DAE/SVCE** on **“Configurations and components of Electric Vehicle – Overview.”**

Phase-1 (Day-1, 08/2/2021, Monday), Session-2, Video link:

https://drive.google.com/file/d/1_GrNzJ5_xAEUcH9g_VCa5COYHL9SoS9/view?usp=sharing






Session-3: Expert lecture by **Dr.A.Deepak**, EM Design Engineer, ePropelled systems Pvt Ltd. on the topic “EV drive motor design aspects - Hands on session using MAGNET software.”

Phase-1 (Day-1, 08/2/2021, Monday), Session-3, Video link:

<https://drive.google.com/file/d/1dCh2Zg4UmQnFj-nDrXjn1vW1pWF1CS0f/view?usp=sharing>

SVCE-EEE-AICTE STTP: day 2 (2021-02-08 at 20:28 GMT-8)

Battery Management System (BMS) & EV Charging Station Requirements

Presented by
Dr. B. Chandra Sekhar
 Technical Lead,
 TATA Consultancy Services (TCS), Bangalore.

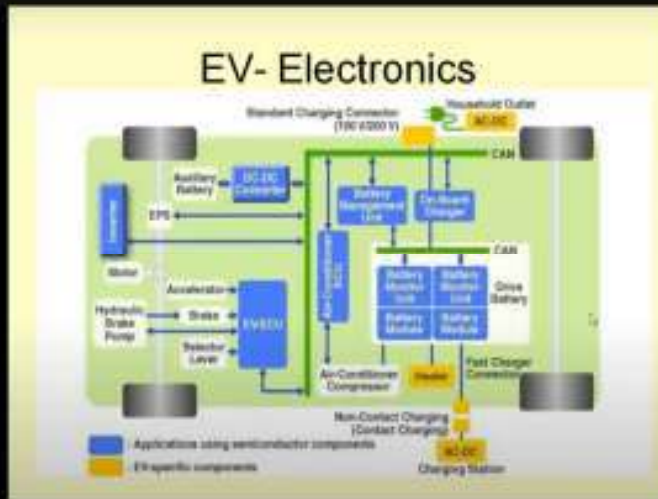
0:19 / 3:52:08

SVCE-EEE-AICTE STTP: day 2 (2021-02-08 at 20:28 GMT-8)

BMS Parameters Display on IVI Screen

31:10 / 3:52:08

Phase-1 (Day-2, 09/2/2021, Tuesday), session-1: Expert lecture by **Dr.B.Chandra Sekhar**, Technical Lead, Tata Consultancy Services, Bangalore on the topic “**Electric Vehicle Charging Station Requirements and Battery Management Systems (BMS).**”



1:51:45 / 3:52:08



3:13:44 / 3:52:08

Phase-1 (Day-2, 09/2/2021, Tuesday), session-2: Expert lecture by **Dr K.Rathnakannan, Asso. Prof.**
Department of EEE, College of Engineering, Guindy, Anna University, Chennai on the topic
“Design and implementation of controllers and control strategies for Electric Vehicle”

Phase-1 (Day-2, 09/2/2021, Tuesday), session-1 & 2:
<https://drive.google.com/file/d/1OiNuetib5LgIpfj6hI6SISUAWTskKOX5/view?usp=sharing>

SVCE-EEE-AICTE STTP: day 2 (2021-02-09 at 00:31 GMT-8)
1. Electrode Sheet Preparation

```
graph TD; A[Sintering] --> B[Milling]; B --> C[Slurry Mixing]; C --> D[Coating]; D --> E[Roll Pressing];
```

Coating Unit

Roll Press/Calendaring Unit

SVCE/201/10

Inside View Of DRY Room



Video Link

Siva Kumar Sathakar

Phase-1 (Day-2, 09/2/2021, Tuesday), session-3: Expert lecture by **Dr.S.Sudhakar, Senior Scientist, CSIR – Central Electrochemical Research Institute, Karaikudi** on the topic “**Li-ion batteries : Recent Progress and Challenges**”



Battery Pack for Electric Cars (Tesla 1S Model)



Phase-1 (Day-2, 09/2/2021, Tuesday), session-3: Expert lecture by **Dr.S.Sudhakar, Senior Scientist, CSIR – Central Electrochemical Research Institute, Karaikudi** on the topic “**Li-ion batteries : Recent Progress and Challenges**”

Phase-1 (Day-2, 09/2/2021, Tuesday), session-3, video link:

<https://drive.google.com/file/d/145bqdnKuhmWmDzgKKYLeC90Vw6vUxq6s/view?usp=sharing>

The screenshot shows a presentation slide with the following text:

"ICTE SPONSORED SIX DAYS SHORT TERM TRAINING PROGRAM (STTP)"
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING
SRI VENKATESWARA COLLEGE OF ENGINEERING CHENNAI
ELECTRIC VEHICLE EVOLUTION- IMPACT ON POWER GRID
10th Feb 2021

Electric Vehicle and Power System Operation and Control - A Perspective

K. Shanti Swarup
Department of Electrical Engineering
IT Madras, Chennai

INDIAN INSTITUTE OF TECHNOLOGY MADRAS
DEPARTMENT OF ELECTRICAL ENGINEERING
February 02, 2021

The slide is displayed in a software window with a menu bar and toolbars. A sidebar on the left shows a list of slides. On the right, a video feed shows a circular profile picture of Dr. K. Shanti Swarup.

The screenshot shows a presentation slide with the following text:

Latest Recent Apple EV

Apple is the powerful Smart phone till date
Imagine what will happen to the Apple car.
Which New technologies will be used

February 02, 2021

The slide is displayed in a software window with a menu bar and toolbars. A sidebar on the left shows a list of slides. On the right, a video feed shows a circular profile picture of Dr. K. Shanti Swarup.

Phase-1 (Day-3, 10/2/2021, Wednesday), session-1: Expert lecture by **Dr.K.Shanti Swarup, Professor, Indian Institute of Technology Madras** on the topic “**Electric Vehicle and Power System Operation and Control - a perspective.**”

Phase-1 (Day-3, 10/2/2021, Wednesday), session-1: Expert lecture by **Dr.K.Shanti Swarup, Professor, Indian Institute of Technology Madras** on the topic “**Electric Vehicle and Power System Operation and Control - a perspective.**”

Phase-1 (Day-3), session-1, video link: <https://drive.google.com/file/d/1pHnRI-fF-e3884xjPtFDolLUuPRTnkCn/view?usp=sharing>

Dual-Input Super Boost (DISB) DC-DC Converter

Key features of the proposed converter structure:

- ✓ Set modes of operation
- Input source can provide the power to load as well as charge / discharge the other source (battery) from the solar PV
- ✓ Low component count, lesser weight and low cost

Ref: C. G. Suresh Kumar, K. Suresh, V. Srinivasan, A. Jibir, "A Bidirectional Dual-Input Super Boost DC-DC Converter for Solar Powered Battery Vehicle", IEEE Trans. Information Tech., vol. 12, pp. 6, pp. 1-10, 2016.



Kumaravel S.

Experimental Setup and Hardware Implementation of DISB Converter

- An experimental prototype has been fabricated in the laboratory environment
- The converter prototype is tested with two different voltage levels for the validation of experimental setup with the simulation results
- The switching pulses are generated using TEKTRONIX AN11022 pulse generator with a switching frequency of 20 kHz
- The parameters for the experimental validations are given in Table and the switches with diode are realized by SKM75GB12V IGBT modules



Parameter	Specification
Source 1 (V _{dc})	25 V
Source 2 (V _{dc})	75 V
Capacitor	100 μF
Inductor	1 mH
Switching Frequency	20 kHz

https://doi.org/10.1109/ITTE.2016.7631667

Design and simulation of DISB converter




Kumaravel S.


Phase-1 (Day-3, 10/2/2021, Wednesday), session-2: Expert lecture by **Dr.S.Kumaravel, Asso. Prof., EEE Dept., National Institute of Technology, Calicut** on the topic **“Coordination of multiple Electric Vehicles, Renewable Energy Sources and Battery Energy Storage Systems in Smart Grid.”**

Phase-1 (Day-3, 10/2/2021, Wednesday), session-2, video link:

<https://drive.google.com/file/d/1GPLYYfkaZb73dcFHYsXjviagXj5th6an/view?usp=sharing>

EVs in De-regulated Power Systems

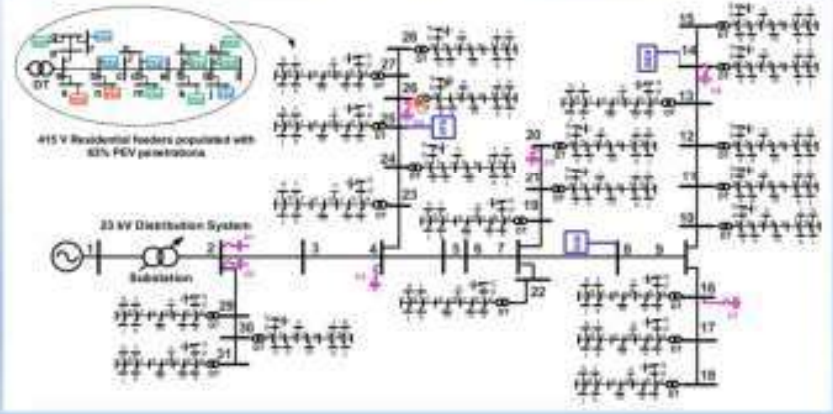




Dr. M. Venkata Kirthiga
Associate Professor
Department of EEE
National Institute of Technology Tiruchirappalli
Tamil Nadu.



Individual node in distribution system in future



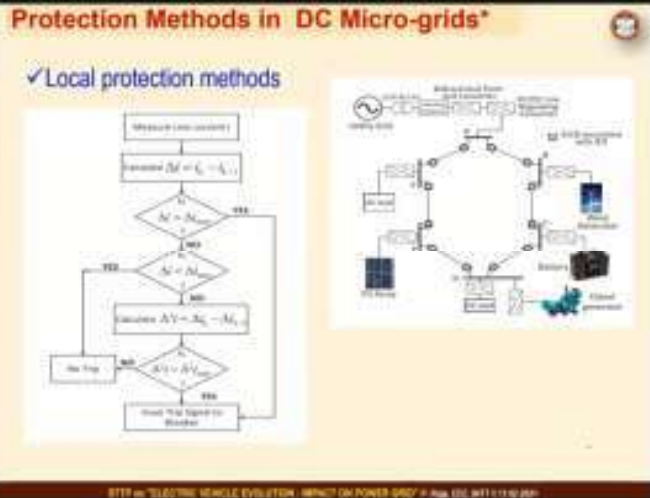
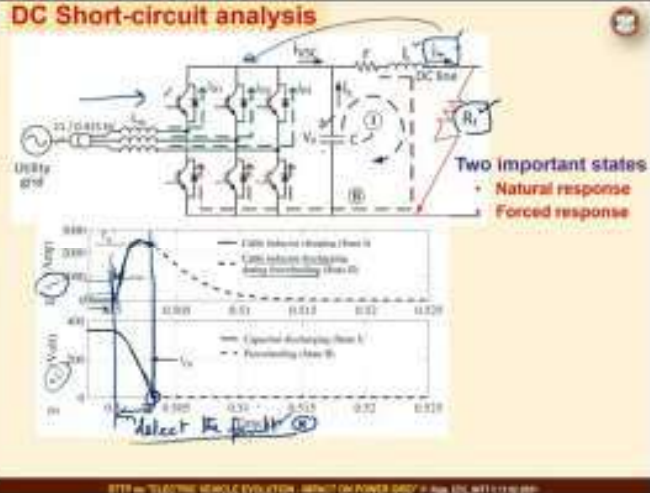
415 V Residential feeders populated with 83% PEV penetration

23 kV Distribution System
Substation



Phase-1 (Day-3, 10/2/2021, Wednesday), session-3: Expert lecture by **Dr.Venkatakrithiga, Asso. Prof., EEE Dept., National Institute of Technology, Trichy** on the topic **“Impact of Electric Vehicle in Deregulated Environment”**

Phase-1 (Day-3, 10/2/2021, Wednesday), session-3, video link:
<https://drive.google.com/file/d/15J10RAo2gv619vJJwMquy5rHqABmEeBj/view?usp=sharing>



Phase-1 (Day-4, 11/2/2021, Thursday), session-1: Expert lecture by **Dr.P.Raja, Asso. Prof., EEE Dept., National Institute of Technology, Tiruchirappalli** on the topic “Electric Vehicle add-on micro - Protection studies.”

Selection of Battery

- High Power/Energy density
- Toxicity, Thermal capability
- Cycle/Service life
- Small size and light weight
- Safety and Cost

Energy source	Specific energy (Wh/kg)
Lithium	150-200
Lead acid	30-50
NiMH	60-120
Hydrogen	10000
Coal	8000
Lead acid battery	30
NiMH nickel hydride battery	60
Lithium polymer battery	150
Lithium ion battery	150-200
Other application	4.4

Sl. No.	Parameter	Lead Acid	NiCd	NiMH	Li-Ion
1	Energy Density (Wh/Kg)	30-50	45-80	60-120	120-250
2	Power Density (W/Kg)	150-400	80-150	200-300	600-800
3	O.C. Voltage/Cell (V)	2.125	1.3	1.35	4.2
4	Temperature Range (in °C)	-20 to +60	-40 to +60	-20 to +60	-30 to +60
5	Cycle Life (Charge-discharge)	200-300	1500	300-500	500-1000

27



i. Battery (cont.)

EY Battery pack



Tesla Battery pack



Nissan Battery pack

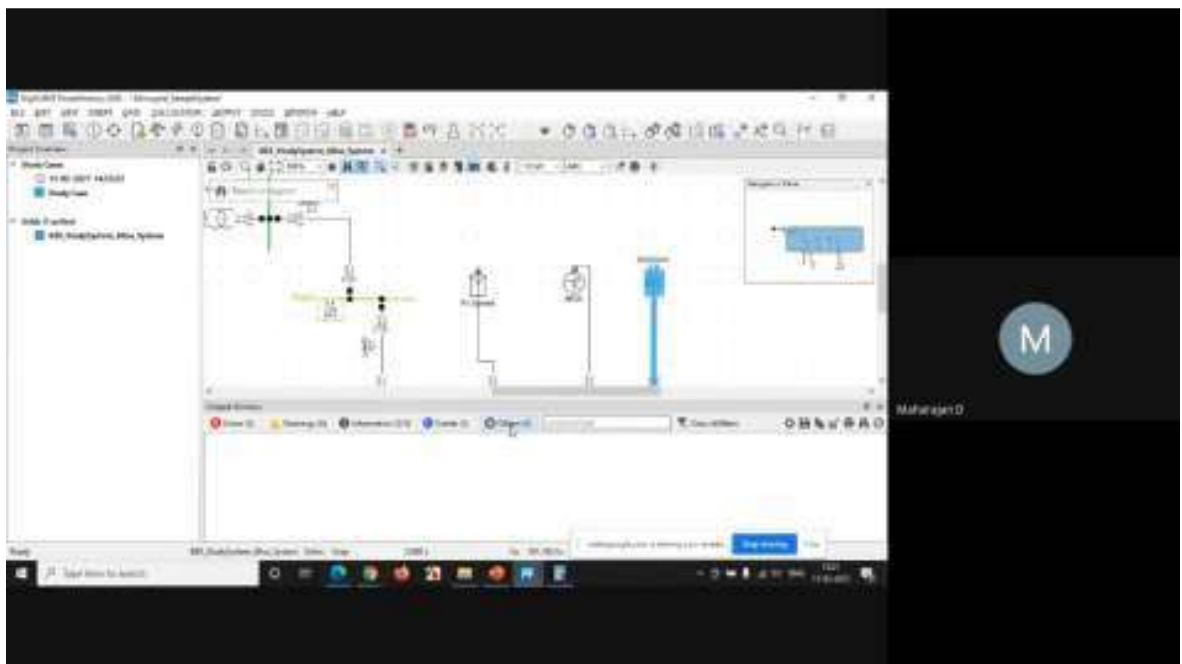
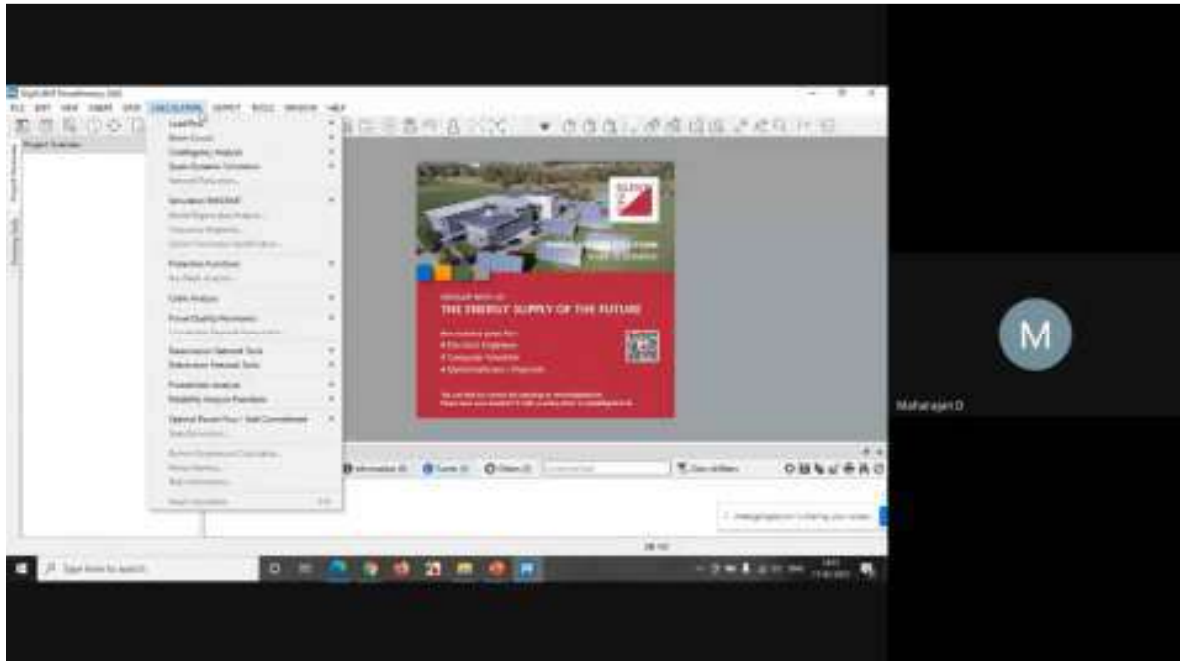
38



Phase-1 (Day-4, 11/2/2021, Thursday), session-2: Expert lecture by **Dr.V.Saravanan, Professor, EEE Dept., Arunai Engineering College** on the topic **“Battery Energy Storage Technologies for Electric Vehicle and Issues in Integration with Power Grid.”**

Phase-1 (Day-4, 11/2/2021, Thursday), session-1 & 2, video link:

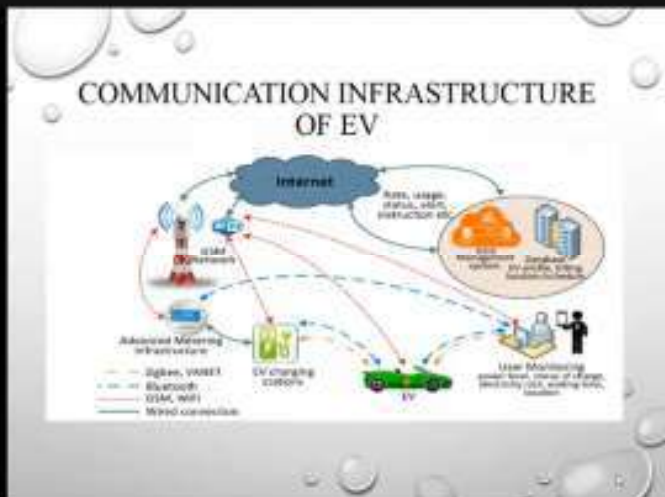
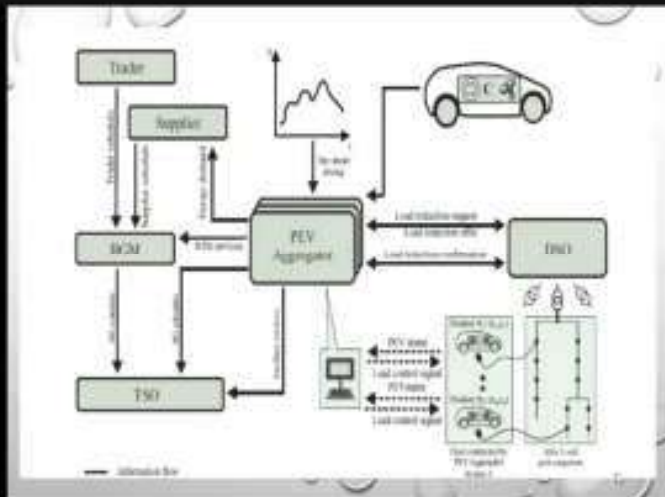
<https://drive.google.com/file/d/1KBxsiBq9C1pDYgOyRTYzOPWTdQBh0XSL/view?usp=sharing>



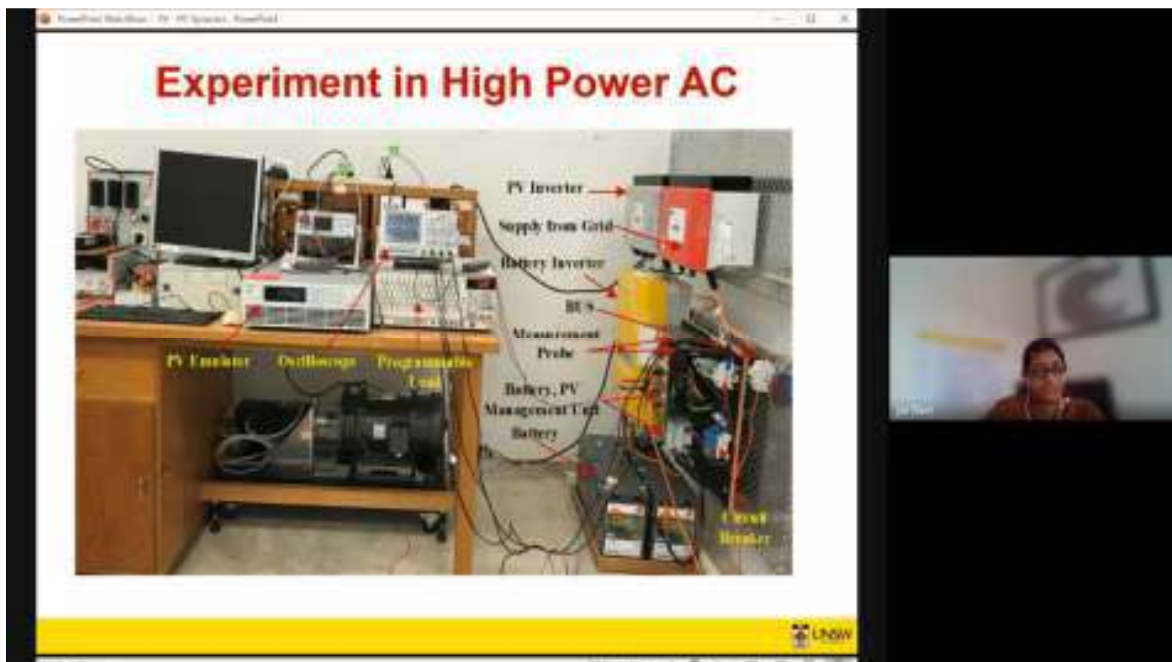
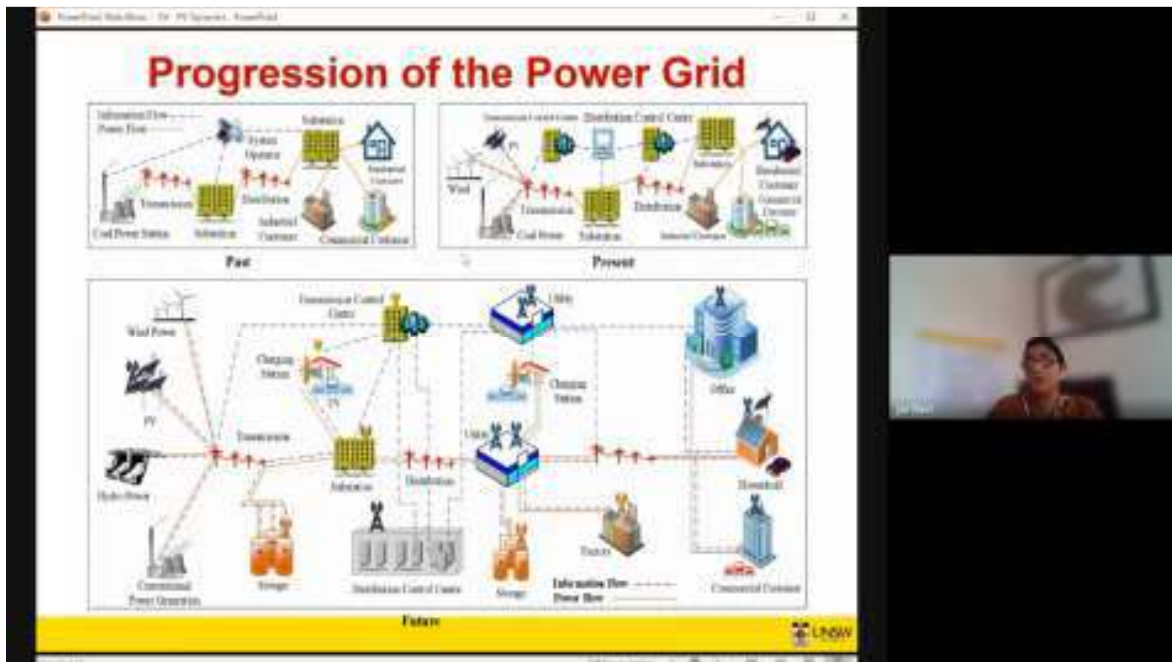
Phase-1 (Day-4, 11/2/2021, Thursday), session-3: Expert lecture and hands-on training by **Dr.D.Maharajan, Asso. Prof., EEE Dept., SRM University** on the topic **“Hands on Training on Micro/Smart grid Power System using DigSILENT”**

Phase-1 (Day-4, 11/2/2021, Thursday), session-3, video link:

<https://drive.google.com/file/d/1DogEDthQ8e3Xgpk7PpH02YBdbeDzoSeG/view?usp=sharing>



Phase-1 (Day-5, 12/2/2021, Friday), session-1: Expert lecture by **Dr.V.Gomathi, Asso. Prof., EEE Dept, Anna University, Chennai** on the topic **“Smart Grid controls - Operation and Control with Electric Vehicle.”**



Phase-1 (Day-5, 12/2/2021, Friday), session-2: Expert lecture by **Dr. R.Jayashri, Professor, School of Electrical Engineering and Telecommunications, UNSW SYDNEY, AUSTRALIA** on the topic **“Electric vehicle impact on Power System Dynamics.”**

Phase-1 (Day-5, 12/2/2021, Friday), session-1 & 2, video link:
<https://drive.google.com/file/d/13aVJmnf5FpafEgLY28iPhXTeQLn4nSfp/view?usp=sharing>

Phase-1 (Day-5, 12/2/2021, Friday), session-3 was postponed to Day-6 session 2 due to technical issues at the expert speaker end.

The rapid automobile market change has already began...

Shared Mobility

Global Shared Mobility Market Value: \$1.55 Trillion

Change in the penetration of vehicles

Sharing economy "Driver" to "Taker"

Electrification

Chart 2018

Rapid growth of EV

Expansion of "eco-friendly vehicles" with strong environmental regulations (CO₂)

Connectivity

Global sales forecast

Connected car market increase

Automotive ICT-based "Vehicle to Everything"

Autonomous

EV of fully autonomous driving has arrived ("23"-30 years)

"Artificial intelligence" of automobiles in progress

Post COVID, Uncertainty in the automobile industry has increased, but it won't be able to change the 'flow to the future'

SVCE-EEE AICTE STTP: day 6 (2021-02-12 at 19:33 GMT-8)

Battery Cell Standardization

- The concept of battery cell standardization is proposed to reduce the battery cost of the electric vehicle by using the common battery cell.
 - Battery cost is about 30-40% of EV Price
- There are many issues with battery standardization.
 - Restriction on Package / Design / Vehicle performance etc.
 - When developing vehicles according to the battery, it is difficult to differentiate performance / design.
- Therefore, battery cell standardization is mandatory after 2020 for battery reduction

Hyundai Battery Package

Soul EV On WVD

Ioniq EV

Under 2nd seat & luggage

Kona On WVD

Other OEM's EV Battery Package

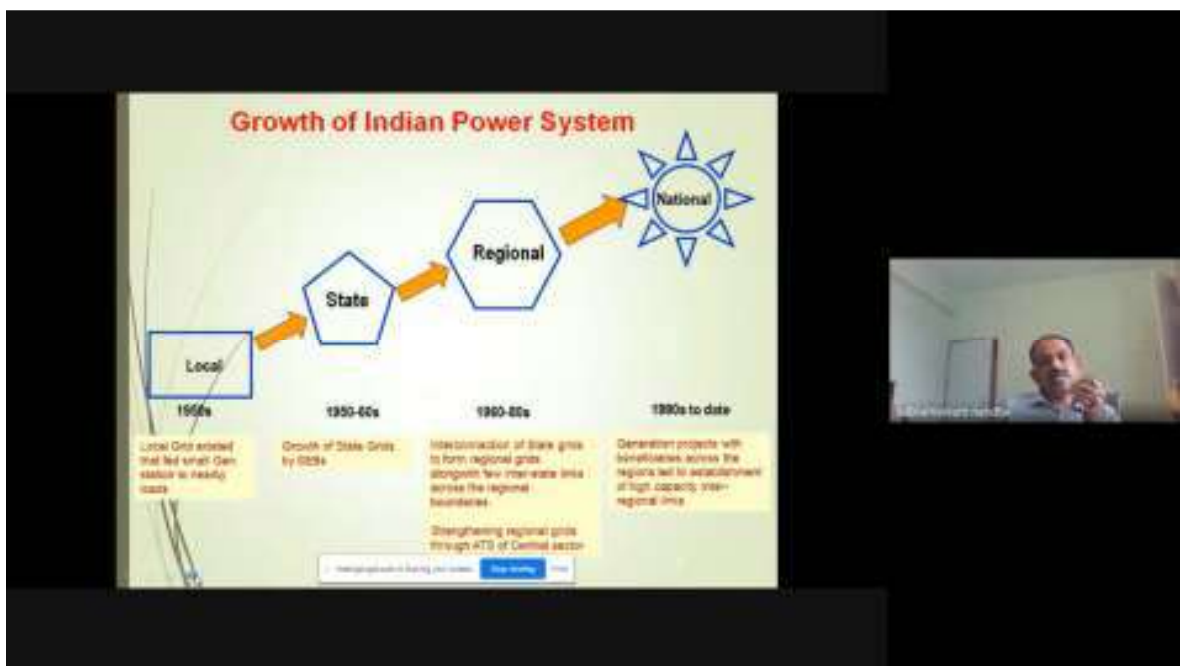
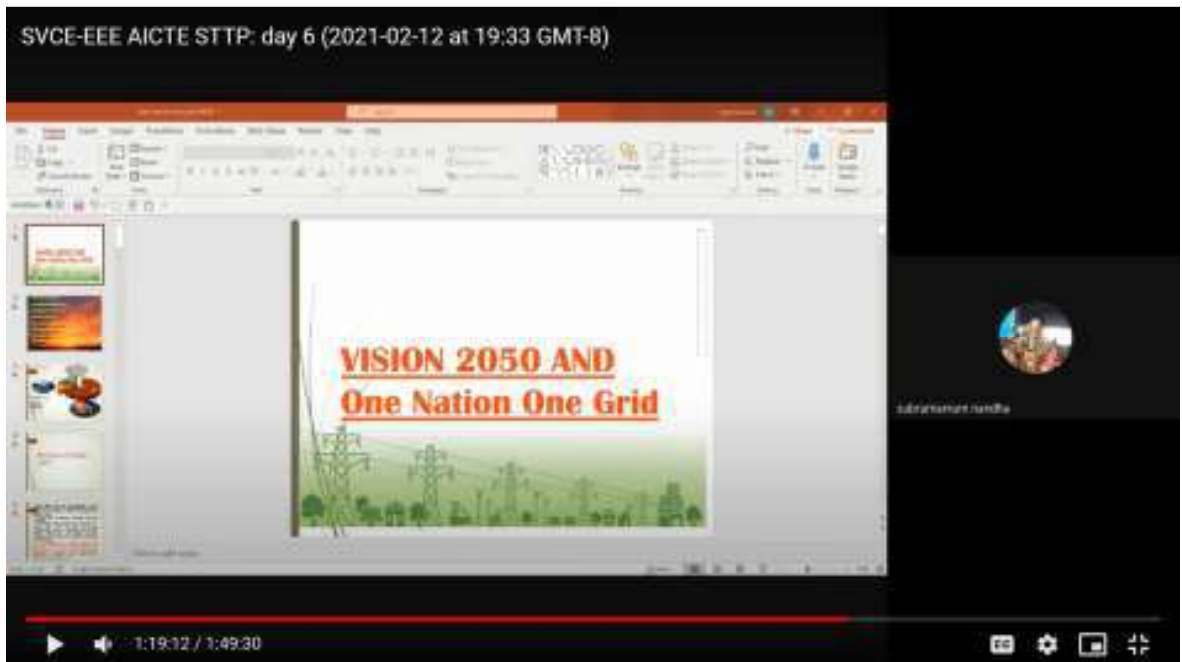
Nissan LEAF On WVD

Renault ZOE On WVD

VW Golf On WVD

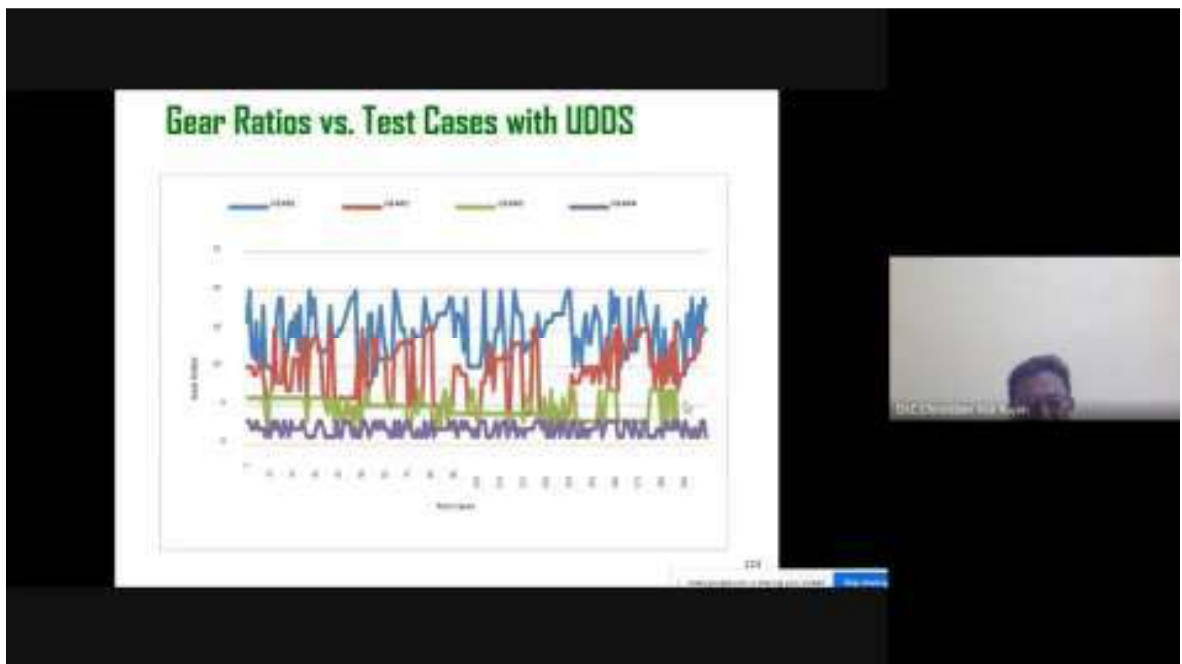
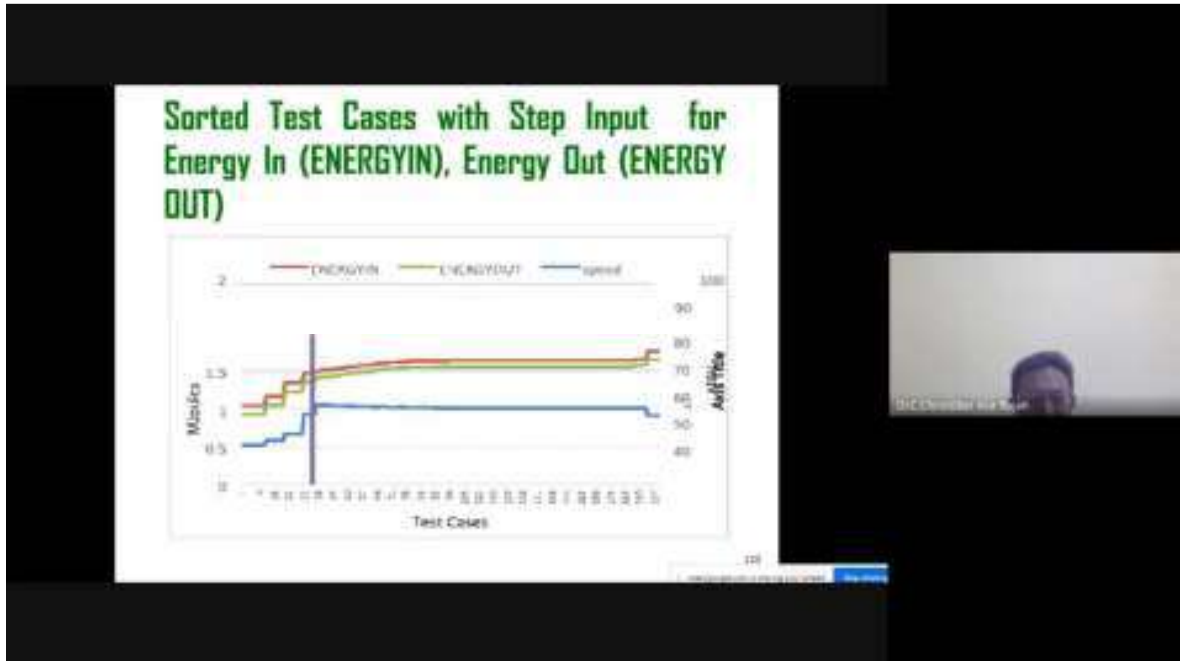
39:59 / 1:49:30

Phase-1 (Day-6, 13/2/2021, Saturday), session-1: Expert lecture by **Mr.S.Jayakrishnan, General Manager, Hyundai Motor India Ltd** on the topic **“Electric Vehicle – Future perspectives and preparedness.”**



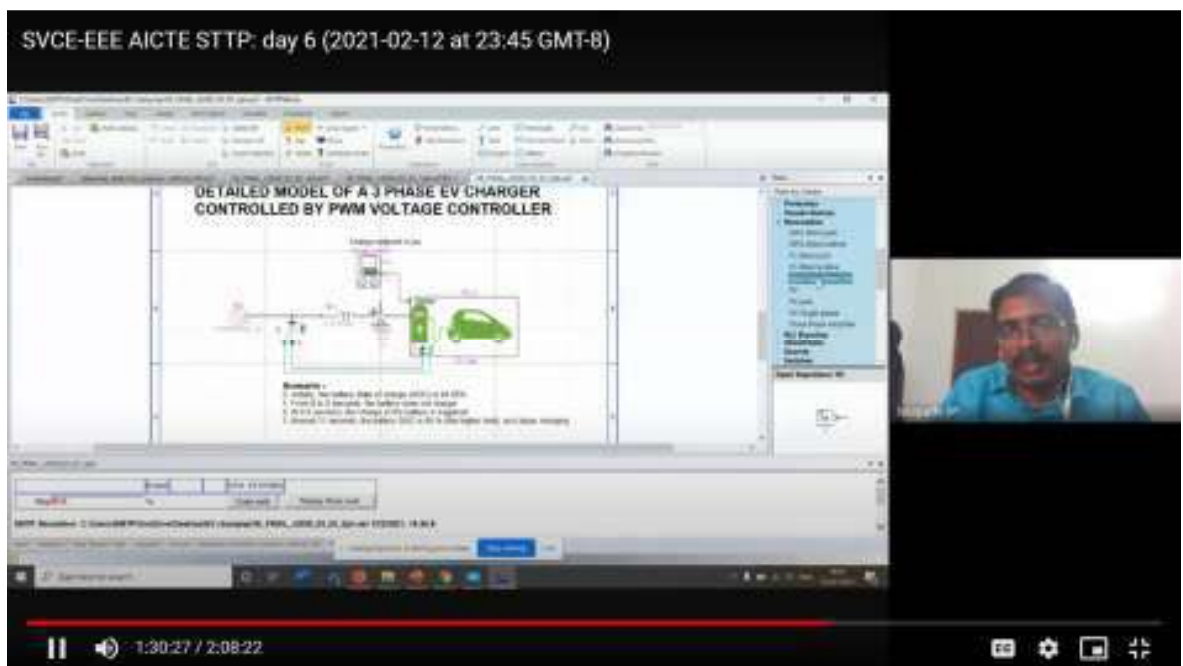
Phase-1 (Day-6, 13/2/2021, Saturday), session-2 (postponed session 3 of Day-5): Expert lecture by **Mr.Nandhakumar, Design Engineer, Power Grid Corporation of India** on the topic “**Vision 2050: Power Grid Resiliency**”

Phase-1 (Day-6, 13/2/2021, Saturday), session-1 & 2, video link:
<https://drive.google.com/file/d/1ca9mL3FsB1kB9ZYgUCNXNITq-ObT1O6U/view?usp=sharing>



Phase-1 (Day-6, 13/2/2021, Saturday), session-3: Expert lecture by **Dr.C.Christober Asir Rajan, Professor, EEE Dept , Pondicherry Engineering College** on the topic **“Optimization of Vehicle Energy flow with Residential Grid and Renewable Energy Sources.”**

Phase-1 (Day-6, 13/2/2021, Saturday), session-3, video link: <https://drive.google.com/file/d/1vTpmS-QTcRUIGkABE2LXDgRFhDHGE0Lz/view?usp=sharing>

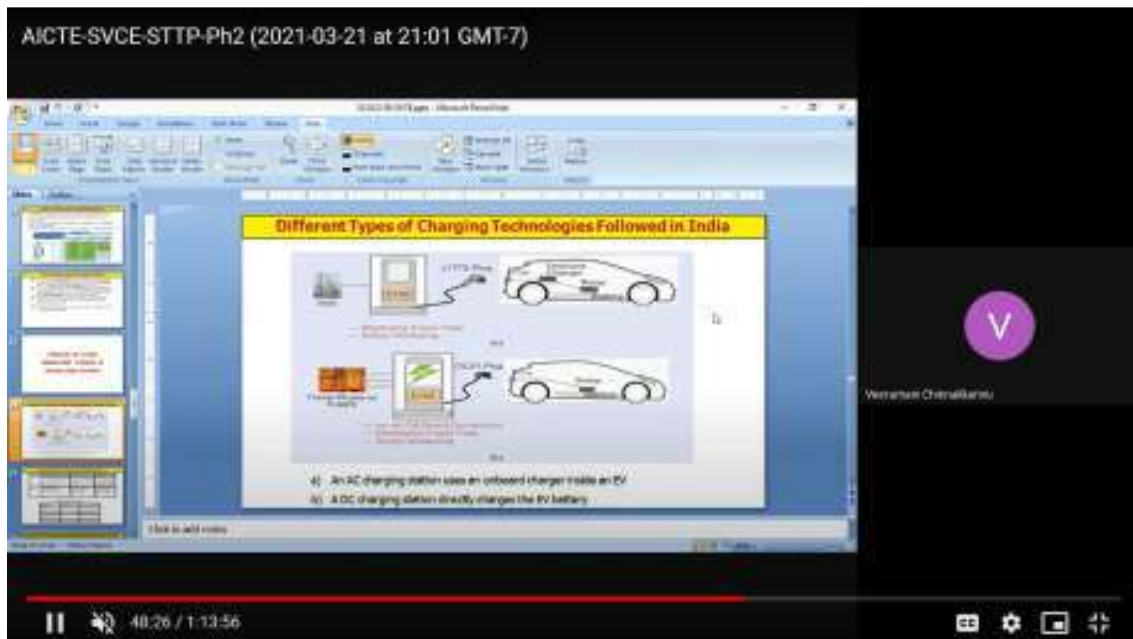
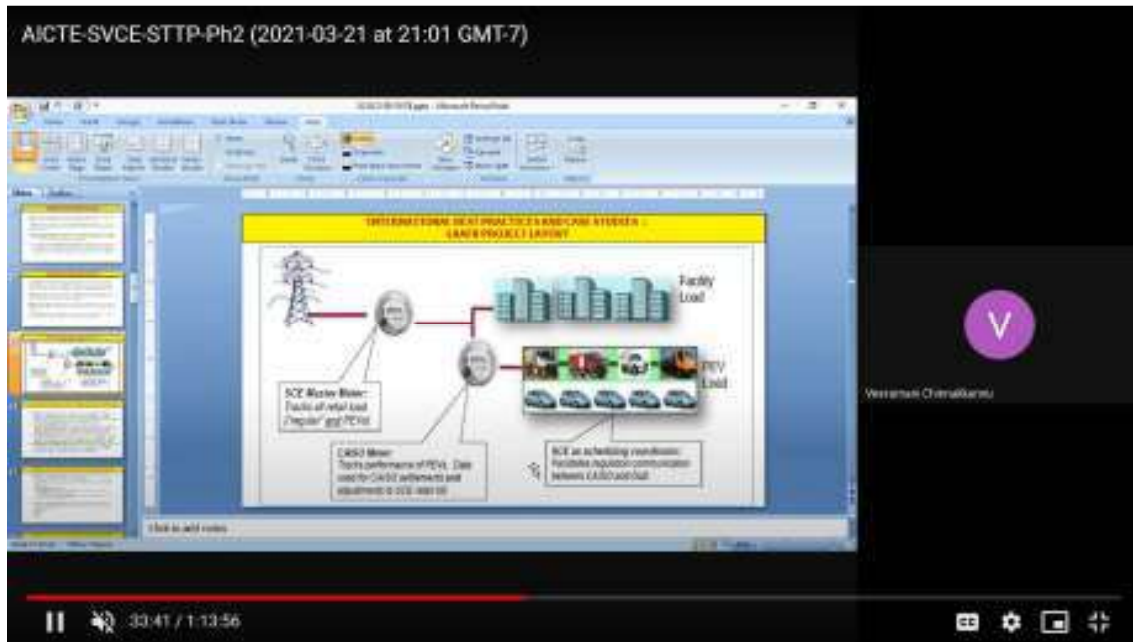


Phase-1 (Day-6, 13/2/2021, Saturday), session-4: Expert lecture and hands-on training by **Dr.V.P. Boopathi, Sr. Appn. Engineer, PWSIM Engg. Solns Pvt Ltd.** on the topic “**Hands on Training to realize the impact of Electric Vehicle on Power System Dynamics.**”

Phase-1 (Day-6, 13/2/2021, Saturday), session-4, video link:

<https://drive.google.com/file/d/1RhNQ4baCHI1Ar7b7PXfrymF420xGXISf/view?usp=sharing>

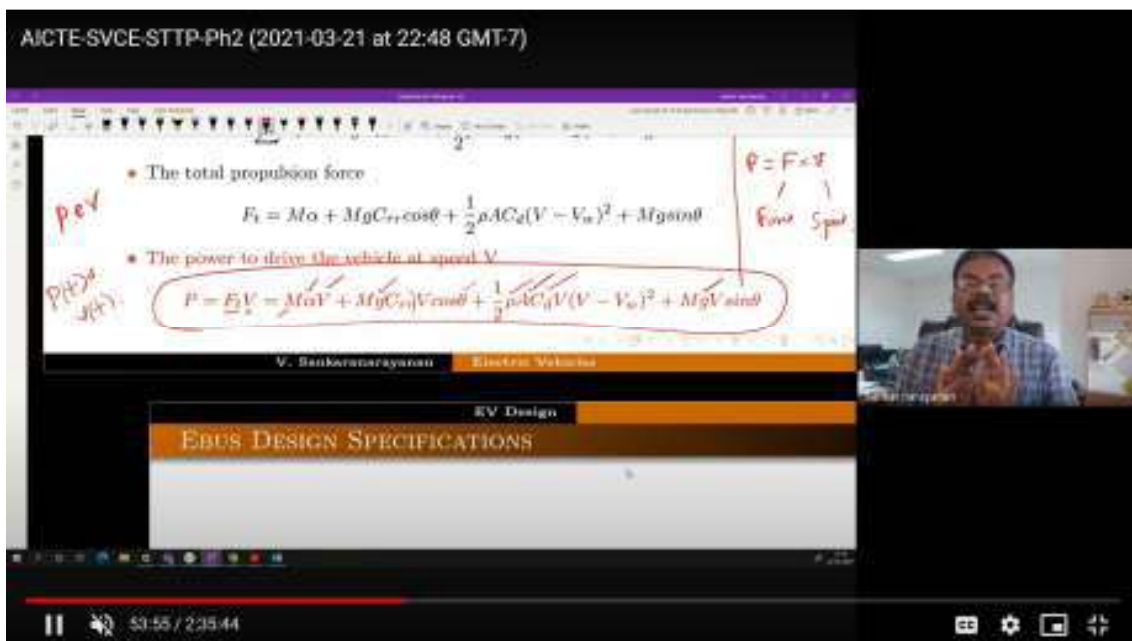
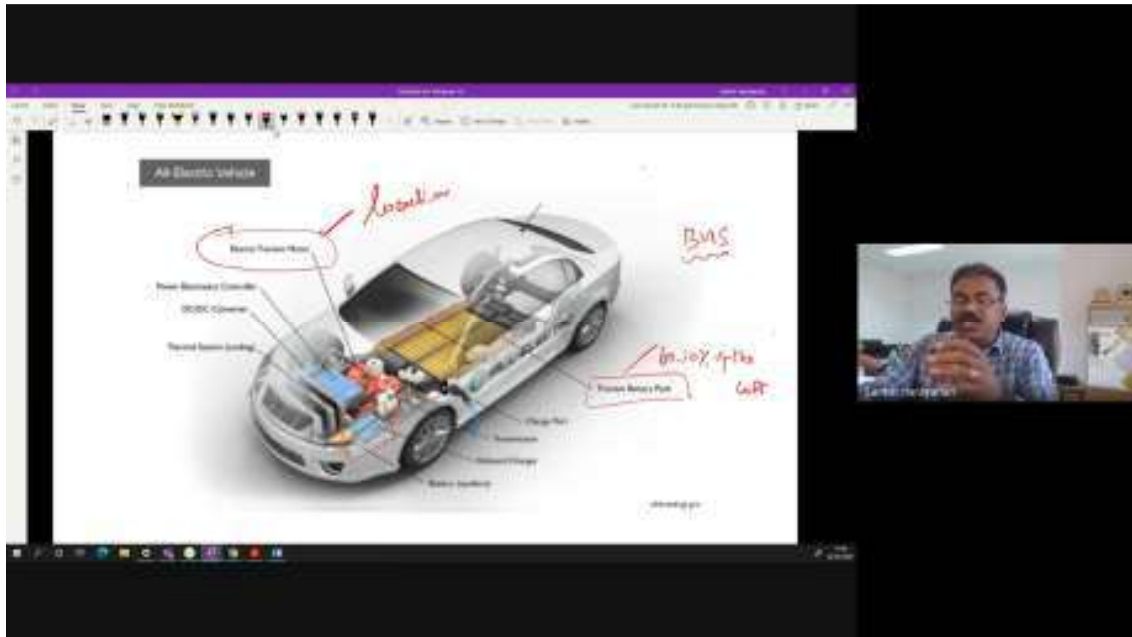
Except for few expert speaker & topic changes, the sessions of Phase-2 and 3 were the same as that of Phase-1. The details of new expert lectures for Phase-2 and 3 and their session details are given below (in addition, all the session video links of Phase-2 & 3 are given at the end):



Phase-2 (Day-1, 22/3/2021 Monday), Inauguration and session-1 expert lecture by **Dr.Veeramani, Chief Engineer (Retd), TANGEDCO** on the topic **“Impact of Renewable Energy Generation and Electric Vehicle on Power Grid – Future perspective and Preparedness.”**

Phase-2 (Day-1, 22/3/2021 Monday), session-1, video link:

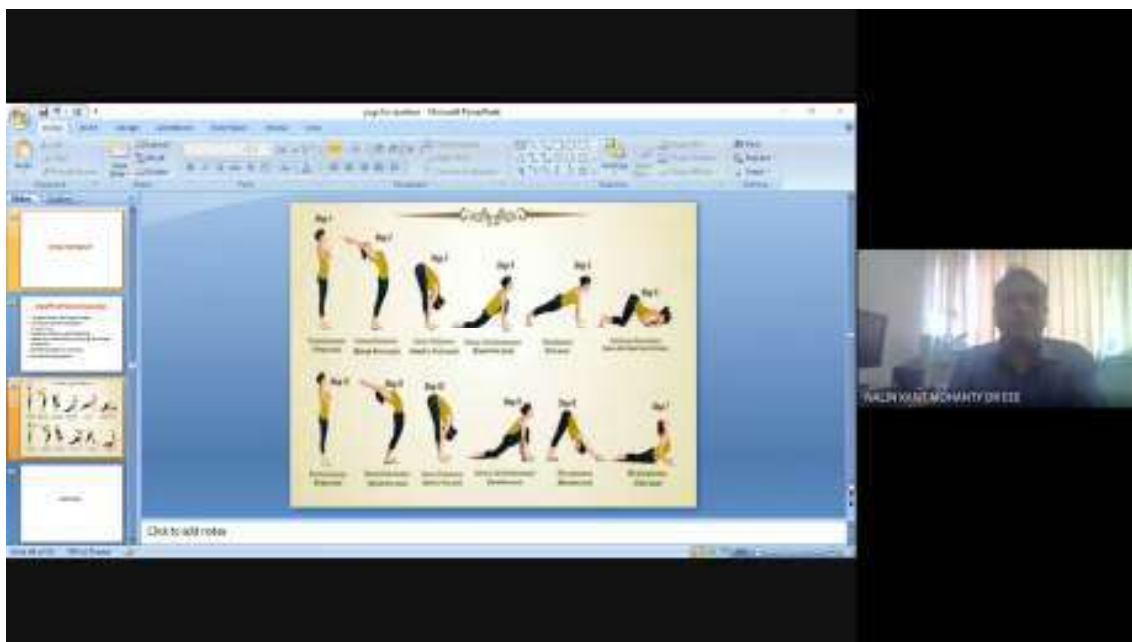
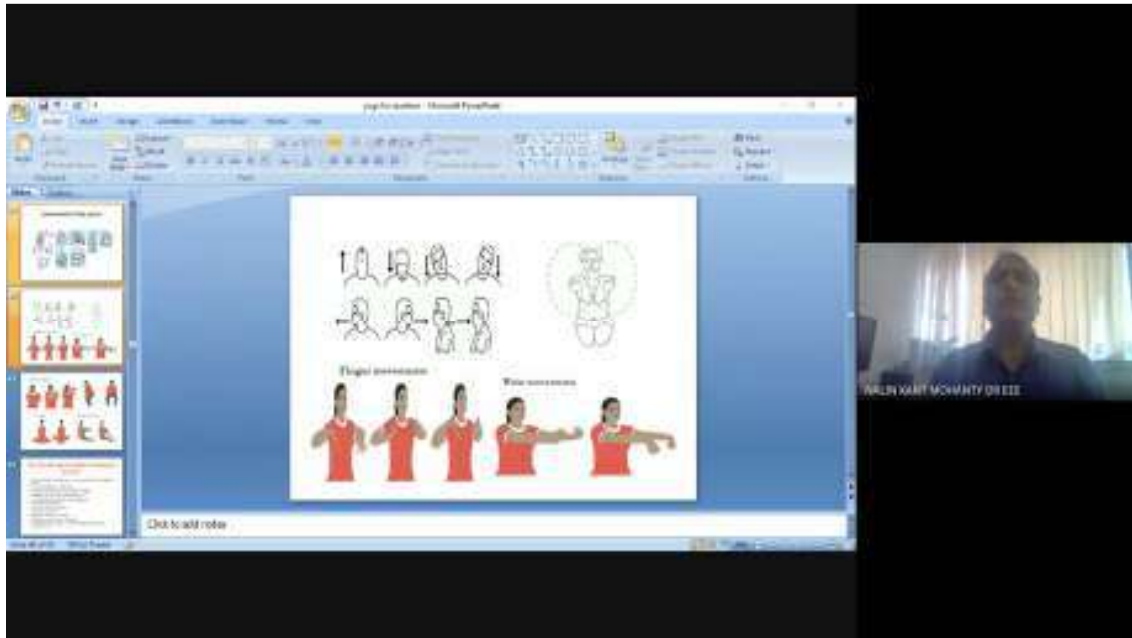
<https://drive.google.com/file/d/1XlMRI67m9C-jUSyWzhemPEvbIgb2xliW/view?usp=sharing>



Phase-2 (Day-1, 22/3/2021 Monday), session-2: Expert lecture by **Dr. Sankara Narayanan, Professor & Head** EEE Dept., National Institute of, Technology, Tiruchirappalli on the topic **“Power Train Design.”**

Phase-2 (Day-1, 22/3/2021 Monday), session-2, video link:

<https://drive.google.com/file/d/1Q11aALLfNrdtYcXO3yhPnyk1JjwBUZOA/view?usp=sharing>



Phase-2 (Day-1, 22/3/2021 Monday), session-3: Expert lecture and online practice by **Dr.Nalin Kant Mohanty Professor, EEE Dept, SVCE** on the topic “Yoga for Teachers”

Phase-2 (Day-1, 22/3/2021 Monday), session-3, video link:

https://drive.google.com/file/d/18SW4CgzXgybhjceot5yYRm-wrZMD_sNj/view?usp=sharing

GAIN SCHEDULED PID FOR VEHICLE SPEED CONTROL

Gain Scheduled PID controller is a nonlinear feedback controller of a special type. It is a controller that can **modify its behavior** in response to changes in the dynamics of the process and the disturbances.

Figure: Block diagram of GPID

Figure: Block diagram of Vehicle speed control

Kalpana Dhanalingam

AICTE-SVCE-STTP Ph2 (Day2) (2021-03-22 at 21:17 GMT-7)

FAULT DIAGNOSIS IN FAST CHARGING BATTERY

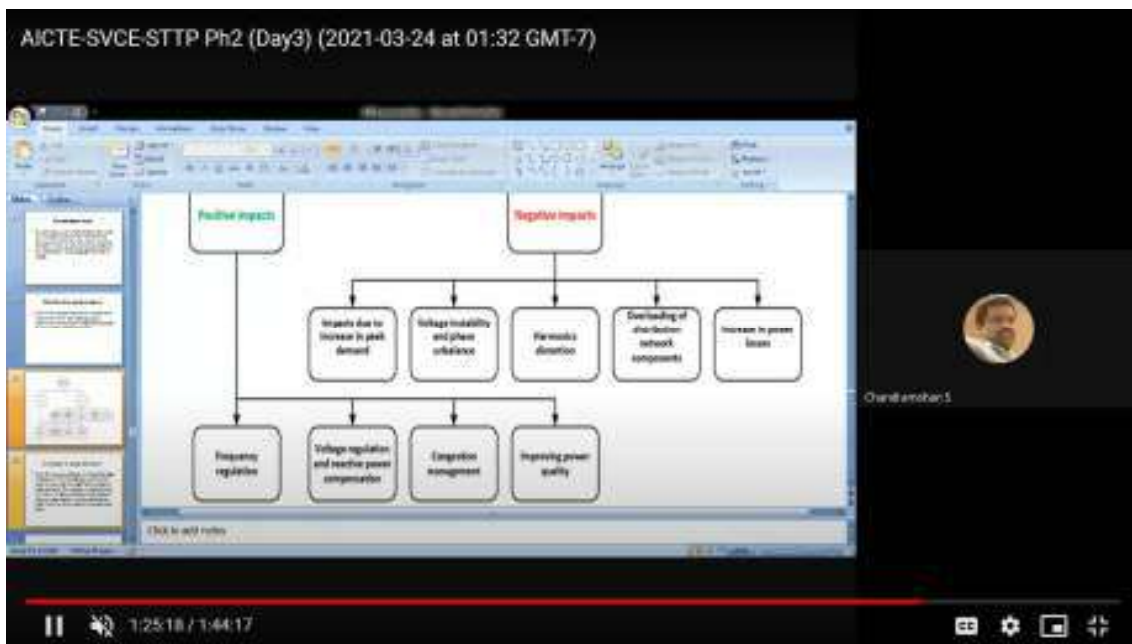
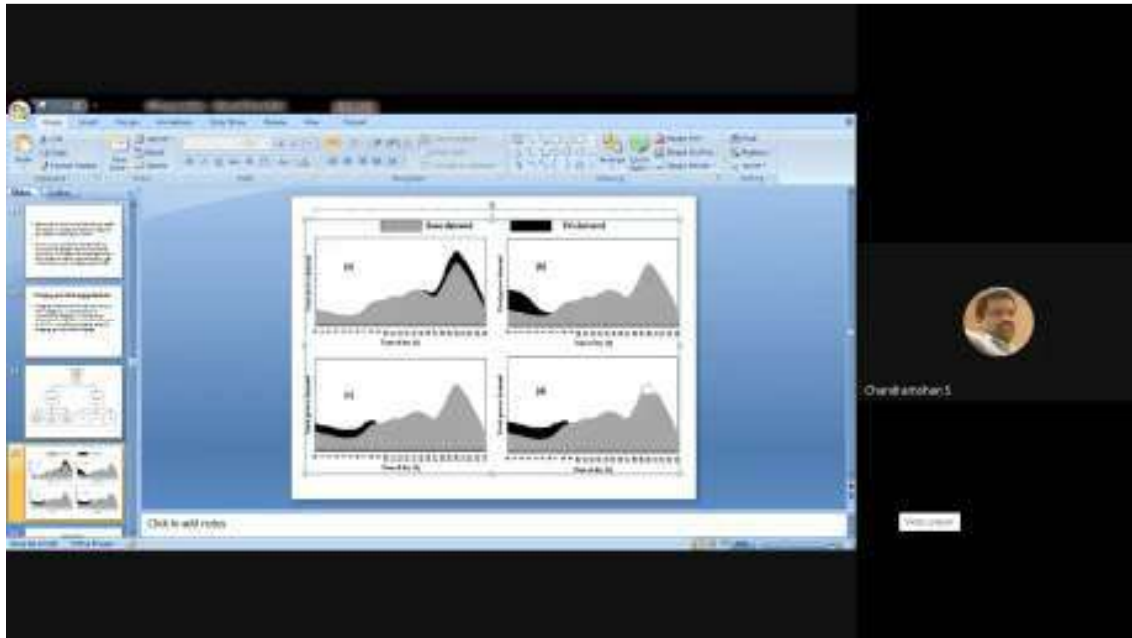
- Bias fault occurs in Fast charging battery system can be diagnosed by estimating the battery parameters such as charging time constant and internal resistance of the battery using Adaptive Unscented Kalman Filter (AUKF).
- The standard deviations of the estimated battery parameters are compared with threshold values.

Kalpana Dhanalingam

1:04:17 / 1:10:51

Phase-2 (Day-2, 23/3/2021 Tuesday), session-1 (on the request of the Expert speaker, the session 2 was preponed to session 1): Expert lecture by **Dr S. Kalpana, Asst. Professor, Madras Institute of Technology, Chennai** on the topic **“Design and implementation of controllers and control strategies for Electric Vehicle.”**

Phase-2 (Day-2, 23/3/2021 Tuesday), session-1, video link:
<https://drive.google.com/file/d/1m4h2Nx570c1NgKlqNg7JTcKEDS6be9Nc/view?usp=sharing>




Phase-2 (Day-3, 24/3/2021 Wednesday), session-3: Expert lecture by **Dr. S.Chandramohan, Prof. & HOD/EEE Dept., College of Engineering, Guindy, Anna University, Chennai** on the topic **“Impact of Electric Vehicle in Deregulated Environment.”**

Phase-2 (Day-3), session-3, video link: <https://drive.google.com/file/d/1GBRceQy-QyVqFfSqdchx23gvA1mW5y-/view?usp=sharing>

Problem Formulation

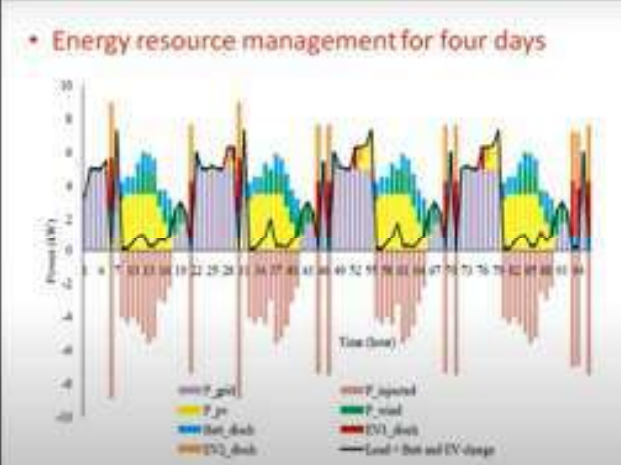
- Objective Function**

$$\min f(\text{cost}) = \sum_{t=1}^T \left\{ \left[\begin{aligned} & [(P_{grid}(t) \times dt) \times C_{grid}(t)] + \\ & [(P_{PV}(t) \times dt) \times C_{PV}(t)] + \\ & [(P_W(t) \times dt) \times C_W(t)] + \\ & \left[\left(\sum_{i=1}^{N_{EV}} p_{EV}^{Disch}(t,i) \times dt \right) \times C_{EV}^{Disch}(t) \right] + \\ & [(P_b^{Disch}(t) \times dt) \times C_b^{Disch}(t)] - \\ & [(P_{Inject}(t) \times dt) \times C_{Sell}(t)] \end{aligned} \right] \right\}$$


Somasundaram Periasamy

AICTE-SVCE-STTP Ph2 (Day4) (2021-03-24 at 21:06 GMT-7)

Energy resource management for four days



Time (hour)

Power (kW)

■ P_grid

■ P_pv

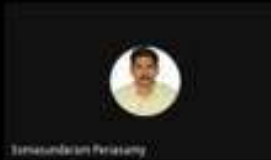
■ P_wind

■ P_battery

■ P_battery2

■ P_battery3

— Load + Disch and EV-charging

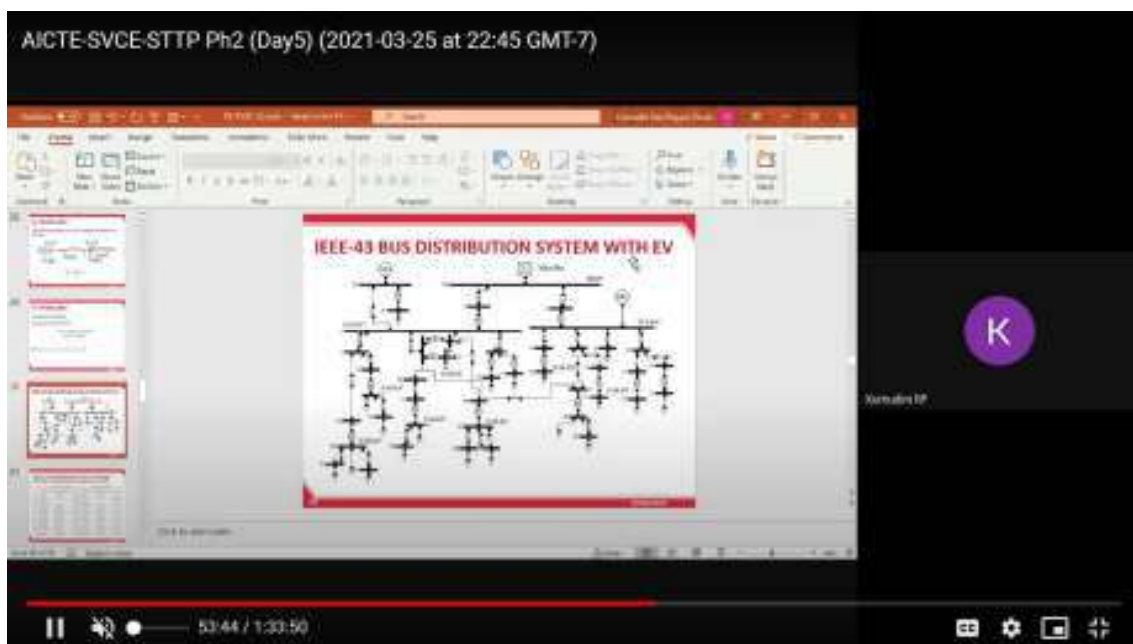
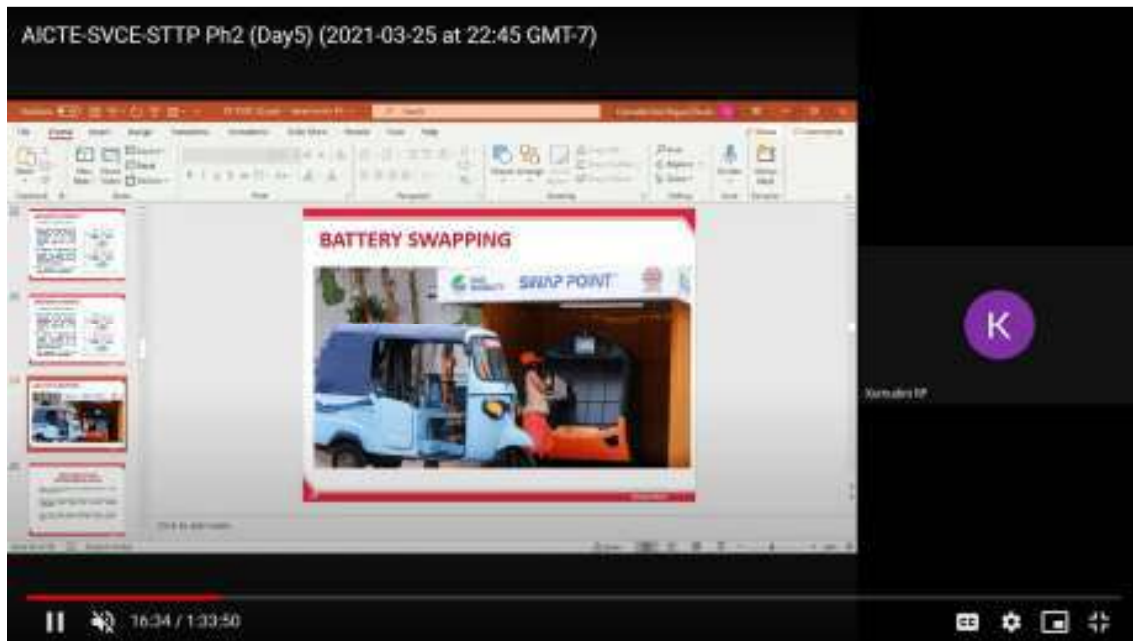


Somasundaram Periasamy

1:12:05 / 1:30:57

Phase-2 (Day-4, 25/3/2021 Thursday), session-1 (on the request of the Expert speaker, the session 2 of Day-6 was preponed to session 1 of Day-4): Expert lecture by **Dr.P.Somasundaram, Prof./EEE Dept., College of Engineering, Guindy, Anna University, Chennai** on the topic **“Optimization of Vehicle Energy flow with Residential Grid and Renewable Energy Sources.”**

Phase-2 (Day-4, 25/3/2021 Thursday), session-1, video link:
https://drive.google.com/file/d/1OiafAaot9f9b7ApVJGXwn6-_ArJgOVIV/view?usp=sharing



Phase-2 (Day-5, 26/3/2021 Friday), session-2 (on the request of the Expert speaker, the session 1 of Day-4 was postponed to session 2 of Day-5): Expert lecture by **Dr. R.P.Kumudini Devi, Professor, College of Engineering, Guindy, Anna University, Chennai** on the topic “**Electric Vehicle and Power System Operation and Control – a perspective.**”

Phase-2 (Day-5, 26/3/2021 Friday), session-2, video link:

<https://drive.google.com/file/d/1MXYzNDInMS8WYLH8ZpyDpETVOG1PnB7w/view?usp=sharing>

AICTE-SVCE-STTP Ph2(Day 6) (2021-03-26 at 21:04 GMT-7)

Two level Inverter – DC to 3-Ph AC

- DC link Voltage = 2800V
- 3 Ph, AC output Voltage = 2400V_{L-L}
- 3 Ph, AC output current = 270A_{max}

40:18 / 1:26:48

AICTE-SVCE-STTP Ph2(Day 6) (2021-03-26 at 21:04 GMT-7)


Locomotive – Quad Voltage Configuration

1:05:23 / 1:26:48



Phase-2 (Day-6, 27/3/2021 Saturday), session-1: Expert lecture by **Mr.B.Saravanan, Lead-Traction control, Alstom, Bangalore** on the topic “**Electric Traction**”

Phase-2 (Day-6, 27/3/2021 Saturday), session-1, video link:
<https://drive.google.com/file/d/1aTNaG4V9S-RuYr5bFVuvtc16GT7c0Ne4/view?usp=sharing>

Use Case 1- School Bus to Grid




- Vehicle-to-grid Technology (V2G) accelerates the clean energy revolution.
- Dominion, a utility in Virginia, US is one of the first to integrate V2G into its commercial operations, with the first 50 electric buses expected to be operational by the end of 2020.
- The integration of a new 2.6-gigawatt offshore wind farm, Dominion Energy has devised a plan to use batteries within electric school buses as a grid flexibility asset.
- Dominion will provide selected local schools with 50 battery-powered buses equipped for bidirectional charging. When the vehicles are idle, the utility will store excess energy in the batteries and draw it back in peak hours.



37:01 / 54:57

Electric Aircraft

Rolls-Royce eA700 project
Another vehicle added to name, Rolls-Royce's eA700, announced last year at the 2016 Paris Air Show International Airshow.



- The vehicle will be hybrid-powered with a modified Rolls-Royce M250 gas turbine at the rear of the craft powering six electric propellers specially designed to have a low noise profile. In this configuration it could carry four or five passengers at speeds up to 250mph for approximately 500 miles and would not require re-charging as the battery is charged by the gas turbine.

Phase-2 (Day-6, 27/3/2021 Saturday), session-2 (on the request of the Expert speaker, the session 2 of Day-5 was postponed to session 2 of Day-6): Expert lecture by **Dr.N.Sivakumar, Global Technical lead, Rolls-Royce, Singapore** on the topic **“Configuration and components of Electric Vehicle – Overview.”**

Phase-2 (Day-6, 27/3/2021 Saturday), session-2, video link:

https://drive.google.com/file/d/1pVlewXZqW-3SSNefPrHFp_PXUkMO95N0/view?usp=sharing

AICTE-SVCE-STTP Ph2(Day 6) (2021-03-26 at 23:53 GMT-7)

Smart grid with EV control

Dr S G BHARATHI DASAN

13:45 / 46:26

EV communication network architecture with smart grid

Dr S G BHARATHI DASAN

Phase-2 (Day-6, 27/3/2021 Saturday), session-3: Expert lecture by **Dr.S.G.Bharathidasan, Asso. Prof., EEE Dept., SVCE** on the topic “**Smart Grid with Electric Vehicle.**”

Phase-2 (Day-6, 27/3/2021 Saturday), session-3, video link:

https://drive.google.com/file/d/1n59MDxPTLvQV_zoWxokx3FVBd8XJVbmA/view?usp=sharing

AICTE-SVCE-STTP Ph3(Day 1) (2021-04-18 at 21:25 GMT-7)

Why the variability is a problem for grid operators?

- Power systems are generally designed to manage, through the load shedding.
- Intermittent variability needs additional balancing reserves.
- Industry flexibility requirements to accommodate higher variability.
- Higher response to accommodation significant up or down swing in wind generation.
- High spinning Reserves(RS) requirements during short peak periods due to high intermittency.
- Lower RS required for high wind penetration than high wind generation.
- Conventional generation need to meet the net load due to high variability.
- High spinning requirements and need to operate at higher efficiency to meet peak loads.

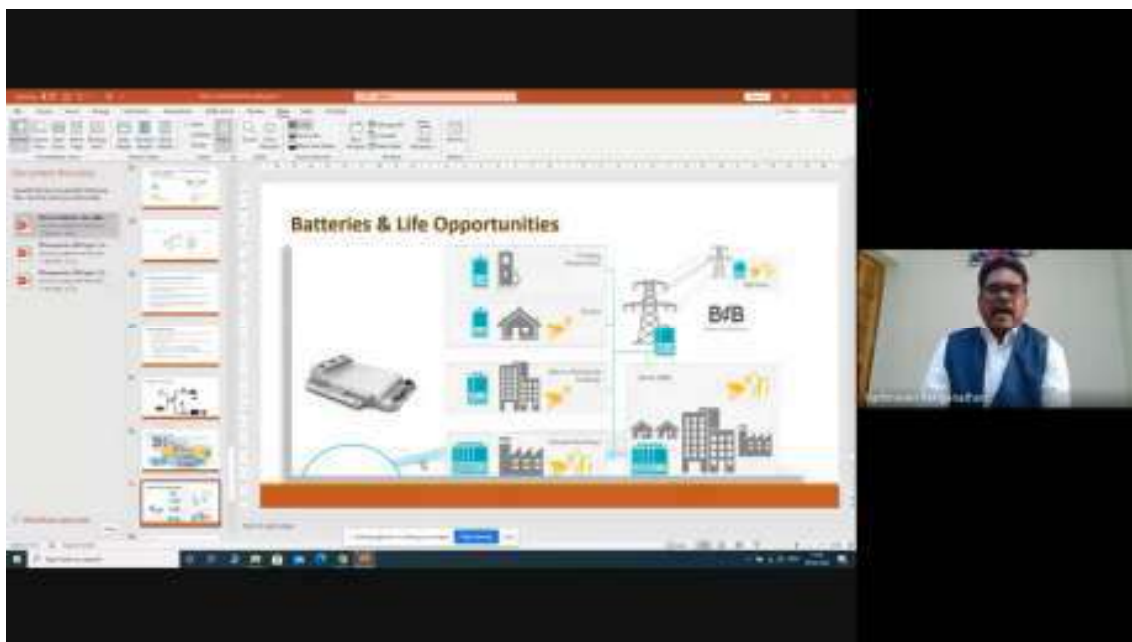
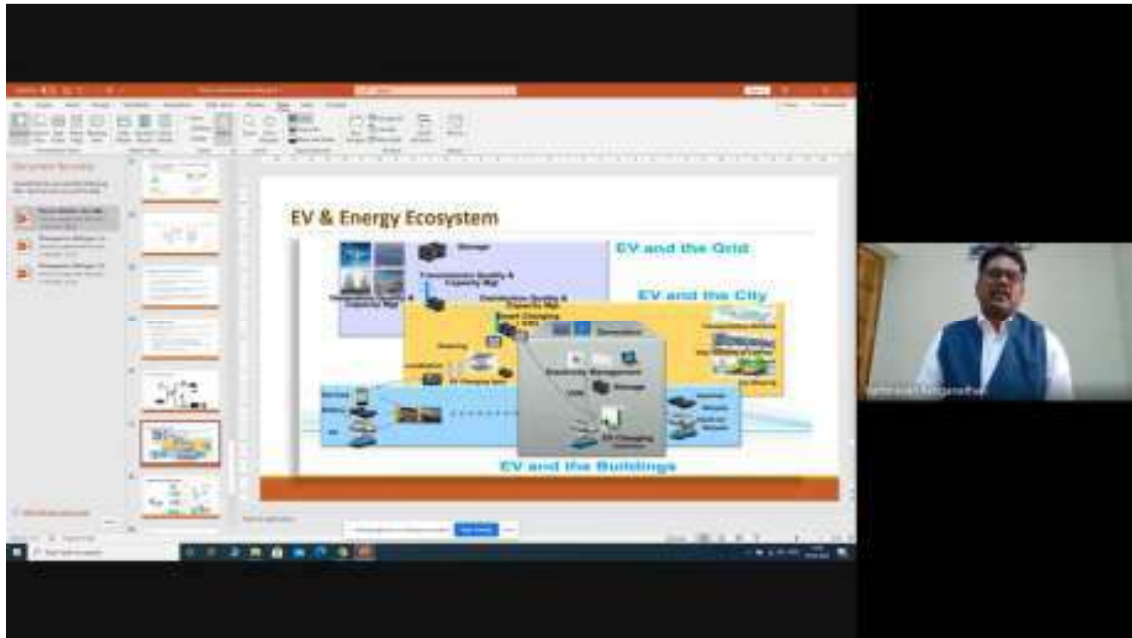
The graph shows a fluctuating line representing power generation over time, with a red area indicating high variability and a blue area indicating lower variability.

49:41 / 3:21:10

EV to Grid

The diagram illustrates the flow of energy from renewable sources (wind turbines) through a power grid (transmission towers) to a house and an electric vehicle (EV) charging station. The EV is shown connected to the charging station, which is also connected to the grid. This represents the concept of EV-to-grid (V2G) technology.

Phase-3 (Day-1, 19/4/2021 Monday), session-1: Inauguration and session-1 expert lecture by **Dr.R.Kathiravan, Executive Engineer, TANGEDCO** on the topic **“Impact of Renewable Energy Generation and Electric Vehicle on Power Grid – Future perspective and Preparedness.”**



Phase-3 (Day-1, 19/4/2021 Monday), session-1: Inauguration and session-1 expert lecture by **Dr.R.Kathiravan, Executive Engineer, TANGEDCO** on the topic **“Impact of Renewable Energy Generation and Electric Vehicle on Power Grid – Future perspective and Preparedness.”**

Phase-3 (Day-1, 19/4/2021 Monday), session-1, video link:

<https://drive.google.com/file/d/1nDCz0ujXJOan5VU7O6djS0Dk3sUvf48u/view?usp=sharing>

Main Benefits of V2X- Future Possibilities

The infographic illustrates the following benefits of V2X:

- Wholesale power market participation
- Generate revenue
- Reduce peak power demand
- Self Consumption
- Help other EVs
- Efficient EV parking management
- Provide power in remote areas
- Higher independence
- Generator when outages
- Emergency power
- Better integration of renewable resources
- Renewable energy storage
- Enhance grid stability, reliability and security
- Provide grid services

IREC
Leading Conversion Technology for Power Resilience

1:13:23 / 1:48:18

Hercules architecture

• Double conversion with internal energy buffering.

The diagram shows a central DC Buffer connected to four converter blocks: AC/DC, DC/AC, DC/DC, and AC/DC. The AC/DC blocks have AC input/output, and the DC/AC blocks have DC input/output. The DC/DC block has DC input/output. A small battery icon is also shown at the bottom right.

Leading Conversion Technology for Power Resilience

Phase-3 (Day-4, 22/4/2021 Thursday), session-3: Expert lecture by **Mr.Rathnakumar Devaraj**, Industrial &Systems, Development Engineer, CE+T Power, Wandre, Belgium on the topic “Modular Multidimensional Converters & Application.”

AICTE-SVCE-STTP Ph3(Day 4) (2021-04-22 at 01:29 GMT+7)

Recommendation-Smart Charging

SUPPLY

Smart charging enables grid access to vehicles for...

DEMAND

Thanks to smart charging your electric vehicle can...

Leading Conversion Technology for Power Resilience

Bidirectional - Smart Charging

The new European IEC 15118-20 standard will be released in 2021. New standard will accelerate the V2G market because it enables bidirectional power transfer for multiple cars.

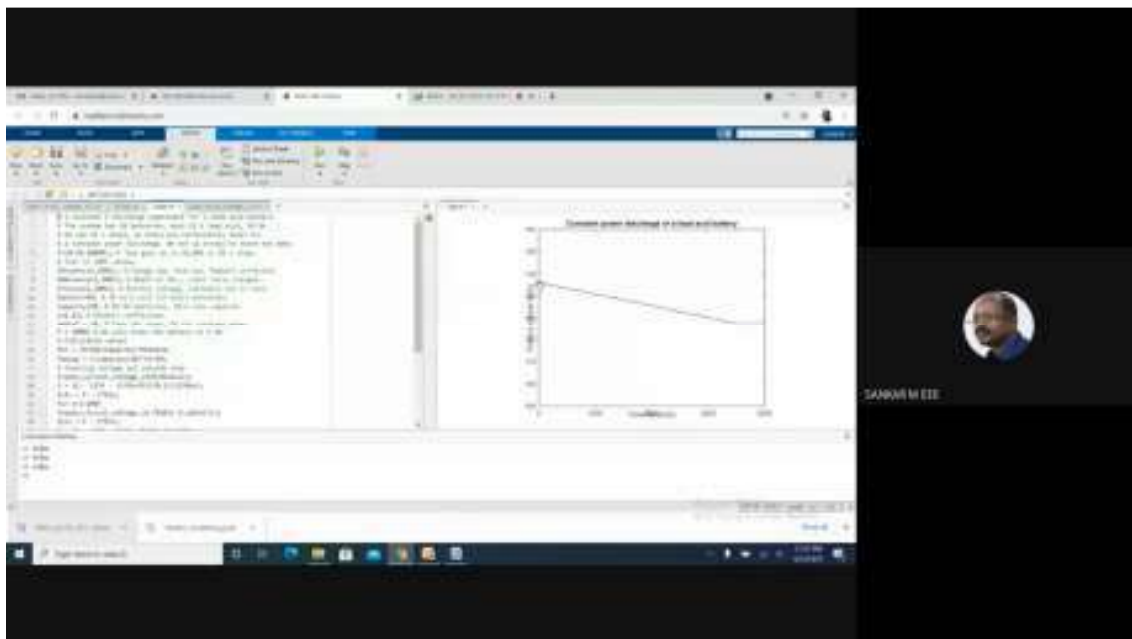
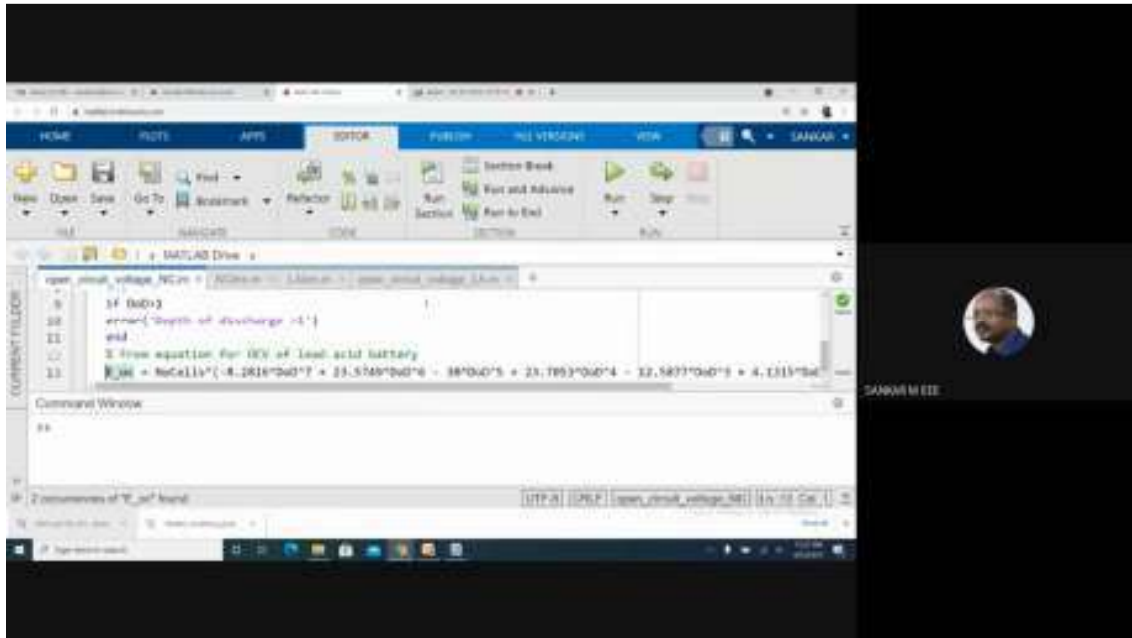
In practice this means that EV battery capacity for energy management will grow heavily in the next couple of years.

For example, European car manufacturers will implement the bidirectional charging. This will be peak battery capacity for the European electricity system.

Leading Conversion Technology for Power Resilience

Phase-3 (Day-4, 22/4/2021 Thursday), session-3: Expert lecture by **Mr.Rathnakumar Devaraj, Industrial &Systems, Development Engineer, CE+T Power, Wandre, Belgium** on the topic **“Modular Multidimensional Converters & Application.”**

Phase-3 (Day-1, 22/4/2021 Thursday), session-3, video link:
<https://drive.google.com/file/d/10hqjmf1B4cNCsDn0fGU0-JiTy7zpdTg/view?usp=sharing>



Phase-3 (Day-6, 24/4/2021 Saturday), session-2: Expert lecture by **Dr.M.Sankar, Asst. Prof./EEE, SVCE** on the topic **“Battery Modeling”**

Phase-3 (Day-6, 24/4/2021 Saturday), session-2, video link:
<https://drive.google.com/open?id=1hey1UloyY45A0MBI3zVkjyi3z10bsWfm>

Phase-2 (22nd March to 27th March 2021) all the sessions' video link:

https://drive.google.com/drive/u/0/folders/1feoZpKXklrCUNeVO0_9E9RUYXfW7GxLa

Phase-3 (19th April to 24th April 2021) all the sessions' video link:

<https://drive.google.com/drive/u/0/folders/1-DX-4gv6U6ip0ANLXkl770NWaBuO1Lv7>



S G BHARATHIDASAN, Associate
Professor, Coordinator



Head of the Department
Department of Electrical and Electronics Engineering
Sri Venkateswara College of Engineering
Ponnalar, Sriperumbudur Taluk-602 117
Tamilnadu, INDIA

PARTICIPANTS LIST

PHASE-1

SNo	Name	DESIG	Department	COLLEGE/INSTITUTE
1	ANNIE BINCY C.A	Assistant Professor	EEE	Albertian Institute of Science and Technology
2	MARIA PHILIP	Assistant Professor	EEE	Albertian Institute of Science and Technology
3	C.ANURADHA	Assistant Professor	EEE	SRMIST
4	A. K. BOOBALASENTHILRAJ	Assistant Professor	Automobile Engineering	Sri Venkateswara College of Engineering
5	KOLA SURESH KUMAR	Assistant Professor	EEE	ANURAG COLLEGE OF ENGINEERING
6	TRIVEDI BHAVIN SATYENDRA	Assistant Professor	ELECTRICAL ENGINEERING	GIDC DEGREE ENGINEERING COLLEGE
7	Chintala Venkatesh	Assistant Professor	EEE	Mohamed Sathak A J College of Engineering, Chennai
8	Mr. G HARI KRISHNA	Assistant Professor	EEE	CBIT, Gandipet
9	MEENAKSHI M	Research scholar	EEE	SRMIST, kattankulathur
10	NARAYANAM RAGHUNADH	Assistant Professor	EEE	PACE Institute of Technology & Sciences
11	SIVAGAMI P	Assistant Professor	EEE	Sathyabama Institute of Science and Technology
12	Mr. ANAND BHUPAL KUMBHAR	Assistant Professor	Electrical Engineering	Sanjay Ghodawat University
13	V.KRITHIKA	Assistant Professor	Mechatronics	SRM IST
14	A V PAVAN KUMAR	Associate Professor	EEE	Madanapalle Institute of Technology and Science
15	GAURAV SHARMA	Assistant Professor	Electrical Engineering	Pratap University Jaipur
16	SYED MUZAFAR AHMED.S	Research scholar	EEE	B.S. Abdur Rahman Crescent Institute of Science and Technology
17	Dr.R.JENSI	Associate Professor	Computer Science and Engineering	Dr.Sivanthi Aditanar College of Engineering, Tiruchendur
18	VEERAKUMAR S	Assistant Professor	MECHANICAL ENGINEERING	SRI RAMAKRISHNA INSTITUTE OF TECHNOLOGY
19	BADDU NAIK BHUKYA	Assistant Professor	EEE	Prasad V. Potluri Siddhartha Institute of Technology
20	DR. R.SENTHIL KUMAR	Assistant Professor	EEE	SRMIST

21	Mrs.A.SANTHI MARY ANTONY	Assistant professor	EEE	Sathyabama Institute of Science and technology
22	Mr.M.VEERASUNDARAM	Associate professor	EEE	SRI SAIRAM INSTITUTE OF TECHNOLOGY
23	RINU JANARDHANAN VIJAYAN	Assistant Professor	EEE	COLLEGE OF ENGINEERING THALASSERY
24	Mrs. MALATHY N	Assistant professor	EEE	J.N.N INSTITUTE OF ENGINEERING
25	Dr. MAHESWARI MUTHUSAMY	Assistant professor	ECE	Hindustan Institute of Technology and Science
26	AJIT NIVRUTTI SHINDE	Assistant Professor	Electrical Engineering	Sanjay Ghodawat Group of Institutes
27	KRISHNAN T	LECTURER (SG-II)	MECHANICAL ENGINEERING	ANNAMALAI POLYTECHNIC COLLEGE, CHETTINAD
28	RUPALI VILAS SALUNKE	Assistant Professor	ENTC	INDIRA COLLEGE OF ENGINEERING AND MANAGEMENT PUNE
29	Dr.T.ELANGO	Head of the Department	EEE	Sri Balaji Chockalingam Engineering College
30	ALEX GEORGE	Associate Professor	EEE	SRIET
31	Dr. Stanly S	Associate Professor	Applied Chemistry	Sri Venkateswara College of Engineering
32	Dr.K.Chanthirasekaran	Professor	ECE	Saveetha Institute of Medical and Technical Sciences
33	N MONIGAA	Teaching fellow	EEE	CEG, Anna University
34	Mrs.M.RAJALAKSHMI	Assistant Professor	EEE	Sri Venkateswara College of Engineering
35	V.KUBENDRAN	Assistant professor	EEE	SRM Institute of Science and Technology
36	Mrs.Gouthami Eragamreddy	Assistant Professor	EEE	G.Narayanamma Institute of Technology and Science (For Women)
37	GOWTHAMAN K S	Assistant Professor	EEE	GOVERNMENT COLLEGE OF ENGINEERING SENGIPATTI THANJAVUR
38	Mrs.M.DEVIKA RANI	Assistant Professor	EEE	PRASAD V POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY
39	SUBRAMANIYAN V	Research Scholar	EEE	College of Engineering
40	RAGHAVENDRAN S	Assistant Professor	EEE	SRMIST, KATTANKULATHUR
41	Dr. Alok Jain	Assistant Professor	Electrical Engineering	Pandit Deendayal Petroleum University
42	M KAVITHA	Assistant Professor	EEE	Sathyabama Institute of Science and Technology
43	Naveen bhargav ganipisetty	Assistant professor	Mechanical	MCEME

44	VEERARAGHAVULU VEMULA	Assistant Professor	EEE	PACE INSTITUTE OF TECHNOLOGY AND SCIENCES
45	MANIVANNAN S	Assistant professor	EEE	Bannari Amman Institute of Technology
46	SUBHAJIT ROY	Assistant Professor	Electrical Engineering	Budge Budge Institute of Technology
47	VIMA MALI	Assistant Professor	ELECTRICAL	PANDIT DEENDAYAL ENERGY UNIVERSITY
48	V.Vasan Prabhu	Assistant Professor	Automobile Engineering	SRM Institute of Science and Technology
49	Mr. RIPANKUMAR HARSHADBHAI PATEL	Assistant Professor	Electrical	Shree Swaminarayan Institute of Technology
50	SHIKALGAR NIYAJ DILAVAR	Assistant Professor	Mechanical Engineering	College of Engineering Pune
51	M. Pushpavalli	Assistant Professor	EEE	Sathyabama Institute of science and technology
52	APURVA RAJKUMAR DESHMUKH	Junior Engineer	Electrical Engineering	NAHEP CAAST DFSRDA VNMKV Parbhani
53	Mr. MOTAPARTHI NAGARAJU	Assistant Professor	EEE	Chaitanya Bharathi Institute of Technology (A)
54	Gagan diwan	Assistant chief	Power market	Central electricity regulatory commission
55	Nuthulapati Rajesh Babu	Assistant Professor	EEE	DVR & Dr HS MIC College of Technology
56	BHASKAR ROY	Assistant Professor	AEIE	Asansol Engineering College
57	K KRANTHI KUMAR	Assistant Professor	Electrical and Electronics Engineering	Kommuri Pratap Reddy Institute of Technology
58	SAI GEETHA LAKSHMI VALLURU	Assistant professor	Electrical and electronics engineering	PVP Siddhartha institute of technology
59	H.SURESH	Assistant Professor	Electrical & Electronics Engineering	Bangalore Institute of Technology
60	MAHESHKUMAR M	Research scholar	EEE	Anna university Chennai
61	Mohammad Hassan	ASSISTANT PROFESSOR	ELECTRONICS AND TELECOMMUNICATION	JD COLLEGE OF ENGINEERING AND MANAGEMENT
62	BIKAS MONDAL	Assistant Professor	AEIE	ASANSOL ENGINEERING COLLEGE
63	Mrs.C.BHUVANESWARI	ASSISTANT PROFESSOR	EEE	Sathyabama Institute of Science and Technology
64	Mr V. PRADEEP	Assistant Professor	EEE	SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
65	RUPALI KADU	Asst.professor	Extc	KJSIEIT
66	Dr. Naveen Kumar Sharma	Assistant Professor	Electrical Engineering	I. K. G. Punjab Technical University Jalandhar, Punjab

67	Mrs. KALPANA.S	Assistant Professor	Electrical and Electronics Engineering	Sri Venkateshwaraa College of Engineering and Technology
68	A.RENUGA	RESEARCH SCHOLAR	EEE	CEG ANNA UNIVERSITY GUINDY
69	Ms.Rajeswari Ramaraj	Assistant Professor	ECE	Sri Venkateswara College of Engineering
70	Dr. S. Vijayalakshmi	Asst Prof	EEE	SRMIST. kattankulathur
71	RAKESH BHADANI	HOD	ELECTRICAL ENGINEERING	VEERAYATAN POLYTECHNIC
72	BINAYA KUMAR MALIKA	Assistant Professor	EE	Einstein Academy of Technology and Management, Bhubaneswar
73	Madhu Valavala	Associate Professor	EEE	Swarnandhra College of Engineering and Technology
74	BINDU VADLAMUDI	Asst.professor	Electrical and electronics engineering	Dhaneluka institute of engineering and technology
75	Neha Kapila	Assistant Professor	Electrical engineering	Sant Baba Bhag Singh University
76	MR. MANOHAR NIVRUTTI KALGUNDE	Assistant Professor	Electrical	Sinhgad Institute of Technology, Lonavala
77	M. EZHILMARAN	Associate Professor	ELECTRICAL and ELECTRONICS ENGINEERING	CHENNAI INSTITUTE OF TECHNOLOGY
78	MAHESH BABURAO LONARE	ASSISTANT PROFESSOR	COMPUTER ENGINEERING	ARMY INSTITUTE OF TECHNOLOGY PUNE
79	A.Kannappan	Assistant professor	Mechatronics	Chennai institute of technology
80	Dr. W. ABITHA MEMALA	Associate Professor	Electrical and Electronics Engineering	Sathyabama Institute of Science and Technology
81	Jani dilip batukray	Associate professor	Mechanical	Government engineering college Dahod
82	Dr. P. ITHAYA RANI	Associate Professor	Computr Science and Technology	KL University
83	MANONEET KUMAR	Assistant Professor	Mechanical Engineering	Shri Vishnu Engineering College for Women(Autonomous)
84	P.ABIRAMI	ASSISTANT PROFESSOR	EEE	SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
85	MAHESHWARIA	Research Scholar	EEE	Alagappa Chettiar Government College of Engineering and Technology, Karaikudi.

PHASE-2

S.No	Name	DESIG	Department	Institute/Organization
1	SURESH K	Assistant professor	Mechanical Engineering	S. A ENGINEERING COLLEGE
2	K.SASIKALA	Assistant Professor	EEE	Vels Institute of Science, Technology and Advanced Studies
3	SRIANANDA GANESH T	Assistant professor	EEE	ST. JOSEPH'S COLLEGE OF ENGINEERING
4	R. SANKARGANESH	Associate Professor	EEE	Vinayaka Mission's Kirupananda Variyar Engineering College
5	V VIMALRAJ AMBETH	Research scholar	EEE	SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
6	B. NAGARAJU	Assistant Professor	EEE	PACE Institute of Technology and Science
7	HARINI S	Research scholar	EEE	SRM institute of science and technology
8	SATISHKUMAR LAXMANBHAI CHAUHAN	Assistant Professor	Electrical Engineering	Babaria Institute of Technology, Varnama
9	LATA BALA AWALE	Assistant professor	Electrical Engineering	Government College of Engineering Chandrapur
10	RAJESH S GODSE	Assistant professor	Mechanical Engineering	Army Institute of Technology Dighi Hills Pune
11	PRAVIN ASHOK MANE	Assistant professor	Mechanical Engineering	WALCHAND COLLEGE OF ENGINEERING, SANGLI
12	NIRAV KARELIA	Assistant Professor	EEE	Pandit Deendayal Energy University, Gandhinagar
13	KRUPA GANDHI	Assistant professor	Mechatronics Engineering	ITM VOCATIONAL UNIVERSITY
14	A NIVETHA	Teaching Fellow	EEE	College of Engineering Guindy , Anna University
15	SELVANATHAN T	Research scholar	EEE	College of Engineering Guindy, Chennai
16	K. LAKSHMIKHANDAN	Associate Professor	EEE	ADHIPARASAKTHI COLLEGE OF ENGINEERING
17	S.SUBA	Assistant professor	EEE	Mahendra Engineering College
18	THAKKAR AMITKUMAR DINESHCHANDRA	Assistant professor	Mechanical Engineering	L J INSTITUTES OF ENGINEERING AND TECHNOLOGY
19	SALOT VIMALKUMAR P.	Assistant professor	Mechanical Engineering	L J INSTITUTE OF ENGINEERING & TECHNOLOGY, AHMEDABAD
20	VIMALRAJ AMBETH	Research Scholar	EEE	College of Engineering Guindy

21	SUGANTHI K	Assistant Professor	EEE	Sri Venkateswara College of Engineering
22	PRADNYA DADASAHEB SONAWANE	Assistant professor	Electrical Engineering	SIT Lonavala
23	S.F. SYED VASIYULLAH	Assistant professor	EEE	AMS COLLEGE OF ENGG
24	SHARANA TARANNUM MOHD. ZAHEER	Assistant Professor	Electrical Engineering	Government College of Engineering, Chandrapur
25	KAMAL C	Assistant Professor	EEE	Sri Venkateswara College of Engineering
26	NIMAIN CHARAN NAYAK	Professor	EEE	M.N.M Jain Engineering College
27	EDWARD BERNARD	Assistant Professor	Mechanical Engineering	ITM VOCATIONAL UNIVERSITY
28	UMESHA K	Vice Principal & HoD	ECE	JAWAHARLAL COLLEGE OF ENGINEERING AND TECHNOLOGY
29	SAKTHIVEL B	Assistant Professor	EEE	Sri Subramanya College of Engineering and Technology, Palani.
30	NARESH KOLLEPALLI	Assistant Professor	EEE	PACE Institute of Technology and Sciences
31	S. G. BHARATHIDASAN	Associate Professor	EEE	Sri Venkateswara College of Engineering Sriperumbudur
32	M. SANKAR	Assistant Professor	EEE	Sri Venkateswara College of Engineering Sriperumbudur
33	S. KUMARAVEL	Assistant Professor	EEE	Sri Venkateswara College of Engineering Sriperumbudur
34	S. S. SETHURAMAN	Assistant Professor	EEE	Sri Venkateswara College of Engineering Sriperumbudur
35	S. THAMIZMANI	Assistant Professor	EEE	Sri Venkateswara College of Engineering Sriperumbudur
36	N.KANTHIMATHI	Assistant Professor	ECE	Bannari amman institute of technology, Erode
37	NIDHI MISHRA	Assistant Professor	Electrical Engineering	JSPM's BSIOTR Pune
38	BHANDERI KUNJAN BABULAL	Assistant Professor	Electrical Engineering	V.V.P. Engineering College, Rajkot
39	SASWATI KUMARI BEHERA	Associate Professor	EEE	Sri Sairam Engineering college, west tambaram, chennai-44
40	P.K.DHAL	Professor	EEE	Vel Tech Rangarajan Dr.Sagunthala R&D Institute of Science and Technology
41	SASWATI KUMARI BEHERA	Associate Professor	EEE	Sri Sairam Engineering College Chennai
42	SARANYA N	Assistant Professor	ECE	Bannari Amman Institute of Technology

PHASE-3

S.No	Name	DESIG	Department	Institute/Organization
1	K S PAVITHRA	Assistant Professor	EEE	Sri Venkateswara College of Engineering
2	RANJITHKUMAR M	Assistant Professor	EEE	Sri Venkateswara College of engineering
3	MAADHURI M	Assistant Professor	EEE	Sri Venkateswara College of engineering Sriperumbudur
4	VINOTH KUMAR G	Assistant Professor	EEE	SRI VENKATESWARA COLLEGE OF ENGINEERING
5	MISS RIDDHI SANJAY THORAT	PhD Scholar	Electrical Engineering	Pandit Deendayal Energy University (PDEU)
6	TEJPAL PUROHIT	Lecturer	Electrical Engineering	GOVERNMENT POLYTECHNIC PALANPUR
7	ARULMOZHI S	Assistant Professor	EEE	SRI VENKATESWARA COLLEGE OF ENGINEERING
8	CHETANKUMAR D UPADHYAY	Assistant Professor	Electrical Engineering	Government Engineering College, Dahod
9	SHETE DATTATRAY SARJERAO	Assistant Professor	Mechanical Engineering	SANJAY GHODAWAT UNIVERSITY , ATIGRE KOLHAPUR.
10	S.NARTHANA	Research Scholar	EEE	Mepco Schlenk Engineering College
11	JESUS BOBIN V	Assistant Professor	EEE	St.Xavier's Catholic College of Engineering
12	ANKUR PATEL	Assistant Professor	Electrical Engineering	CSPIT, CHARUSAT UNIVERSITY, CHANGA
13	J. DHANABAL	Assistant Professor	Automobile Engineering	Sri Venkateswara College of Engineering
14	SARIKA YUVRAJ MANE	Assistant Professor	Electronics Engineering	K. J. Somaiya Institute of Engineering and Information Technology, Mumbai
15	SOHANKUMAR G PRAJAPATI	Assistant Professor	Electrical Engineering	Government Engineering College, Patan
16	ROOPALI BHASKAR PALWE	Assistant Professor	Electrical Engineering	Maharashtra Institute of Technology, Aurangabad
17	K KIRUBA	Assistant Professor	EEE	SRM TRP Engineering College
18	DARSHITA SHAH	Assistant Professor	Mechanical Engineering	NIRMA UNIVERSITY
19	G RAVI	Assistant Professor	Automobile Engineering	SRI VENKATESWARA COLLEGE OF ENGINEERING
20	DIVYANG R PATEL	Assistant Professor	ECE	Shankersinh Vaghela Babu Institute of Technology
21	S.S.SELVA PRADEEP	Assistant Professor	EEE	St.Xavier's Catholic College of Engineering
22	KAUSHAL PATEL	Assistant Professor	Electrical Engineering	INDUS UNIVERSITY

23	M.S.GIRIDHAR	Professor	EEE	Lakireddy Bali Reddy College of Engineering
24	PRAVINKUMAR DHANJIBHAI PATEL	Assistant Professor	Electrical Engineering	Government Engineering College, PATAN
25	S.SUDHARSANAM	Assistant Professor	EEE	Sri Venkateswara College of Engineering
26	VENKATESAN C	Assistant Professor	EEE	Sri Venkateswara College of Engineering
27	R.RENUGADEVI	Associate Professor	ECE	PSR Engineering College
28	LIJO JACOB VARGHESE	Professor	EEE	Christian College of Engineering and Technology
29	D. GERMIN NISHA	Associate Professor	EEE	St. Xavier's Catholic College of Engineering
30	ABRAGAM SIYON SING M	Assistant Professor	EEE	St.Xavier's Catholic College of Engineering
31	R.GANDHI RAJ	Assistant Professor	EEE	University College of Engineering, BIT Campus, Anna University, Tiruchirappalli
32	SUKUMAR.P	Professor	ECE	Nandha Engineering College(Autonomous)
33	RONAK DIPAKKUMAR GANDHI	Assistant Professor	Mechanical Engineering	ITM VOCATIONAL UNIVERSITY; VADODARA
34	VRATRAJ K JOSHI	Assistant Professor	Mechanical Engineering	R N G Patel Institute of Technology
35	P.MUTHU THIRUVENGADAM	Research Scholar	EEE	Mepco Schlenk Engineering College, Sivakasi
36	K.RADHIKA	Professor	ECE	Muthayammal Engineering College
37	VIJAY BHARAT DESLE	Assistant Professor	Electrical Engineering	Babaria Institute of Technology
38	S. SARAVANAN	Assistant Professor	Mechanical Engineering	Sri Vekateswara College of Engineering
39	SAIFEE KANJETAWALA	Assistant Professor	Electrical Engineering	Babaria Institute of Technology
40	M.RAJKUMARI	Assistant Professor	ECE	P S R ENGINEERING COLLEGE
41	S SUDHERSHAN	Instructor	Mechanical Engineering	SRI VENKATESWARA COLLEGE OF ENGINEERING
42	VAGHASIA SURESH VALLBHDAS	Assistant Professor	Electrical Engineering	BALAJI ENGINEERING COLLEGE
43	GAURANGKUMAR K SHARMA	Assistant Professor	Electrical Engineering	BVM Engineering College
44	ANKALA SATYA PRABHA	Assistant Professor	EEE	Arifa institute of technology
45	BHATT JAIMINKUMAR RAJESHBHAI	Assistant Professor	Mechanical Engineering	ITM Vocational University, Vadodara
46	KALPAN MUKESHBHAI DESAI	I/C PRINCIPAL	Mechanical Engineering	S S AGRAWAL INSTITUTE OF ENGINEERING AND TECHNOLOGY NAVSARI

47	P.KARUPPASAMY	Professor	ECE	P.S.R Engineering College
48	NIRAV AVDHUTKUMAR SALUNKE	Assistant Professor	Electrical Engineering	R. N. G. Patel Institute of technology, Bardoli
49	PRATIKKUMAR DALPATBHAI SOLANKI	Assistant Professor	Electrical Engineering	R. N. G. Patel Institute of Technology, Bardoli
50	PUNIT SOMPUA	Assistant Professor	Electrical Engineering	BABARIA INSTITUTE OF TECHNOLOGY VADODARA
51	SACHIN R. PATEL	Assistant Professor	Electrical Engineering	R. N. G. Patel Institute of Technology
52	UMESHA K	Vice Principal & HoD	ECE	JAWAHARLAL COLLEGE OF ENGINEERING AND TECHNOLOGY
53	K.RAMA ABIRAMI	Associate Professor	CSE	Sri Krishna College of Engineering and Technology
54	N.SUTHANTHIRA VANITHA	Professor and Dean-Quality Assurance	EEE	Muthayammal Engineering College (Autonomous)
55	MAHESHKUMAR N	Assistant Professor	EEE	Hindusthan college of engineering and technology
56	TEJASKUMAR MUKESHKUMAR PANCHAL	Assistant Professor	Electrical Engineering	R N G PATEL INSTITUTE OF TECHNOLOGY
57	RUCHIT RAJESHBHAI SONI	Assistant Professor	Electrical Engineering	INDUS UNIVERSITY
58	P.KRISHNALEELA	Assistant Professor	ECE	PSR Engineering College
59	PATEL URVESHKUMAR AMRUTBHAI	Lecturer	Science and Huminity	K.D. POLYTECHNIC , PATAN
60	SAKTHIVEL B	Assistant Professor	EEE	Sri Subramanya College of Engineering and Technology, Palani.
61	DINAL J. PANCHAL	Assistant Professor	Electrical Engineering	Babaria Institute of Technology
62	S MAHALAKSHMI	Assistant Professor	ECE	PSR ENGINEERING COLLEGE
63	JIGNESHKUMAR RAMESHBHAI PRAJAPATI	Assistant Professor	Electrical Engineering	R N G Patel Institute of Technology
64	R.VINOTH	Associate Professor	ECE	P.S.R Engineering College, Sivakasi
65	SHUKLA HARDIKKUMAR ANILKUMAR	Assistant Professor	Mechanical Engineering	GOVERNMENT ENGINEERING COLLEGE, GODHRA
66	R.KARTHIC KUMAR	Assistant Professor	Marine Engineering	SRI VENKATESWARA COLLEGE OF ENGINEERING
67	ASHISH DHIRUBHAI JOSHI	Assistant Professor	Electrical Engineering	GOVERNMENT ENGINEERING COLLEGE,DAHOD
68	DIPAKKUMAR GIRISHBHAI PARMAR	Lecturer (Sr)	Electrical Engineering	GOVERNMENT POLYTECHNIC, KHEDA

69	HARIHARAN C	Assistant Professor	Automobile Engineering	Easwari Engineering College
70	CHINMAY D DESAI	Assistant Professor	Electrical Engineering	R N G PATEL INSTITUTE OF TECHNOLOGY
71	S.SANTHOSH	Assistant Professor	ECE	P.S.R. ENGINEERING COLLEGE
72	A.MATHINA	Assistant Professor	ECE	PSR ENGINEERING COLLEGE
73	ANAND MAHAJAN	Assistant Professor	Mechanical Engineering	SIRT, Sage university Indore
74	JAYDEEPSINGH CHAUHAN	Assistant Professor	Electrical Engineering	SHANKERSINH VAGHELA BAPU NSTITUTE OF TECHNOLOGY
75	S.M.RAMESH	Professor	ECE	KPR Institute of Engineering and Technology, Coimbatore
76	S.BASKARA SETHUPATHY	Professor	Automobile Engineering	Velammal Engineering college
77	MANAN DESAI	Assistant Professor	Electrical Engineering	Dr. Subhash Technical Campus, Junagadh
78	S.SANKAR GANESH	Assistant Professor	ECE	PSR ENGINEERING COLLEGE
79	A. BHASKARAN	Professor and Head	Applied Physics	Sri Venkateswara College of Engineering

CONCLUSION

The AICTE sponsored STTP on “Electric Vehicle Evolution – Impact on Power Grid” was organized in online mode in three phases with 18 sessions per phase. The STTP phases were inaugurated by dignitaries from Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO). The sessions were handled by expert speakers from industry and academia. The sessions were of expert lectures and hands-on training that facilitated the participants from industry and academia to expertise in concepts related to EV configuration/ components and its interaction with power grid, impact of EV evolution on operation and control of Electrical Power System, charging/discharging of aggregated EV and its impact on micro grid and hands-on training in design and analysis of EV drive motor using MAGNET, simulation of EV with battery energy storage (BES) using DIgSILENT. The participants attended a MCQ test at the end of the STTP. A total of 206 participants were qualified as per the AICTE norms and were awarded with the Participation Certificates. The feedback from the participants were overwhelming in terms of the session topics & expert speakers, the session flow, hands-on training and coordination and organizing of the STTP.

APPENDICES

Department of Electrical & Electronics Engineering

AICTE sponsored six days online Short Term Training Programme (STTP)

On

“ELECTRIC VEHICLE EVOLUTION - IMPACT ON POWER GRID”

Phase-I: February 8th to 13th 2021 Phase-II: March 22nd to 27th 2021

Phase-III: April 19th to 24th 2021

Chief Patron

Dr. M. Sivanandham, Secretary, SVEHT

Patron

Dr. S. Ganesh Vaidyanathan, Principal

Convener

Dr. KR. Santha, Vice-Principal

Coordinators

Dr. KR. Santha, Professor & Head / Dept. of EEE

Dr. S. G. Bharathidasan, Asso. Professor/EEE

Dr. M. Sankar, Asst. Professor/EEE

Mr. S. Kumaravel, Asst. Professor/EEE

Mr. S. S. Sethuraman, Asst. Professor/EEE

Mr. S. Thamizmani, Asst. Professor//EEE

ABOUT THE INSTITUTION

Sri Venkateswara College of Engineering (SVCE), a premier self-financing Engineering College was started in the year 1985 and is managed by Sri Venkateswara Educational and Health Trust. The college conducts 11 B.E / B.Tech Degree Courses and 8 PG Courses in Engineering. The college has 11 Research Centers approved by Anna University cater to MS (by Research) and PhD programmes. The courses are approved by AICTE and affiliated to Anna University, Chennai. The college received Autonomous status in 2016. The college is accredited by National Assessment and Accreditation Council (NAAC). The college is situated in serene environment about 37 km from Chennai and situated on the way of Chennai – Bangalore National Highway (NH4) at Pennalur, Sriperumbudur, in Kanchipuram district.

ABOUT THE DEPARTMENT

The Department of EEE was started in the year 1994. The post graduate program (M.E) in Power Electronics and Drives was started in 2002. The department has secured permanent affiliation with Anna University and accredited by National Board of Accreditation (NBA) for the third consecutive time of Full Accreditation for five years. The Department has well equipped state-of-the-art laboratories and recognized as a Research Centre by Anna University. The Department has well qualified and experienced faculty and staff of proven ability and profound skills.

ABOUT THE STTP

The future Electrical Power System operation and control has to be restructured to face the challenges of plug-in Electric Vehicles (EV) evolution. The knowledge in EV drive, Battery Energy Storage (BES), Fast-charging circuitry, Battery Management System (BMS) and its impact on smart and micro grid dynamics, coordinated BMS, control, protection and communication protocols are imperative for Engineers working in these domains. This STTP is aimed at training the participants on the present procedures and future expectations in the aforementioned areas by experts from Industry & Institutions. This STTP will also facilitate the participants to acquire hands-on training in this field through various related systems modeling and simulation. After attending workshop, Participants will be able to select and design suitable motors, Battery management system and power converters for Electric Vehicles. They can also identify the changes to be done in Power System after EV incorporation in Micro and Smart grid environments.

OBJECTIVES

- ❖ Familiarize the participants about EV configuration/ components and its interaction with power grid.
- ❖ Creating awareness on impact of EV evolution on operation and control of Electrical Power System.
- ❖ Inculcate charging/discharging of aggregated EV and its impact on micro grid.
- ❖ Training the delegates in design and analysis of EV drive motor using MAGNET, simulation of EV with battery energy storage (BES) using PWSIM, MATLAB and DIGSILENT.
- ❖ Offering expertise to the participants on operation of micro and smart grids with EV.

STTP TOPICS

- ❖ EV evolution - Challenges to Power System Operation and Control - Utility Preparedness
- ❖ Configuration and components of EV-Overview
- ❖ EV drive motor design aspects - Hands on session using MAGNET software
- ❖ Electric Vehicle Charging Station Requirements and Battery Management Systems (BMS)
- ❖ Battery Energy Storage Technologies for Electric Vehicle and Issues in Integration with Power Grid
- ❖ Electric Vehicle and Power System Operation and Control - a perspective
- ❖ Coordination of multiple EVs, Renewable Energy Sources and Battery Energy Storage Systems in Smart Grid
- ❖ Impact of EV Evolution on Electrical Power System Dynamics
- ❖ Design and implementation of controllers and control strategies for Electric Vehicle
- ❖ Electric Vehicle add-on micro-grid - Protection studies
- ❖ Hands on Training on Micro/Smart grid Power System using DIgSILENT
- ❖ Smart Grid controls - Operation and Control with Electric Vehicle
- ❖ Electric Vehicle – Future perspectives and preparedness
- ❖ Hands on Training to realize the impact of Electric Vehicle on Power System Dynamics

INDUSTRY RESOURCE PERSONS

Mr.S.Sankara Narayanan, General Manager, Tamilnadu Energy Development Agency, Govt. of Tamilnadu
Mr.S.Jayakrishnan, General Manager, Hyundai Motor India Ltd
Dr.R.Kathiravan, AEE, TANGEDCO, TNEB
Dr.S.Sudhakar, Senior Scientist, CSIR - Central Electrochemical Research Institute, Karaikudi
Dr.N.Sivakumar, Global Technical lead, Rolls-Royce, Singapore.
Mr.Nandhakumar, Design Engineer, Power Grid Corporation of India.
Dr.B.Chandra Sekhar, Technical Lead, TCS, Bangalore.
Mr.B.Saravanan, Lead-Traction control, Alstom, Bangalore.
Dr.A.Deepak, EM Design Engineer, ePropelled systems Pvt Ltd.
Dr.V.P. Boopathi, Sr. Appn. Engineer, PWSIM Engg. Solns Pvt Ltd.
Mr.Balasubramanian Ananthraman, Scientist, CSIR - Central Electrochemical Research Institute, Chennai

ACADEMIC RESOURCE PERSONS

Dr.K.Shanti Swarup, Professor, Indian Institute of Technology Madras.
Dr. R.Jayashri, Professor, School of Electrical Engineering and Telecommunications, UNSW SYDNEY, AUSTRALIA.
Dr.R.P.Kumudinidevi, Professor, EEE Dept, Anna University Chennai.
Dr.D.Kalpana, Asst. Prof., Dept. of Instrumentation Engg, Madras Institute of Technology.
Dr.S.Kumaravel, Asso. Prof., EEE Dept., National Institute of Technology, Calicut.
Dr.P.Raja, Asso. Prof., EEE Dept., National Institute of Technology, Tiruchirappalli.
Dr.V.Gomathi, Asso. Prof., EEE Dept, Anna University, Chennai.
Dr.C.Christober Asir Rajan, Professor, EEE Dept, Pondicherry Engineering College.
Dr.D.Maharajan, Asso. Prof., EEE Dept., SRM University
Dr.V.Saravanan, Professor, EEE Dept., AEC.

ADVISORY COMMITTEE

Dr.N.K.Mohanty, Professor
Dr.Sudhakar K Bharatan, Professor
Dr.R.Karthikeyan, Asso. Professor
Dr.C.Gopinath, Asso. Professor

ORGANIZING COMMITTEE

Ms. S.Arulmozhi AP/EEE
Ms.M.Sasikala AP/EEE
Ms. N.Shanmugavadivu AP/EEE
Mr.C.Venkatesan AP/EEE
Ms.K.Suganthi AP/EEE
Mr.S.Sudharsanam AP/EEE
Dr.T.Annamalai AP/EEE

Ms.D.Amudhavalli AP/EEE
Mr.M.Ranjithkumar AP/EEE
Mr.D.S.Purushothaman AP/EEE
Ms.S.Anitha AP/EEE
Ms.S.Sinthamani AP/EEE
Ms.K.S.Pavithra AP/EEE
Mr.V.Mohanraj AP/EEE

Mr.G.Vinoth kumar AP/EEE
Ms.M.Rajalakshmi AP/EEE
Mr.C.Kamal AP/EEE
Ms.M.Maadhuri AP/EEE
Dr.R.Kannadasan AP/EEE

ELIGIBILITY

This AICTE sponsored STTP is open to Faculty members of AICTE approved Institutions, Research scholars and persons from Industries from all over the country. As per AICTE guidelines no registration fee will be charged from the participants.

Registration link: <https://forms.gle/cEdKcypoasR51xM18>

Scan QR Code



CERTIFICATE

A test shall be conducted by Project Monitoring Committee (PMC) at the end of the STTP and the certificates shall be issued to those participants who have attended all the sessions of the STTP and have qualified in the test. The number of participants will be limited to 100 for each Phase. Online meeting link will be sent to Whatsapp contact /Registered email. **For any queries:** svceesttp2021@gmail.com

ADDRESS FOR COMMUNICATION

The Co-ordinator,
AICTE-EEE-STTP,
Department of Electrical and Electronics Engineering,
Sri Venkateswara College of Engineering,
Irungattukottai post, Pennalur,
Sriperumbudur Taluk, Tamilnadu-602 117,
Ph.No: 044-27152000 Ext.:251,
Mobile: 9994423534/9500837386/9940695670.



Department of Electrical & Electronics Engineering

Solicit your Esteemed Presence for the

INAUGURAL FUNCTION

of

AICTE sponsored six days online Short Term Training Programme (STTP) on

“ELECTRIC VEHICLE EVOLUTION - IMPACT ON POWER GRID”

8th February 2021, 09.30 AM

Mr.S.Sankara Narayanan,

*General Manager, Tamilnadu Energy Development Agency,
Govt. of Tamilnadu*

will inaugurate and deliver the inaugural address

Dr.S.Ganesh Vaidyanathan,

Principal, Sri Venkateswara College of Engineering

will preside over the function



AICTE sponsored six days online Short Term Training Programme (STTP) on

“ELECTRIC VEHICLE EVOLUTION - IMPACT ON POWER GRID”

AGENDA

8th February 2021

09.30 – 09.33 AM :	Invocation	
09.33 – 09.43 AM :	Welcome address & About the STTP	Dr. KR.Santha, Vice Principal, Professor & Head / EEE SVCE
09.43 – 09.53 AM :	Presidential Address	Dr. S. Ganesh Vaidyanathan, Principal, SVCE
09.53 – 09.55 AM:	Introduction of Chief Guest	Dr S.G.Bharathidasan Asso.Professor/EEE SVCE
09.55 AM onwards:	Inaugural address & STTP Session 1	Mr.S.Sankara Narayanan, <i>General Manager,</i> <i>Tamilnadu Energy Development</i> <i>Agency, Govt. of Tamilnadu</i>
<p><i>Topic: Impact of Renewable Energy Generation and Electric Vehicle on Power Grid – Future perspective and Preparedness</i></p>		
10.55 AM :	Vote of thanks	Dr M.Sankar AP/EEE SVCE



Department of Electrical & Electronics Engineering
AICTE sponsored six days online Short Term Training Programme (STTP) on
“ELECTRIC VEHICLE EVOLUTION - IMPACT ON POWER GRID”

Phase-I SCHEDULE :: February 8th to 13th 2021

Date and day	Session #1 9:30 am to 11:00 am	Session #2 11:15 am to 12:45 pm	Session #3 2:00 pm to 3:30 pm		
08/02/2021 Monday	INAUGURATION followed by Expert Lecture Expert: Mr.S.Sankara Narayanan, <i>General Manager, Tamilnadu Energy Development Agency, Govt. of Tamilnadu</i> Topic: Impact of Renewable Energy Generation and Electric Vehicle on Power Grid – Future perspective and Preparedness	Refreshment break (11:00 am to 11:15 am)	Lunch break (12:45 pm to 2:00 pm)		
09/02/2021 Tuesday	*10.00 am to 11.30 am Expert: Dr.B.Chandra Sekhar, <i>Technical Lead, Tata Consultancy Services, Bangalore.</i> Topic: Electric Vehicle Charging Station Requirements and Battery Management Systems (BMS)			Expert : Dr K.Rathnakannan Associate Professor Department of EEE College of Engineering, Guindy Anna University, Chennai. Topic: Design and implementation of controllers and control strategies for Electric Vehicle	Expert: Dr.S.Sudhakar, <i>Senior Scientist, CSIR - Central Electrochemical Research Institute, Karaikudi</i> Topic: Li-ion batteries : Recent Progress and Challenges
10/02/2021 Wednesday	Expert: Dr.K.Shanti Swarup, <i>Professor, Indian Institute of Technology Madras</i> Topic: Electric Vehicle and Power System Operation and Control - a perspective			Expert: Dr.S.Kumaravel, <i>Asso. Prof., EEE Dept., National Institute of Technology, Calicut</i> Topic: Coordination of multiple Electric Vehicles, Renewable Energy Sources and Battery Energy Storage Systems in Smart Grid	Expert: Dr.Venkatakrithiga, <i>Asso. Prof., EEE Dept., National Institute of Technology, Trichy</i> Topic: Impact of Electric Vehicle in Deregulated Environment

11/02/2021 Thursday	Expert: Dr.P.Raja, <i>Asso. Prof., EEE Dept., National Institute of Technology, Tiruchirappalli</i> Topic: Electric Vehicle add-on micro-grid - Protection studies	Expert: Dr.V.Saravanan, <i>Professor, EEE Dept., AEC.</i> Topic: Battery Energy Storage Technologies for Electric Vehicle and Issues in Integration with Power Grid	Expert: Dr.D.Maharajan, <i>Asso. Prof., EEE Dept., SRM University</i> Topic: Hands on Training on Micro/Smart grid Power System using DIgSILENT
12/02/2021 Friday	Expert: Dr.V.Gomathi, <i>Asso. Prof., EEE Dept, Anna University, Chennai.</i> Topic: Smart Grid controls - Operation and Control with Electric Vehicle	Expert: Dr. R.Jayashri, <i>Professor, School of Electrical Engineering and Telecommunications, UNSW SYDNEY, AUSTRALIA.</i> Topic: Electric vehicle impact on Power System Dynamics	Expert: Mr.Nandhakumar, <i>Design Engineer, Power Grid Corporation of India.</i> Topic: Vision 2050 : Power Grid Resiliency
13/02/2021 Saturday	<i>*9.00 am to 10.30 am</i> Expert: Mr.S.Jayakrishnan, <i>General Manager, Hyundai Motor India Ltd</i> Topic: Electric Vehicle – Future perspectives and preparedness	Expert: Dr.C.Christober Asir Rajan, <i>Professor, EEE Dept , Pondicherry Engineering College</i> Topic: Optimization of Vehicle Energy flow with Residential Grid and Renewable Energy Sources	Expert: Dr.V.P. Boopathi, <i>Sr. Appn. Engineer, PWSIM Engg. Solns Pvt Ltd.</i> Topic: Hands on Training to realize the impact of Electric Vehicle on Power System Dynamics



Department of Electrical & Electronics Engineering

Solicit your Esteemed Presence for the

INAUGURAL FUNCTION

of

AICTE sponsored six days online Short Term Training Programme (STTP) on

**“ELECTRIC VEHICLE EVOLUTION - IMPACT ON
POWER GRID”**

22nd March 2021, 09.30 AM

Er.C.Veeramani,

*Chief Engineer Regulatory Cell (Retired),
TANGEDCO*

will inaugurate and deliver the inaugural address

Dr.S.Ganesh Vaidyanathan,

Principal, Sri Venkateswara College of Engineering

will preside over the function



AICTE sponsored six days online Short Term Training Programme (STTP) on

“ELECTRIC VEHICLE EVOLUTION - IMPACT ON POWER GRID”

AGENDA

22nd March 2021

09.30 – 09.33 AM :	Invocation	
09.33 – 09.43 AM :	Welcome address & About the STTP	Dr.KR.Santha, Vice Principal, Professor & Head / EEE SVCE
09.43 – 09.53 AM :	Presidential Address	Dr.S.Ganesh Vaidyanathan, Principal, SVCE
09.53 – 09.55 AM:	Introduction of Chief Guest	Dr.S.G.Bharathidasan Asso. Professor/EEE, SVCE
09.55 AM onwards:	Inaugural address & STTP Session 1	Er.C.Veeramani, <i>Chief Engineer Regulatory Cell (Retd), TANGEDCO</i>
<p><i>Topic: Impact of Renewable Energy Generation and Electric Vehicle on Power Grid – Future perspective and Preparedness</i></p>		
10.55 AM :	Vote of thanks	Dr.M.Sankar AP/EEE, SVCE



Department of Electrical & Electronics Engineering
AICTE sponsored six days online Short Term Training Programme (STTP) on
“ELECTRIC VEHICLE EVOLUTION - IMPACT ON POWER GRID”

Phase-II SCHEDULE :: March 22nd-27th,2021

Date and day	Session #1 9:30 am to 11:00 am		Session #2 11:15 am to 12:45 pm		Session #3 2:00 pm to 3:30 pm	
22/03/2021 Monday	INAUGURATION followed by Expert Lecture Expert: Dr.Veeramani <i>Chief Engineer (Retd), TANGEDCO</i> Topic: Impact of Renewable Energy Generation and Electric Vehicle on Power Grid – Future perspective and Preparedness	Refreshment break (11:00 am to 11:15 am)	Expert : Dr . Sankara Narayanan Professor & Head <i>EEE Dept., National Institute of Technology, Tiruchirappalli</i> Topic: Power Train Design	Lunch break (12:45 pm to 2:00 pm)	Expert : Dr.Nalin Kant Mohanty <i>Professor, EEE Dept, SVCE.</i> Topic: Yoga for Teachers	Expert: Dr.S.G.Bharathidasan <i>Asso. Prof., EEE Dept., SVCE.</i> Topic: Smart Grid with Electric Vehicle
23/03/2021 Tuesday	Expert: Dr.B.Chandra Sekhar, <i>Technical Lead, Tata Consultancy Services, Bangalore.</i> Topic: Electric Vehicle Charging Station Requirements and Battery Management Systems (BMS)		Expert : Dr S. Kalpana Asst. Professor, Madras Institute of Technology, Chrompet. Anna University, Chennai. Topic: Design and implementation of controllers and control strategies for Electric Vehicle		Expert: Dr.S.Sudhakar, <i>Senior Scientist, CSIR - Central Electrochemical Research Institute, Karaikudi</i> Topic: Li-ion batteries : Recent Progress and Challenges	
24/03/2021 Wednesday	Expert: Dr.P.Raja, <i>Asso. Prof., EEE Dept., National Institute of Technology, Tiruchirappalli</i> Topic: Electric Vehicle add-on micro-grid - Protection studies		Expert: Dr.S.Kumaravel, <i>Asso. Prof., EEE Dept., National Institute of Technology, Calicut</i> Topic: Coordination of multiple Electric Vehicles, Renewable Energy Sources and Battery Energy Storage Systems in Smart Grid		Expert: Dr. S.Chandramohan, <i>Prof. & HOD/EEE Dept., College of Engineering, Guindy, Anna University, Chennai.</i> Topic: Impact of Electric Vehicle in Deregulated Environment	

<p>25/03/2021 Thursday</p>	<p>Expert: Dr. R.P.Kumudini Devi, <i>Professor, College of Engineering, Guindy.</i> <i>Anna University, Chennai-25</i> Topic: Electric Vehicle and Power System Operation and Control - a perspective</p>	<p>Expert: Dr.V.Saravanan, <i>Professor, EEE Dept., AEC.</i> Topic: Battery Energy Storage Technologies for Electric Vehicle and Issues in Integration with Power Grid</p>	<p>Expert: Dr.A.Deepak, <i>EM Design Engineer, ePropelled systems Pvt Ltd.</i> Topic : EV drive motor design aspects - Hands on session using MAGNET software</p>
<p>26/03/2021 Friday</p>	<p>Expert: Dr. R.Jayashri, <i>Professor, School of Electrical Engineering and Telecommunications, UNSW SYDNEY, AUSTRALIA.</i> Topic: Electric vehicle impact on Power System Dynamics</p>	<p>Expert: Dr.N.Sivakumar, <i>Global Technical lead, Rolls- Royce, Singapore</i> Topic: Configuration and components of Electric Vehicle - Overview</p>	<p>Expert: Dr.D.Maharajan, <i>Asso. Prof., EEE Dept., SRM University</i> Topic: Hands on Training on Micro/Smart grid Power System using DIgSILENT</p>
<p>27/03/2021 Saturday</p>	<p>Expert: Mr.B.Saravanan, <i>Lead-Traction control, Alstom, Bangalore</i> Topic: Electric Traction</p>	<p>Expert: Dr.P.Somasundaram <i>Prof./EEE Dept., College of Engineering, Guindy, Anna University, Chennai.</i> Topic: Optimization of Vehicle Energy flow with Residential Grid and Renewable Energy Sources</p>	<p>Expert: Dr.V.P. Boopathi, <i>Sr. Appn. Engineer, PWSIM Engg. Solns Pvt Ltd.</i> Topic: Hands on Training to realize the impact of Electric Vehicle on Power System Dynamics</p>



Department of Electrical & Electronics Engineering

Solicit your Esteemed Presence for the

INAUGURAL FUNCTION

of

AICTE sponsored six days online Short Term Training Programme (STTP)

on

**“ELECTRIC VEHICLE EVOLUTION - IMPACT ON
POWER GRID”**

19th April 2021, 9.30 AM

Dr.R.Kathiravan,

Executive Engineer, TANGEDCO

will inaugurate and deliver the inaugural address

Dr.S.Ganesh Vaidyanathan,

Principal, Sri Venkateswara College of Engineering

will preside over the function

AGENDA

19th April 2021

09.30 – 09.33 AM :	Invocation	
09.33 – 09.43 AM :	Welcome address & About the STTP	Dr. KR.Santha, Vice Principal, Professor & Head / EEE
09.43 – 09.53 AM :	Presidential Address	Dr. S. Ganesh Vaidyanathan, Principal, SVCE
09.53 – 09.55 AM :	Introduction of Chief Guest	Dr. S.G.Bharathidasan Associate Professor / EEE
09.55 AM onwards :	Inaugural address & STTP session #1	Dr.R.Kathiraven Executive Engineer, TANGEDCO
	Topic:	<i>“Impact of Renewable Energy Generation and Electric Vehicle on Power Grid – Future perspective and Preparedness”</i>
10.55 AM :	Vote of thanks	Dr.M.Sankar Asst. Prof./EEE

Department of Electrical & Electronics Engineering
AICTE sponsored six days online Short Term Training Programme (STTP) on
“ELECTRIC VEHICLE EVOLUTION - IMPACT ON POWER GRID”
Phase-III SCHEDULE :: April 19th-24th, 2021

Date and day	Session #1 9:30am to 11:00am	Session #2 11:15am to 12:45pm	Session #3 2:00pm to 3:30pm
19/04/2021 Monday	INAUGURATION & Expert Lecture Expert: Dr.R.Kathiravan <i>Executive Engineer, TANGEDCO.</i> Topic: Impact of Renewable Energy Generation and Electric Vehicle on Power Grid – Future perspective and Preparedness	Expert: Dr.Sankara Narayanan Professor & Head <i>EEE Dept., National Institute of Technology, Tiruchirappalli</i> Topic: Power Train Design	*(1:30 pm to 2:30 pm) Expert: Dr.V.Saravanan, <i>Professor, EEE Dept., AEC.</i> Topic: Electric Vehicle and Issues in Integration with Power Grid *(2:30pm to 3:30 pm) Expert: Dr.S.G Bharathidasan <i>Asso. Prof., SVCE</i> Topic: Optimization of Vehicle Energy flow with Residential Grid and Renewable Energy Sources
20/04/2021 Tuesday	*(10:00 am to 11:15 pm) Expert: Dr.B.Chandra Sekhar, <i>Technical Lead, Tata Consultancy Services, Bangalore.</i> Topic: Electric Vehicle Charging Station Requirements and Battery Management Systems (BMS)	Expert: Dr K.Rathnakannan <i>Associate Professor, Dept. of EEE College of Engineering, Guindy Anna University, Chennai.</i> Topic: Design and implementation of controllers and control strategies for Electric Vehicle	Expert: Dr.S.Sudhakar, <i>Senior Scientist, CSIR - Central Electrochemical Research Institute, Karaikudi</i> Topic: Li-ion batteries: Recent Progress and Challenges
21/04/2021 Wednesday	Expert: Dr.P.Raja, <i>Asso. Prof., EEE Dept., National Institute of Technology, Tiruchirappalli</i> Topic: Electric Vehicle add-on micro-grid - Protection studies	Expert: Dr.S.Kumaravel, <i>Asso. Prof., EEE Dept., National Institute of Technology, Calicut</i> Topic: Coordination of multiple Electric Vehicles, Renewable Energy Sources and Battery Energy Storage Systems in Smart Grid	Expert: Dr.Venkatakrithiga, <i>Asso. Prof., EEE Dept., National Institute of Technology, Trichy</i> Topic: Impact of Electric Vehicle in Deregulated Environment

Refreshment break (11:00am to 11:15am)

Lunch break (12:45pm to 2:00pm)

<p>22/04/2021 Thursday</p>	<p>Expert: Dr.R.Jayashri, <i>Professor, School of Electrical Engineering and Telecommunications, UNSW SYDNEY, AUSTRALIA.</i></p> <p>Topic: Electric vehicle impact on Power System Dynamics</p>	<p>Expert: Dr.A.Deepak, <i>EM Design Engineer, ePropelled systems Pvt Ltd.</i></p> <p>Topic : EV drive motor design aspects - Hands on session using MAGNET software</p>	<p>Expert:Mr.Rathnakumar Devaraj, <i>Industrial &Systems, Development Engineer, CE+T Power, Wandre, Belgium.</i></p> <p>Topic:Modular Multidirectional Converter& Application.</p>
<p>23/04/2021 Friday</p>	<p>Expert : Dr.V.Gomathi, <i>Asso. Prof., EEE Dept, Anna University,Chennai.</i></p> <p>Topic: Smart Grid controls - Operation andControl with Electric Vehicle</p>	<p>Expert: Dr.N.Sivakumar, <i>Global Technical lead, Rolls-Royce, Singapore</i></p> <p>Topic: Configuration and components of Electric Vehicle - Overview</p>	<p>Expert: Dr.D.Maharajan, <i>Asso. Prof., EEE Dept., SRM University</i></p> <p>Topic: Hands on Training on Micro/Smart grid Power System using DIgSILENT</p>
<p>24/04/2021 Saturday</p>	<p>Expert: Mr.S.Jayakrishnan, <i>General Manager, Hyundai Motor India Ltd</i></p> <p>Topic: Electric Vehicle – Future perspectives and preparedness</p>	<p>Expert: Dr.R.P.Kumudini Devi, <i>Professor, College of Engineering, Guindy,Anna University,Chennai-25</i></p> <p>Topic: Electric Vehicle and Power System Operation and Control - a perspective</p>	<p>Expert: Dr.V.P.Boopathi, <i>Sr. Appn. Engineer, PWSIM Engg. Solns Pvt Ltd.</i></p> <p>Topic: Hands on Training to realize the impact of Electric Vehicle on Power System Dynamics</p>





Department of Electrical & Electronics Engineering

Solicit your esteemed presence for the

Valedictory Function
of

AICTE sponsored six days online Short Term Training Programme (STTP)
on

**“ELECTRIC VEHICLE EVOLUTION - IMPACT
ON POWER GRID”**

by

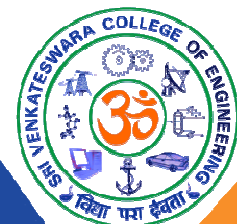
Dr.KR.Santha

**Vice Principal, Professor & Head/EEE
Sri Venkateswara College of Engineering
Sriperumbudur**

Date : 24-04-2021 (Saturday)

Time : 3.30 PM

Venue : <https://meet.google.com/rdq-uqtx-tkj>





Sri Venkateswara
College of
Engineering

Autonomous - Affiliated to Anna University
Pennalur, Sriperumbudur, Tamil Nadu | www.svce.ac.in



35 Years of Excellence

AICTE Sponsored Short Term Training Programme (STTP)

Certificate No : SVCEEEP232

Certificate of Participation

This is to certify that

Dr. / Mr. / Ms. M. SANKAR, Assistant Professor, EEE
of

SRI VENKATESWARA COLLEGE OF ENGINEERING SRIPERUMBUDUR

has attended Six days online Short Term Training Programme - Phase II on **“Electric Vehicle Evolution - Impact on Power Grid”** Organised by Department of Electrical and Electronics Engineering, Sri Venkateswara College of Engineering during March 22nd - 27th, 2021.

Dr. K R. Santha

Vice Principal, Prof & Head / EEE
Co-ordinator

Prof. Dr. S Ganesh Vaidyanathan

Principal



Top Ranked Affiliated
Institution in Tamil Nadu



5/5 Star Rated
Innovation Cell



SMART INDIA
HACKATHON
2020

Top
Performer



Recognized
Incubation Center



Certified
Organization



Accreditations