



**Online Faculty Development
Programme
On
"GREEN TECHNOLOGY &
SUSTAINABILITY ENGINEERING"
(15-02-2021 to 19-02-2021)**



REPORT

AICTE Training and Learning (ATAL) Academy sponsored online Faculty Development Programme (FDP) on "GREEN TECHNOLOGY & SUSTAINABILITY ENGINEERING" is organized by Department of Electrical and Electronics Engineering, Sree Vidyanikethan Engineering College (Autonomous), Tirupati, Andhra Pradesh, India during February 15-19, 2021. An amount of Rs. 93000.00 (Rupees Ninety Three Thousands only) is sanctioned to Dr. V. Arun on 22/01/2021 (F. No.01/AICTE/ATAL-HQ/2020-21 1095(5) for organizing the FDP.

The online FDP is conducted using the Google meet conference. A total of 161 participants from 15 states of the country participated in the FDP. The participants are the faculty and research scholars of various engineering colleges and government institutions across the country. Further, the participants are trained by the industry and academic experts. The FDP has received an overwhelming response from the participants. A total of 14 sessions are conducted. Out of 14, 13 are technical sessions and one is on "Creative Thinking for stress management" to promote the FIT INDIA movement across the country.

The outcomes of FDP are as follows:

- ❖ Gain knowledge on Power Electronic converters, Renewable Energy system and Grid connected PV system.
- ❖ Develop Power electronic converters for various Renewable Energy System.
- ❖ Train students by conducting hands-on sessions on design of converters and hybrid system and make students industry ready.

INAUGURAL SESSION

The inaugural function of the online FDP is scheduled on February 15, 2021 at 10:00 AM. In the inaugural function, **Ms. R. Sindhuja**, Assistant Professor, Department of EEE welcomed the chief guest **Dr. P. Elanchezhian**, Technical Lead (Global R & D), KK Wind Solutions India Private Limited, Bangalore and Guest of Honor **Prof. L. Venugopal Reddy**, Advisor cum Director, SVET and Principal, directors and vice- principal of SVEC and all participants. The event is started with a prayer song.

Dr. M.S. Sujatha, Professor and Head, Department of EEE given the welcome speech. In the welcome speech, the Professor and Head, Department of EEE welcomed the chief guest, Guest of Honor, Directors and Principal & vice- principal, of SVEC and all participants and also thanked the ATAL academy for sponsored the FDP. Further, Professor and Head, Department of EEE highlighted the objectives of the FDP, the topics to be discussed, the outcomes of the FDP. Later, the coordinator ATAL FDP **Dr. V.Arun**, Associate Professor, Department of EEE introduced the chief guest **Dr. P. Elanchezhian**, to the participants.



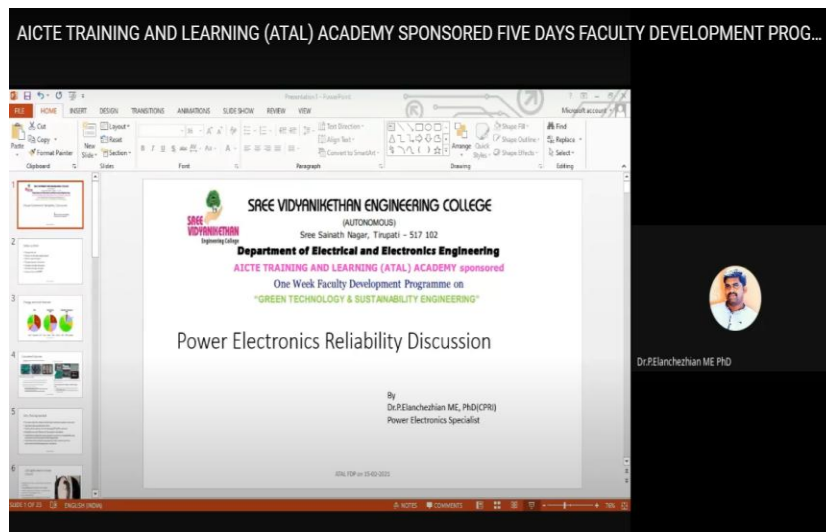
Ms. R. Sindhuja, Assistant Professor, Department of EEE is welcoming the chief guest and the participants.



Dr. M. S. Sujatha, Professor & Head , Department of EEE is giving the welcome speech



Dr. V. Arun, Coordinator, ATAL-FDP is introducing the chief guest **Dr. P. Elanchezhian** to the participants.



Dr. P. Elanchezhian, Technical Lead (Global R & D), KK Wind Solutions India Private Limited, Bangalore is addressing the participants.

Dr. P. Elanchezhian, has emphasized the skills that can gain by the participants after learning the Green technology and sustainability engineering concepts. related to power electronic converters used in renewable energy system and reliability discussion.

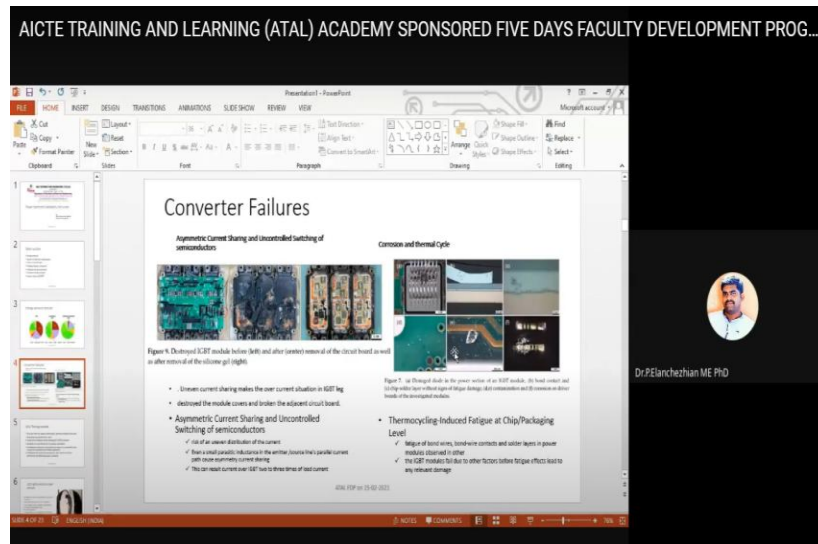
TECHNICAL SESSIONS

February 15, 2021 (Day – 1, Session – 1)

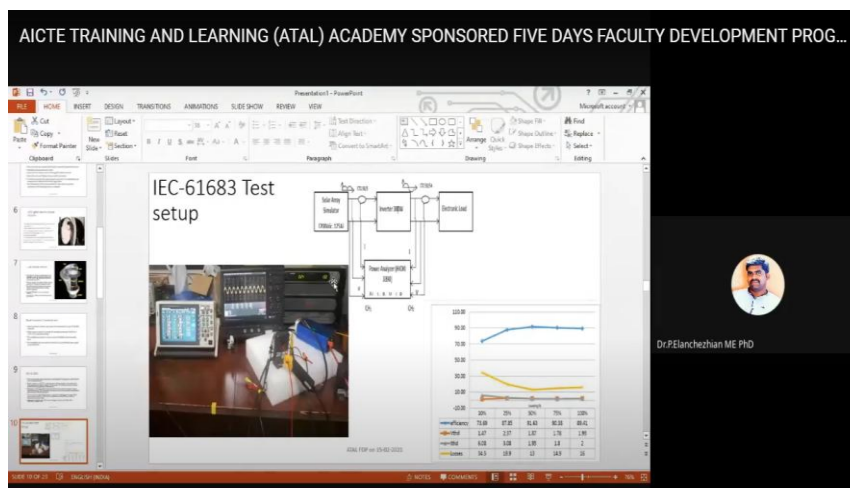
Dr. P. Elanchezhian, Technical Lead (Global R & D), KK Wind Solutions India Private Limited, Bangalore acted as a resource person for first sessions of Day-1 to deliver the Power electronics reliability concepts. The first session of Day-1 is started at 10:00 AM. The participants are trained on the following concepts of Python programming.

- Power Electronic component reliability
- Converter Failures

- Testing Needs
- LED drivers
- Solar inverter/ inverter test



Dr. P. Elanchezian, is explaining the concept of Power electronic component reliability.



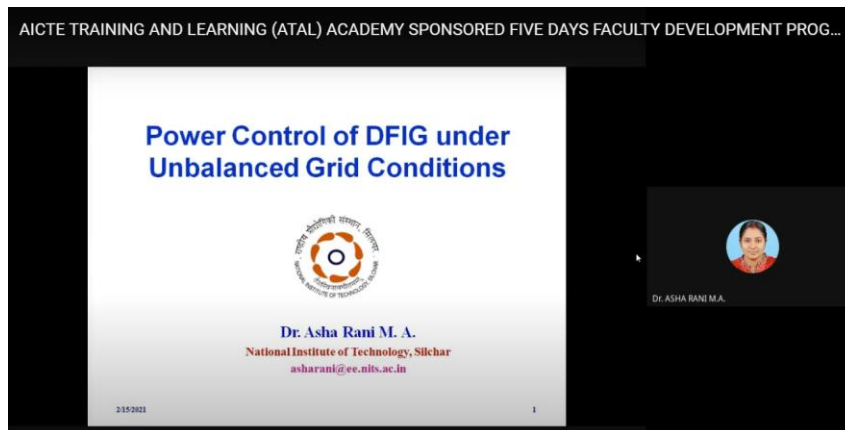
Dr. P. Elanchezian is demonstrating the basic types of Python using the IDLE.

February 15, 2021 (Day – 1, Session – 2)

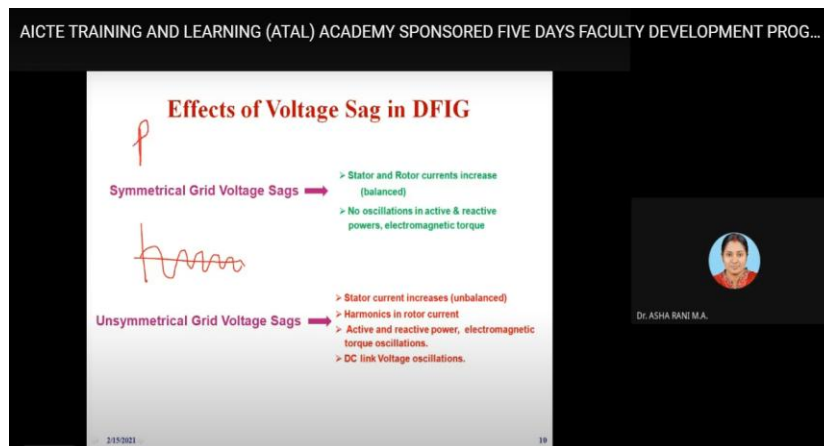
Dr. Asha rani, Assistant Professor/EEE, NIT, Silchar acted as a resource person for Second session of Day-1 to deliver Power control of DFIG under Unbalanced grid conditions concepts. The second session of Day-1 is started at 12:00 Noon. In this session. The participants were introduced with the following concepts.

- Types of WECS
- Signification of synchronizing techniques in grid
- Effects of voltage sag in DFIG
- Signification of rotor speed and position estimation algorithms

- Power control of DFIG under different conditions



Dr. Asha rani is explaining the Power control of DFIG under Unbalanced grid conditions.



Dr. Asha rani is explaining the Effects of voltage sag in DFIG.

February 15, 2021 (Day – 1, Session – 3)

The final session of Day-1 is started at 2:30 PM. In this session, **Dr. G. Saravana Ilango, NIT, Trichy** explained the Importance of MPPT tracker in extracting the Power from the PV Module/string/array. The participants have gained the knowledge on the following concepts.

- MPPT concepts
- Impact of temperature and irradiation on power output
- Implementation of MPPT using boost converter



Dr. G. Saravana Ilango, Importance of MPPT tracker in extracting the Power from the PV Module/string/array.

February 16, 2021 (Day – 2, Session – 1)

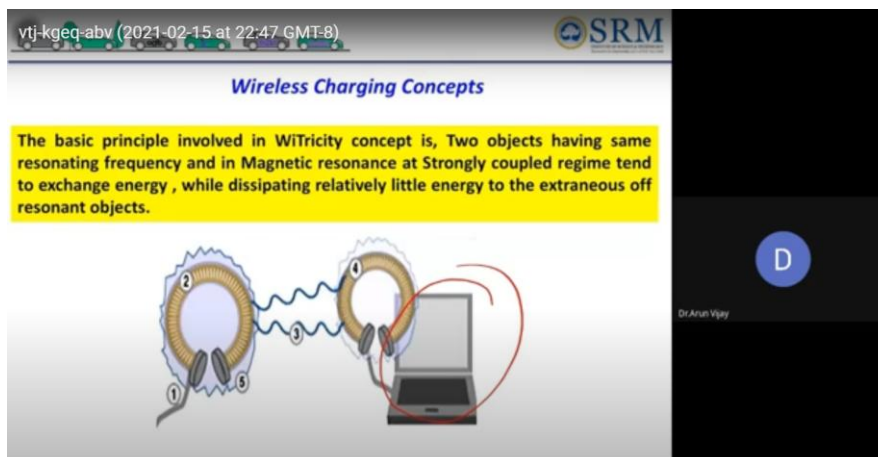
Dr. C. Bharatiraja , Associate professor, SRM institute of science and technology, Chennai acted as a resource person for all the three sessions of Day-2. The first session of Day-2 was started at 10:00 AM. In this session **Dr. C. Bharatiraja** , explained the Power electronics converter topologies and emobility and implementation. The participants have gained the practical knowledge on the following concepts.

- Converter and inverter topologies and control,
- Different configuration of topologies

February 16, 2021 (Day – 2, Session – 2)

The second session of the Day-2 was started at 12.30 AM. In this session, **Dr. C. Bharatiraja** has demonstrated the following concepts.

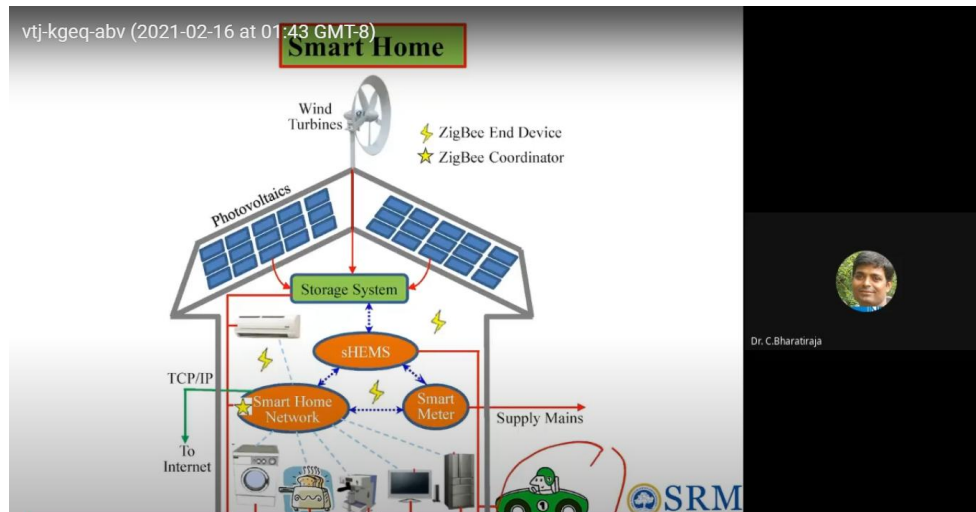
- E mobility
- Wireless charger
- Charging methods



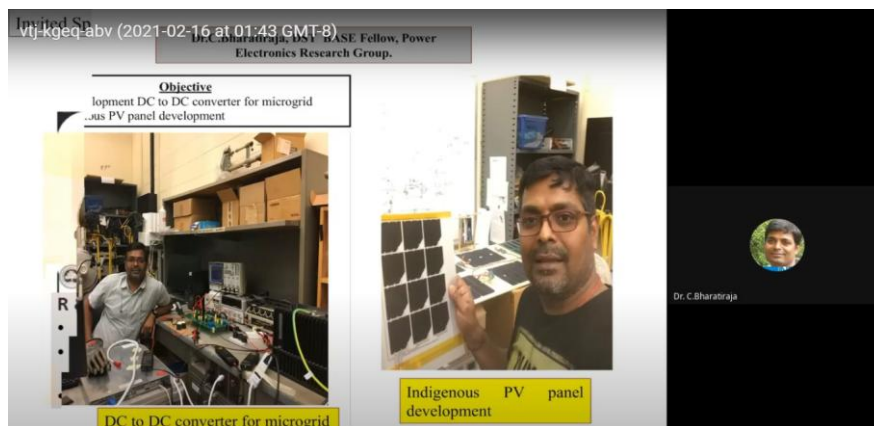
C. Bharatiraja is explaining wireless charging concepts

February 16, 2021 (Day – 2, Session – 3)

The session was started at 2.30 PM. In this session, **Dr. C.Bharatiraja** has delivered a lecture on PV plants with micro grid concepts and roll of power converters. He explained the various tags and styles that are used to design micro grid and smart grid. In addition, **Dr. C.Bharatiraja** practically shown the design of wireless charger and EV that help the participants to gain practical knowledge on EV and Charger.



Dr. C.Bharatiraja is explaining SMART HOME Concepts.



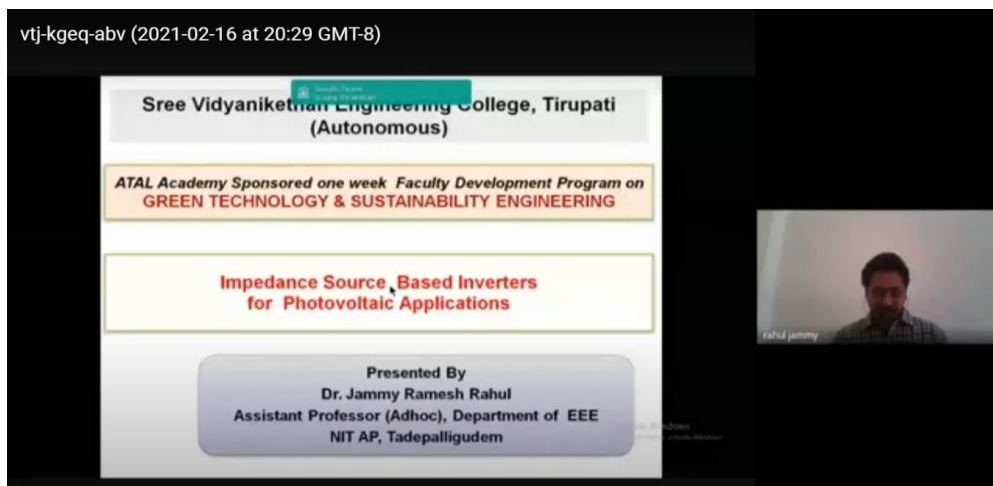
Dr. C.Bharatiraja is demonstrating DC-DC converter and Charger setup..

February 17, 2021 (Day – 3, Session – 1)

The first session of the Day-3 was started at 10:00 AM. **Dr. Jammy Ramesh Rahul, Assistant professor, NIT-AP** acted as a resource person for first session of Day-3.

In this session **Dr. Jammy Ramesh Rahul**, explained the Impedance source inverters used for PV applications. The participants have gained the knowledge on the following concepts.

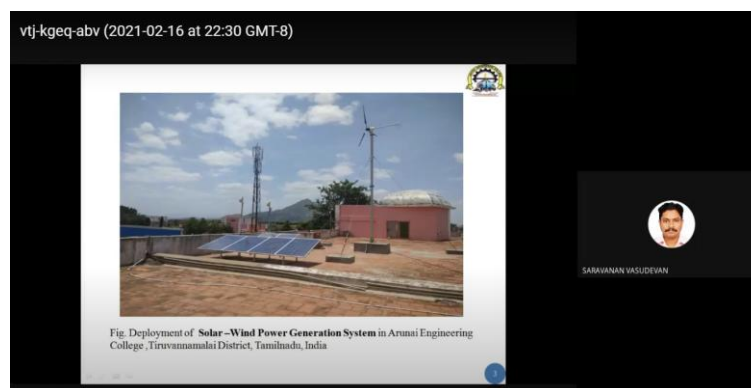
- Impedance source inverter topologies and control,
- Multilevel impedance source inverter and Different configuration.



Dr. Jammy Ramesh Rahul is explaining the Impedance source inverter.

February 17, 2021 (Day – 3, Session – 2)

The session 2 of the Day-3 was started at 12:00 Noon. **Dr. V. Saravanan**, Head PG studies, Arunai Engineering college, Tiruvannamali acted as a resource person. **Dr. V. Arun**, Coordinator of ATAL FDP introduced the resource person to the participants. He delivered a session on “Solar - Wind hybrid energy system”. In addition, **Dr. V. Saravanan** explained the converter and control techniques adopted in hybrid energy system. **Dr. V. Saravanan** demonstrated the solar-wind hybrid energy system setup shown.



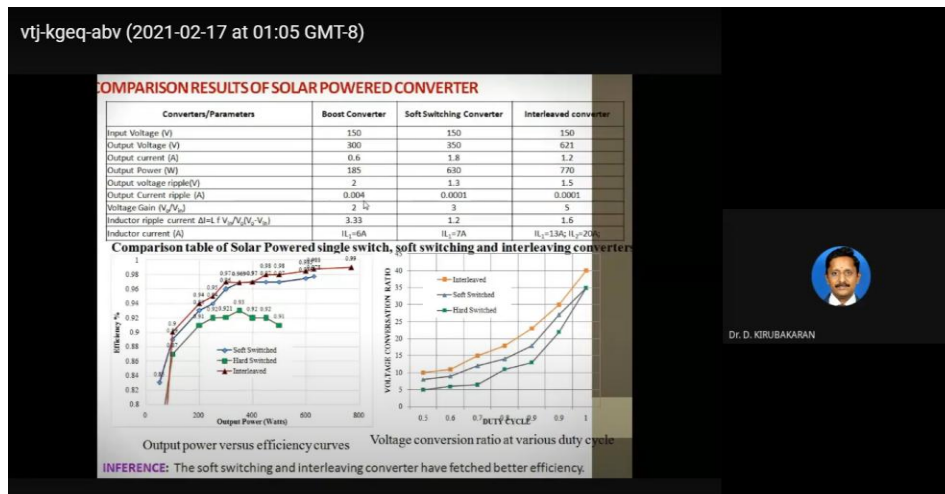
Dr. V. Saravanan, Demonstrated the solar- wind hybrid energy setup.

February 17, 2021 (Day – 3, Session – 3)

The third session of the Day-3 was started at 2.30 PM. In this session, Dr. D. Kirubakaran, Professor and Head EEE, St. Joseph's Institute of Technology - Tamilnadu acted as a resource person. Dr. D. Kirubakaran, He delivered a session on Modern DC-DC Converter. In this session, the participants have gained the knowledge on the following:

- DC DC Converters.
- Different converter structures.

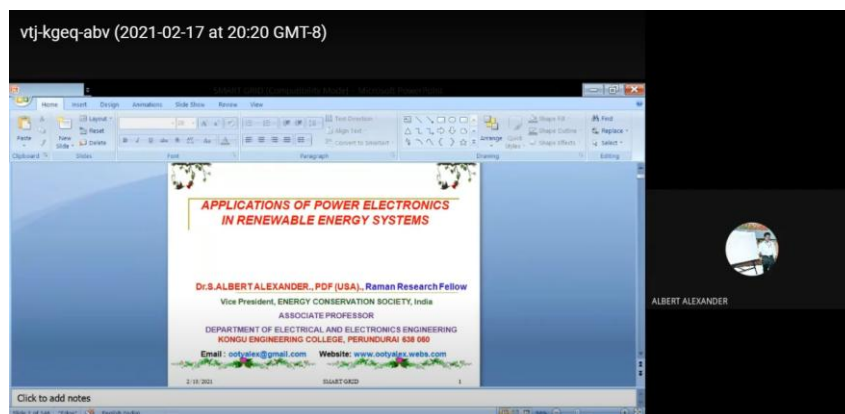
- Soft switch Converter.
- Interleaving converter.
- SEPIC and ZEETA converter



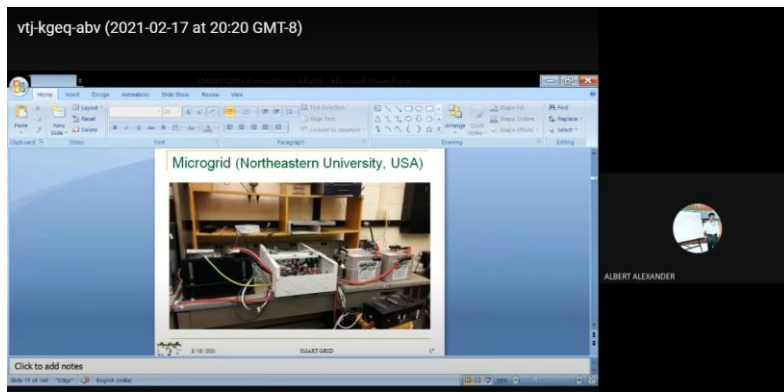
February 18, 2021 (Day – 4, Session – 1)

Dr. S. Albert Alexander, Postdoctoral research fellow (USA) ,Associate Professor of EEE Kongu Engineering College Tamilnadu acted as a resource person for two sessions of Day-4 to deliver Application of Power electronics in Renewable energy systems. The first session of Day-4 was started at 10:00 AM. **Dr. V. Arun**, Coordinator of ATAL FDP introduced the resource person to the participants. In this session, the participants have gained the partial knowledge on the following:

- Micro grid vs Smart Grid.
- Grid integration of renewable energy sources.



Dr. S. Albert Alexander, is explaining the applications of Power electronics.

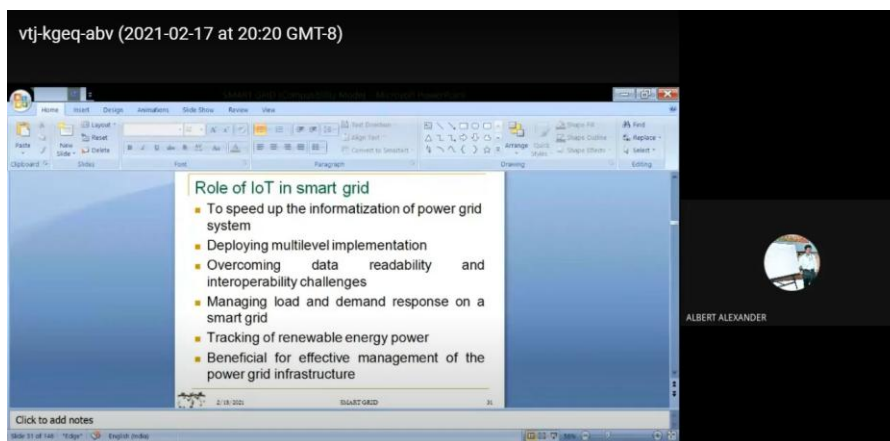


Dr. S. Albert Alexander, is explaining the applications with test setup.

February 18, 2021 (Day – 4, Session – 2)

The session 2 of the Day-4 was started at 12:00 AM. In this session, the participants have introduced the concepts of Micro grid. The topics that are discussed in this session are:

- Micro grid
- Application of Power electronics.
- Power electronic converter in PV and control techniques
- Intelligent systems.



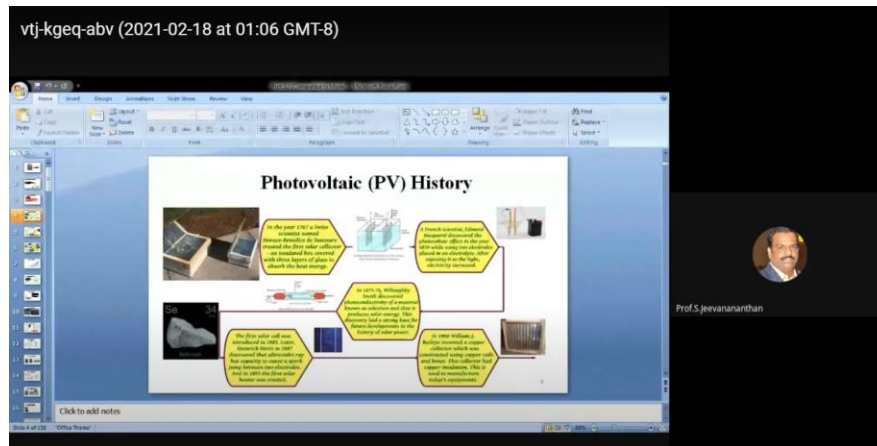
Dr. S. Albert Alexander, is explaining the concepts IoT in Smart Grid

February 18, 2021 (Day – 4, Session – 3)

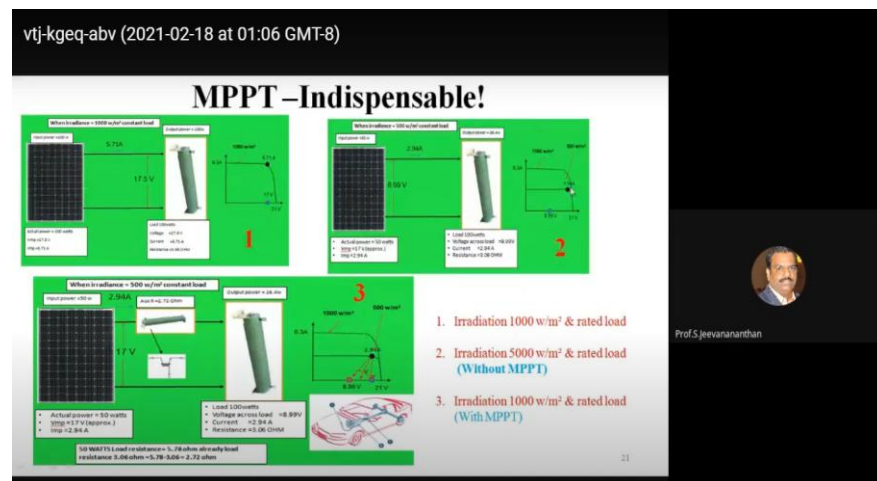
Dr. S. Jeevananthan, Professor of EEE, **Puducherry Technological University, Pondicherry** acted as a resource person for two sessions of Day-4 to deliver Application of Power electronics in Renewable energy systems. The first session of Day-4 was started at 10:00 AM. **Dr. V. Arun**, Coordinator of ATAL FDP introduced the resource person to the participants. In this session, the participants have gained the partial knowledge on the following:

- PV History.

- Modelling of PV using Embedded C-Coding.
- MPPT.
- Dodging Techniques for partial Shading in the solar Energy conversion.



Dr. S. Jeevananthan, is explaining Photovoltaic History

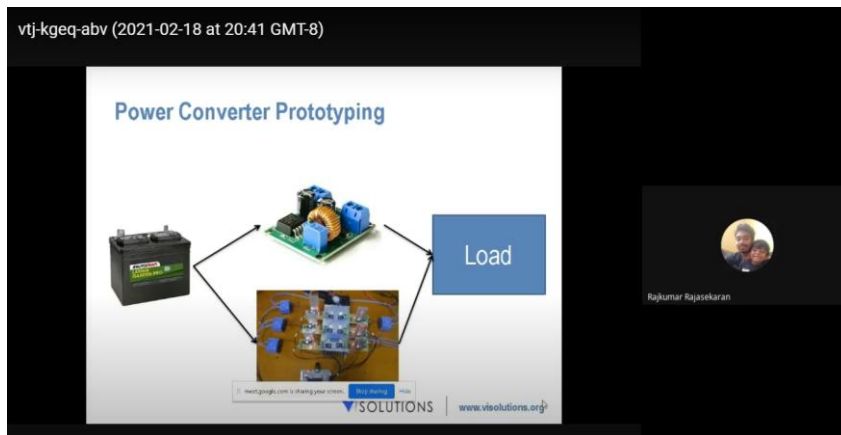


Dr. S. Jeevananthan, is explaining MPPT with different conditions

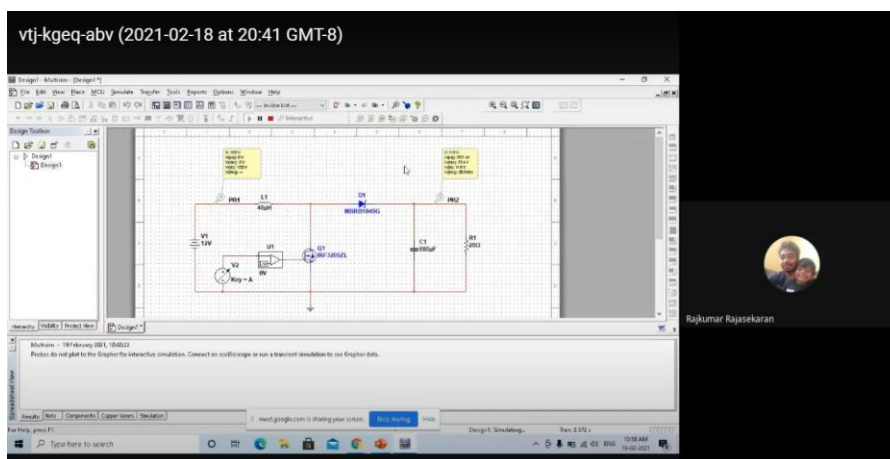
February 19, 2021 (Day – 5, Session – 1)

Mr. Rajkumar, Senior Application Engineer, Ni Instruments, Bangalore acted as a resource person for first sessions of Day-5 to demonstrate the Dc DC converter using Multisim. The first session of Day-5 was started at 10:00 AM. In this session, **Mr. Rajkumar**, explained the following concepts using Mutisim.

- DC DC converter design
- Power converter prototyping
- Simulation tools for design
- Simulation Analysis.



Mr. Rajkumar is explaining the Power converter Prototyping .



Mr. Rajkumar is demonstrated the converter in simulation.

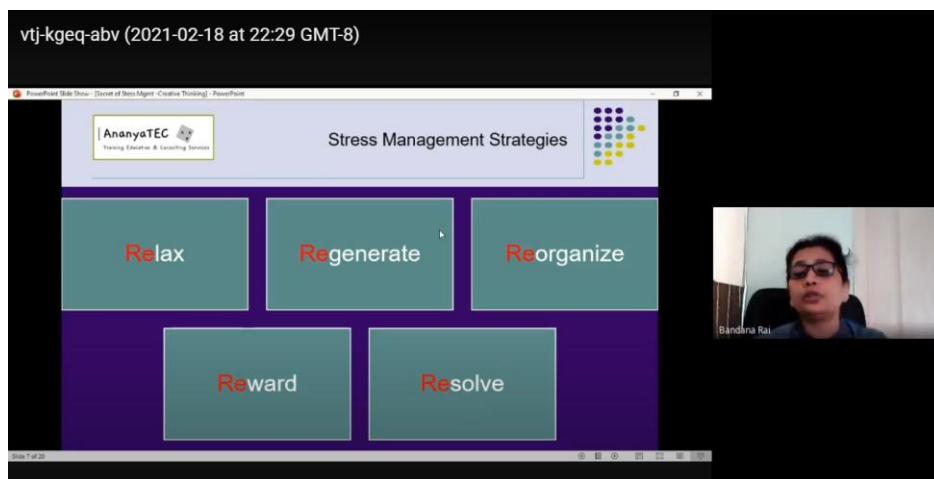
February 19, 2021 (Day – 5, Session – 2)

The second session of Day-5 was started at 12.00 Noon. As a part of FIT INDIA movement and to promote it across the country, the session on “**Creative Thinking for Stress Managent**” is conducted. This session was delivered by **Sri Bandana rai**, Founder and Chief mentor, Ananya Tec. **Dr. V. Arun**, Coordinator of ATAL FDP introduced the resource person to the participants. **Sri Bandana rai** explained the following:

- Under standing stress
- Causes of stress
- Stress management
- Strategies of emotional intelligence include self-awareness, self-management, social awarness and relationship management.
- Positive and negative emotions.
- Brainstroming
- Creative thinking
- Power to Empower



Sri Bandana rai is explaining Stress with example



Sri Bandana rai is explaining Stress management strategies

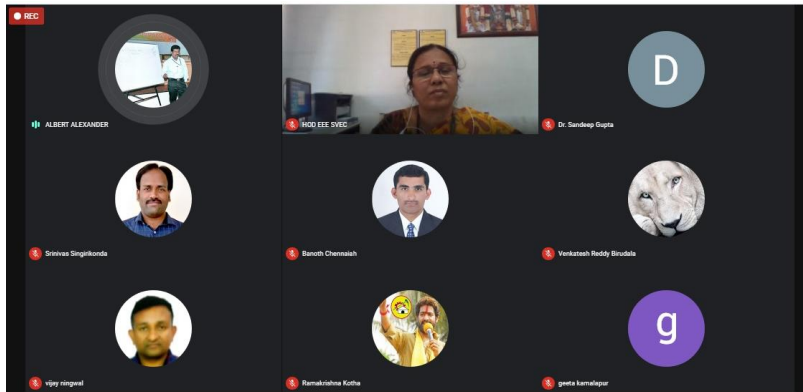
February 18, 2021 (Day – 5, Session – 3)

VALEDICTORY FUNCTION

The valedictory function of AICTE Training and Learning (ATAL) Academy sponsored online Faculty Development Programme (FDP) on “GREEN TECHNOLOGY & SUSTAINABILITY ENGINEERING” was started at 2.00 PM on February 19, 2021. In the valedictory function, **Dr. S. Albert Alexander** invited the chief guest.



Dr. M. S. Sujatha, Professor & Head , Department of EEE is giving the welcome speech



Dr. Albert Alexander, Chief Guest addressing the participants



Dr. V. Arun, Coordinator, ATAL FDP has proposed a Vote-of-Thanks.

Initially, the coordinator thanked the Core team of ATAL for sponsoring the FDP to organize at national level and also for their suggestions, support and guidance to conduct the FDP. Later, he thanked the participants of various engineering colleges and government institutions across the country for their enthusiastic participation. At the end, he conveyed his heartfelt thanks to the management, Sree Vidyanikethan Engineering College (Autonomous), Tirupati, Andhra Pradesh, the Principal, Head of the Department, EEE, Dr. S.Prabhu, Co-coordinator for their constant support to make this event a grand success.

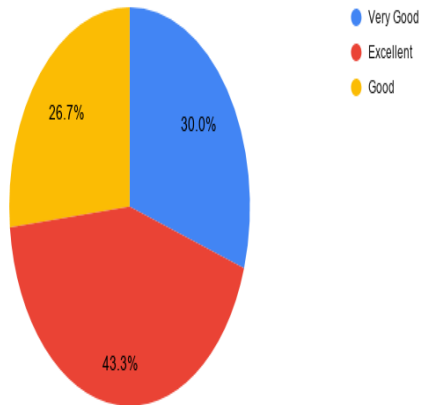
Total Number Of Participants- 166

Total Number of CERTIFIED PARTICIPANTS-70

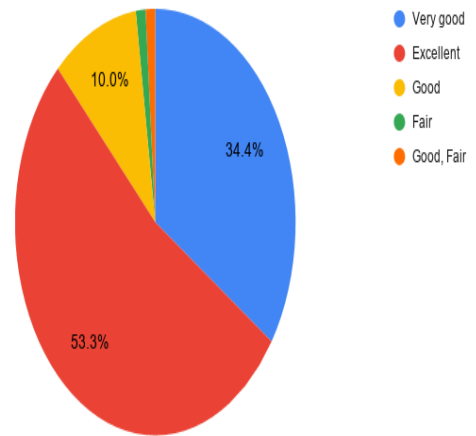
FEEDBACK

The Feedback that is congregated from the participants using a Google form is summarized using a Pie chart. A pie chart depicts the feedback on a percentage.

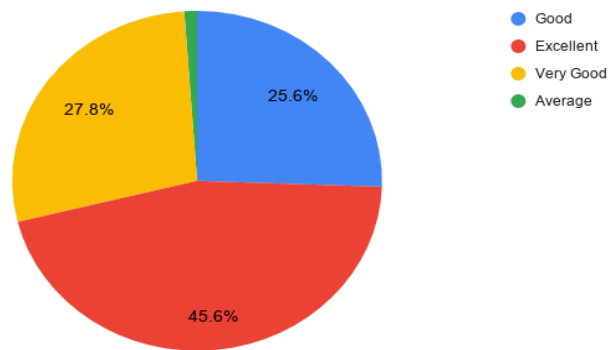
Count of Technical Content of the Induction/Refresher programme



Count of How would you rate the overall Programme?



Count of Information shared during the programme



V.ARUN

Coordinator, ATAL FDP
Department of EEE

Sree Vidyanikethan Engineering College (Autonomous)
Tirupati – 517102, Andhra Pradesh