LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (Autonomous)

L.B. Reddy Nagar, Mylavaram-521 230. Andhra Pradesh, INDIA Affiliated to JNTUK, Kakinada & Approved by AICTE New Delhi

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Report of AICTE Training and Learning (ATAL) Academy Sponsored 2 Week Faculty **Development Program on "IOT Based Green Energy Technologies from 17th October-**29th October, 2022

Coordinator & Convener: Dr J.Sivavara Prasad

Co-coordinator: Dr K.R.L.Prasad

Program Schedule for 1st Week

Week 1 (17th OCT 2022-22nd OCT 2022) -Online (7:00PM-9:30PM)

S.No	Date and	Name and details of	Topic of Presentation	Online Link
	Session	Resource Person		
1	17-10-2022	Dr. Suresh Mikkili	Smart Electric Grid:	https://tinyurl.com/ATAL-
	Session-1	Associate Professor	Architecture, Indian Smart	FDP-DAY1
	Session-1	Department of Electrical	Grid Journey, Status of	
		Engineering National	Pilot Projects, Smart Grid	
		Institute of Technology Goa	Challenges &	
			Opportunities	
2	18-10-2022	Dr.Gurunath Gurrala,	1.Sensing and analytic	https://tinyurl.com/ATAL-
	Session-2	Associate Professor	smart campus 2. Fault	FDP-DAY2
	Session-2	Department of Electrical	classification using	
		Engineering,	symbolic dynamics	
		Indian Institute of Science,		
		Bangalore		
3	19-10-2022	Dr. Kotni Srikumar,	Introduction to Green	https://tinyurl.com/ATAL-
	Session-3	Professor of EEE &	Technologies	FDP-DAY3
	Bession-3	Principal JNTU-GV College		
		of Engineering		
		Vizianagaram.		
4	20-10-2022	Dr. M.Jaya Bharata	Supervisory Control and	https://tinyurl.com/ATAL-
	Session-4	Reddy,	Data Acquisition	FDP-DAY4
		Professor	(SCADA) & Internet of	
		Department of Electrical	Things (IOT)	
		and Electronics Engineering		
5	21-10-2022	NIT, Tiruchirapalli Dr. Ch. Ramulu,	Introduction to Solar PV	https://tinyurl.com/ATAL-
3	21-10-2022	Assistant Professor	Induction Motor Based	FDP-DAY5
	Session-5	Department of Electrical	Water Pumping System &	<u>IDI-DATS</u>
		Engineering Electrical	IoT Based Solar Power	
		National Institute of	System	
		Technology,		
		Warangal.		
6	22-10-2022	Mr. Ramesh Babu Darla,	Solar Energy and IOT	https://tinyurl.com/ATAL-

	Session-6	Sr. Engineer,	Applications	FDP-DAY6
		Power CQT		
		Cisco Systems (India)		
		Private Limited		
		Bangalore.		

<u>Program Schedule for 2nd Week</u> <u>Week 2 (25th OCT 2022-29th OCT 2022) –Offline (9:00AM-4:30PM)</u>

25-10-2022	26-10-2022	27-10-2022	28-10-2022	29-10-2022
9:00 – 9:30 Inauguration	9:00 – 10:00 Travel for Visit	9:00 – 11:30 Session 10 (ORB Energy, Bangalore)	9:00 – 11:30 Session 12 (Emsys Technologies, Coimbatore)	9:00 – 11:30 Session 14 (Dr. Narla Tatarao Thermal Power Station, Ibrahimpatnam Circle, Vijayawada)
9:30 – 11:30 Session 7 (Microchip Technology, Chennai)	10:00 – 12:30 Session 9 (Efftronics System, Guntur)	11:30 – 12:30 Article 2 Discussion	11:30 – 12:30 MCQs	11:30 – 12:30 Visit Report (Team)
11:30 – 12:30 Article 1 Discussion	12:30 – 1:30 Lunch	12:30 – 1:30 Lunch	12:30 – 1:30 Lunch	12:30 – 1:30 Lunch
12:30 – 1:30 Lunch	1:30 – 4:30 Visit (Efftronics System, Guntur)	1:30 – 3:30 Session 11 (ORB Energy, Bangalore)	1:30 – 3:30 Session 13 (Emsys Technologies, Coimbatore)	1:30 – 2:30 Reflection Journal
1:30 – 3:30 Session 8 (Microchip Technology, Chennai)	4:30 – 5:30 Travel back	3:30 – 4:45 Teaching Practice	3:30 – 4:45 Teaching Practice	2:30 – 3:30 Feedback
3:30 – 4:45 Teaching Practice				3:30 – 4:30 Valedictory

Report on Online Sessions (from 17th October -22nd October, 2022)

AICTE sponsored two-week faculty development program on "IOT based Green Energy Technologies" was conducted from 17th to 22nd October, 2022 in Online mode and from 25th to 29th October, 2022 in Offline mode. In this FDP, 50 participants are registered from 22 engineering colleges in Andhra Pradesh and Telangana states.

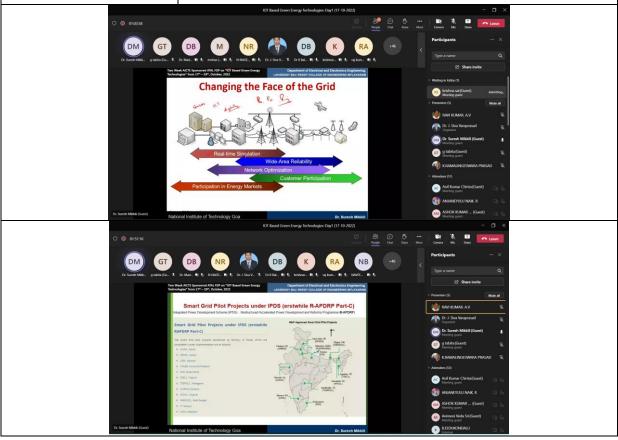
Dr. Suresh Mikkili, Associate Professor, Department of Electrical Engineering, NIT, GOA.



Session-1:

On 17th October, 2022, the following topics are discussed during the online session.

- > Smart grid vision for India.
- Indian smart grid journey.
- NSGM-3 tier structure.
- Green energy challenges.
- Smart grid pilot projects.
- ➤ Advanced meter infrastructure
- > EV Charging management



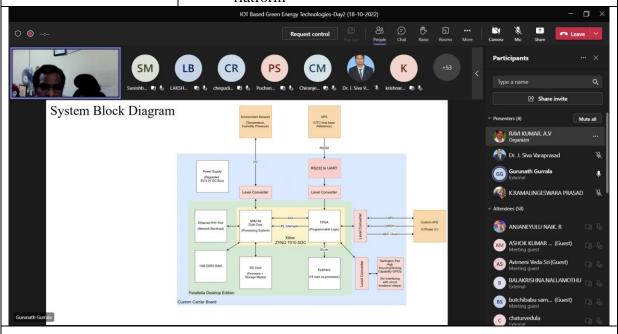
Dr. Gurunath Gurrala, Associate Professor, Department of Electrical Engineering, Indian Institute of Science, Bangalore.

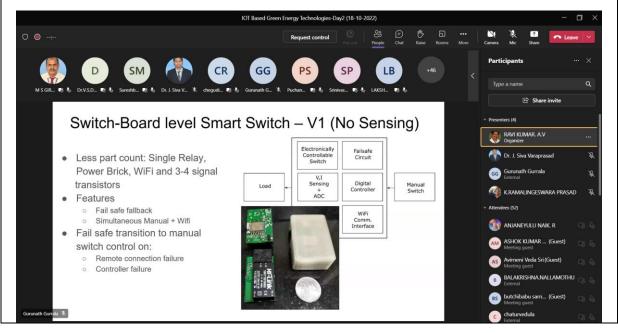


Session-2:

On 18th October, 2022, the following topics are discussed during the online session.

- Sensors and analytics for smart campus.
- ➤ Cyber security features in parallela and Analytics on parallela servers using FPGA.
- > Power quality implementation.
- ➤ Hardware architectures for PMU.
- System on chip (both microprocessor and FPGA).
- Parallela board specifications.
- ➤ Implementation of PMU (Phasor Management unit) algorithms on FPGA
- > Smart switch with sensing and also the overview of the flatform





Dr. K. SRIKUMAR, Professor & Principal, Department of Electrical & Electronics Engineering, College Of Engineering (A), Vizianagaram, JNTU-GV, Vizianagaram.

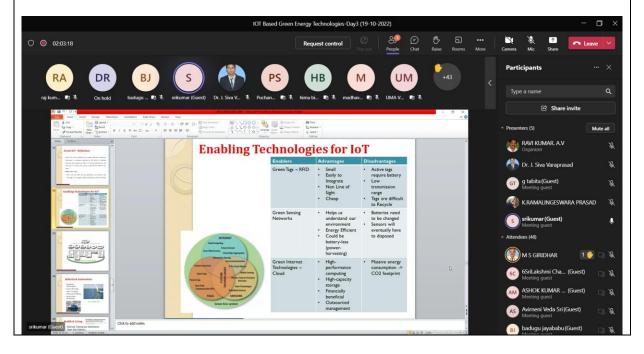


Session-3:

On 19th October, 2022, the following topics are discussed during the online session.

- Overview of various renewable energy sources.
- ➤ Energy efficient infrastructure management under IOT.
- > Smart grid and smart city IOT solutions
- Awareness on technologies for green IOT.
- ➤ IOT applications

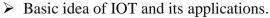




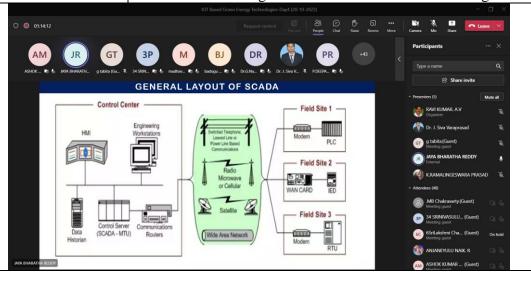
Dr. M. Jaya Bharata Reddy, Professor, Department of Electrical Engineering, National Institute of Technology, Tiruchirapalli.

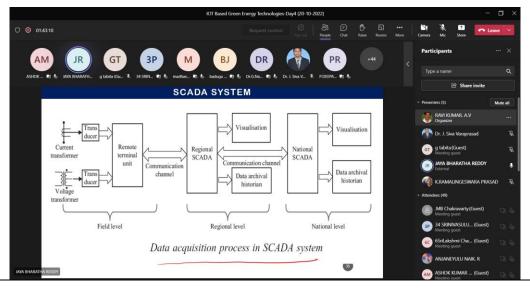
Session-4:

On 20th October, 2022, the following topics are discussed during the online session.



- ➤ SCADA system in power systems and its components which include RTUs, PLCs, IEDs (Intelligent Electronics devices).
- ➤ SCADA architectures-First generation (Monolithic), second generation (Distributed) and third generation (IOT-networked).
- ➤ IOT role in SCADA.
- > SCADA for Microgrid.
- > Microgrid architectures.
- Microgrid components.
- ➤ Microgrid Energy storage systems.
- ➤ Different loads (Critical loads, non-critical and reschedule loads.
- ➤ Microgrid challenges.
- ➤ Micro grid control-hierarchical control.
- Standalone and grid connected modes and Islanding mode



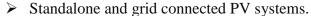




Dr Ramulu Ch, Assistant Professor, Department of Electrical Engineering, National Institute of Technology, Warangal.

Session-5:

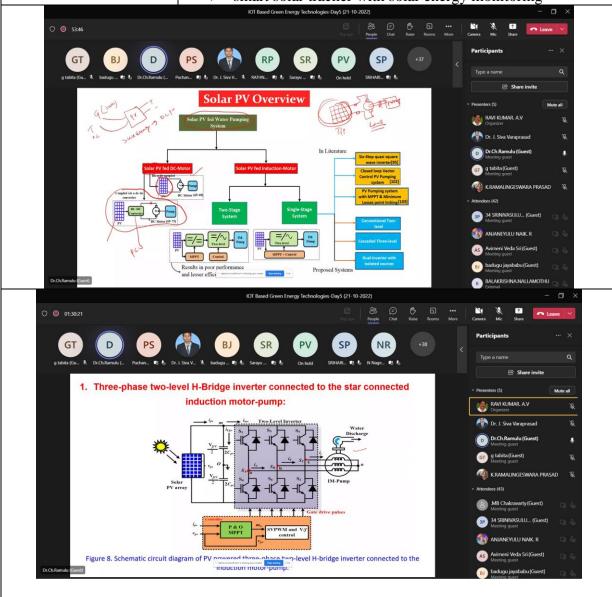
On 21st October, 2022, the following topics are discussed during the online session.



- > Standalone applications like solar water pumping used in agriculture and buildings.
- > Solar PV fed water pumping system.
- Solar model, Block diagram, control algorithm for 3-phase 2-level H- bridge inverter connected star connected induction motor pump and also covered results.
- > Space vector PWM technique
- ➤ 3-phase 3-level/4 -level inverter connected induction motor pump and also covered results.
- ➤ IOT based solar system
- ➤ IOT components, solar photovoltaic remote monitoring systems using IOT, its flowchart

> smart solar tracker with solar energy monitoring





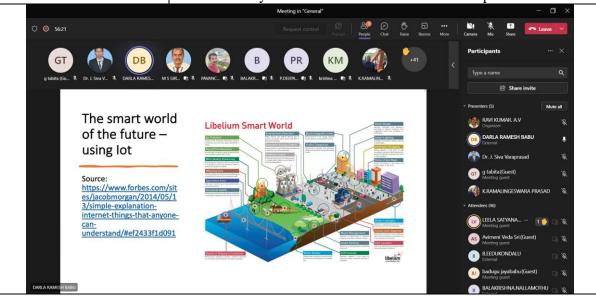
Mr. Ramesh Babu Darla, Sr Engineer – Power CQT, T&Q, Cisco Systems India, Bangalore.

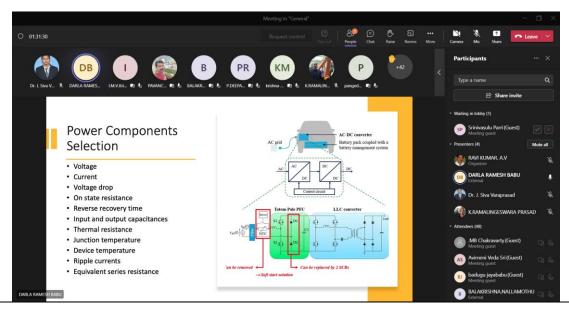


Session-6:

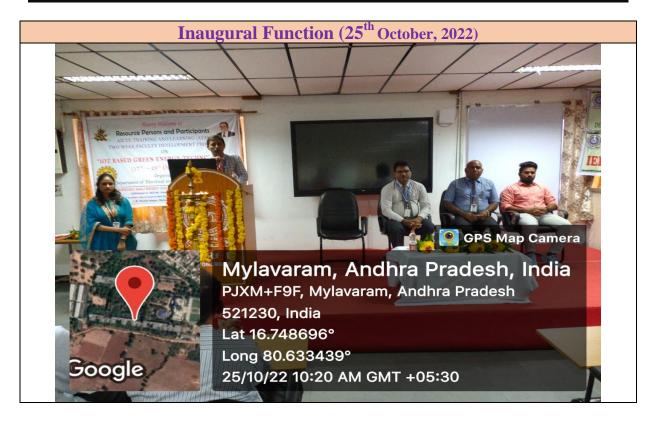
On 22nd October, 2022, the following topics are discussed during the online session.

- ➤ Benefits of IOT solar PV Systems.
- ➤ Consumer and enterprise IOT applications.
- > Battery performance.
- ➤ Controllers -basics, features, inverter controllers.
- > PV calculations
- ➤ Balance of systems (BOS) and selections
- > System design considerations.
- > Product design methodology
- ➤ Power components selection explained with the help of converter
- Case study-I: IOT based automatic load and power balancer





Report on Offline Sessions (from 25th October -29th October, 2022)



Mr. Yadla Naresh, Engineer-II software, Microchip Technology Pvt. Ltd., Chennai.



Sessions-7 & 8:

On 25th October, 2022, the following topics are discussed during the offline session.

- > Introduction IOT.
- > IOT process.
- ➤ IOT development in industries.
- > Technology developments in IOT.
- Practice in Computer Lab













Mr. Rama Krishna, CEO, Efftronics Mangalagiri



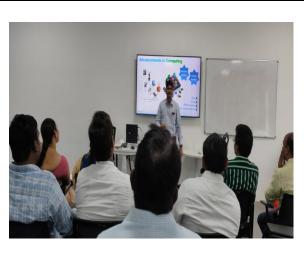
Session-9:

On 26th October, 2022, the following topics are discussed during the offline session.

- > Types of renewable Energy Technologies
- > IOT role in renewable systems
- > Case studies and sensors
- > Design of IOT trainer modules
- ➤ Different IOT applications











Mr. G.V.Siva kumar, Assistant General Manager-Projects, ORB Energy Pvt Ltd, Bangalore.



Session-10:

On 27th October, 2022, the following topics are discussed during the offline session.

- Overview of ORB Solar Park.
- Mono and Poly crystal modules.
- > 25MW solar park construction
- > Investments on solar park.
- Comparison of unit cost over the years.







Mr. SK.Subhani, Technical Manager, ORB Energy Pvt Ltd, Bangalore.

Session-11:
On 27th October, 2022, the following topics are discussed during the offline session.

- Overview of solar grid inverter.Solar modules by site visiting





Mr. M.Mathan Kumar, R&D Engineer, EMSYS Technologies, Coimbatore.



Session-12 & 13:

On 28th October, 2022, the following topics are discussed during the offline session.

- > Technologies enable IOT.
- ➤ Life cycle of IOT
- List of cloud providers.
- > Design of converters in MATLAB.
- ➤ Home automation.
- > IOT solar PV technology
- > Real time projects







Mr. G.Prasada Rao, Assistant Executive Engineer, Dr.NTTPS, Ibrahimpatnam.



Session-14:
On 29th October, 2022, the following topics are discussed during the offline session.

- > Structure of thermal power plant.
- Components of coal handling plant.

- Layout of CHP.
 Working of steam turbines.
 IOT development in Power plant









Awards to best participants





	LIST OF THE PARTICIPANTS					
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Dr J.Sivavara Prasad Coordinator & Convener Department of EEE LBRCE