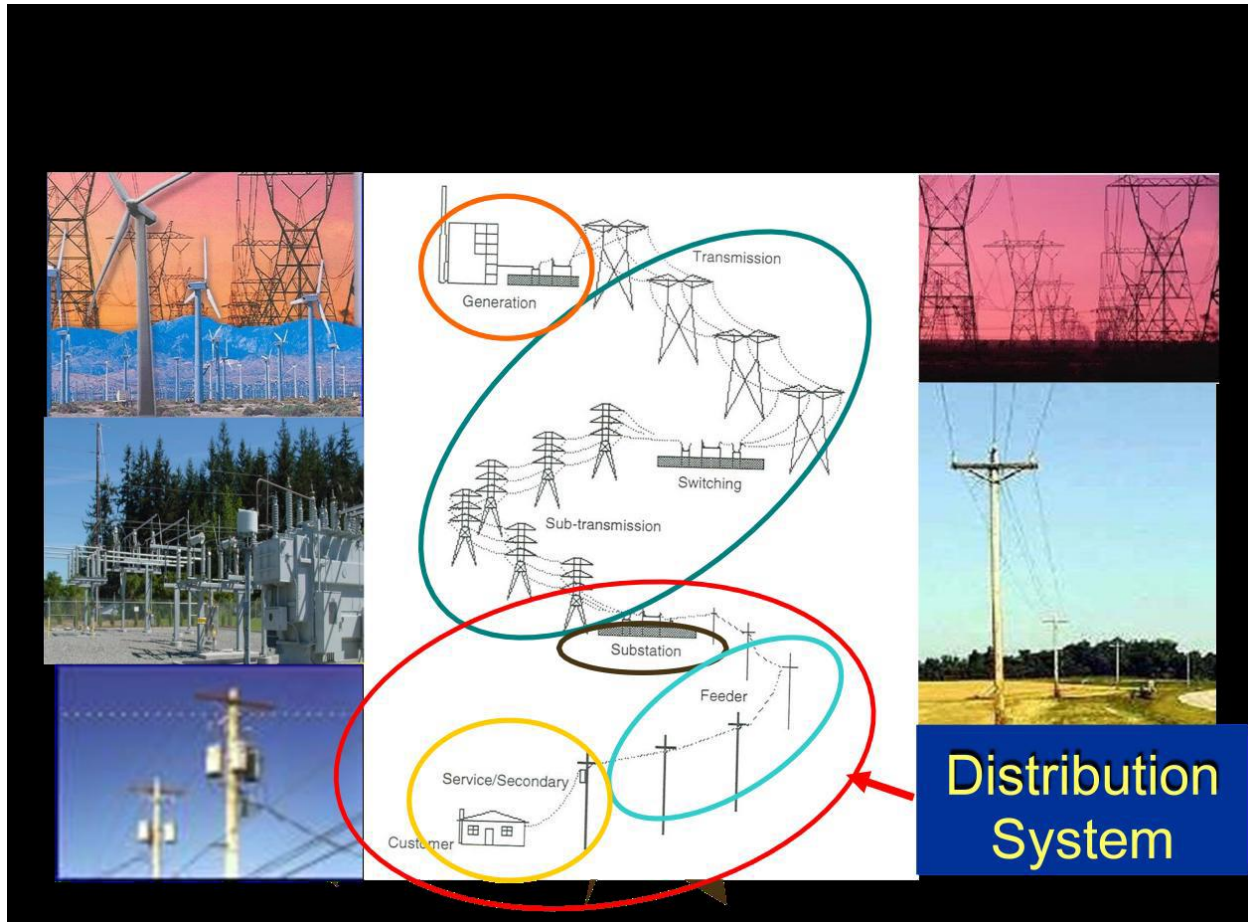


Short Course Report

# Smart Distribution Systems

Dec 27, 2015 - Jan 1, 2016



Organised By



**Department of ELECTRICAL AND ELECTRONICS ENGINEERING**  
**K L UNIVERSITY**

(NAAC Accredited "A" Grade University)  
Koneru Lakshmaiah Education Foundation  
(Deemed to be university, Estd .u/s. 3 of UGC Act 1956)  
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## SIMPLIFIED VIEW OF THE TRADITIONAL GRID

### Objectives of the short course

K L University's Electrical and Electronics Engineering department in association with IEEE Hyderabad PES Chapter inaugurated a Six day short course on Smart Distribution Systems. Today, academic research and industrial applications in the area of Smart Cities seek to optimize existing city infrastructure, networks, and urban behavior through the deployment and utilization of digital networks.

The specific objectives of the course were to bring up professional deliberation Smart Distribution Systems technologies. Few of the specific objectives of the short course are given below:

- To provide you as power and energy engineers with the state-of-the-art knowledge on the Smart (emerging) Distribution Systems (SDS), technologies, methodologies and performance evaluation tools or the important decisions you make in your professional life.
- This Course will focus on the improvements in Distribution Management Systems incorporating advanced technological solutions for the emerging Smart Grid.
- The primary objective of this Course is to present the state of the art of the emerging smart grid from real-time operations point of view.
- The main objective is to address how and where intelligence is to be embedded within a SDG at both the primary and secondary distribution levels to achieve desired goals of enhanced reliability and system operational efficiency.
- Information gathering to support decision and control actions in the SDG will be distributed, requiring new two-way communications infrastructure and associated data management framework.
- Therefore, making the distribution grid “smart” would require smart infrastructure, smart planning and design, smart operations and smart customers

## KLU Course Objectives:

- To motivate our college UG students to take up projects in the area of distribution systems.
- To encourage the faculty members to take up active research in the area of distribution systems
- To get the ideas on how to set up a laboratory which can give a hands on experience for the students and faculty

## Inauguration of Short Course



The programme was inaugurated by the chief guest R. Nagaraja , Managing Director, Power Research & Development Consultants Pvt. Ltd, Bangalore, INDIA, Chancellor Dr. M Ramamoorthy, Principal Dr. Anand Kumar , resource person Dr.S.S.(Mani)Venkata who is currently the Principal Scientist and Director of R&D, Alstom Grid Inc USA and coordinator of the short course SVN Lalitha of EEE. In the opening remarks Dr M Ramamoorthy addressed the gathering and suggested the need for applying latest trends in Smart Distribution Systems to existing age old distribution networks. The Chief Guest for the occasion **R. Nagaraja** thrown light on the need of developing and

implementing Renewable Energy for Sustainable College Campus. He also mentioned that developments in the area of Grid connected Solar PV and Net Metering & Feed-in Tariff.



The chief guest R. Nagaraja, Managing Director, Power Research & Development Consultants Pvt. Ltd, Bangalore, INDIA on the first day of the course started with key note lecture on Renewable Energy for Sustainable College Campus. By the end of the days session delegates were able to thoroughly understand design methods and analysis of Integration of Smart Load & Generation Management System

## **Structure of the workshop**

This was a six day workshop. The workshop was divided into day wise sessions, there were 10 presentations altogether, nine presentation from the international resource person; Dr.S.S.(Mani)Venkata and one presentation was made by the chief guest R. Nagaraja. By the end of each day participants had rigorous case study exercises. Day wise distribution and delivery of the presentations were as under:

**First day of the course covered the presentation of R. Nagaraja outlining the over view of**

- **Inauguration function**
- **Outlines given by the Sparkers**
- **Renewable Energy for Sustainable College Campus**
- **State of global power delivery systems**

**Second day of the course covered the presentation of Dr.S.S.(Mani)Venkata in the areas of**

- **Overview of distribution systems**
- **Smart Distribution Grid (SDG)**
- **Basic distribution load flow**
- **Design of a micro grid based on -load curve [sizing of conductors, transformers, and feeder layout]**

**Third day of the course covered the presentation of Dr.S.S.(Mani)Venkata in the areas of**

- **Reactive compensation using capacitor banks – utility side and customer side**
- **Energy pricing – using normal tariffs and TOU tariffs – costs of active and reactive powers/ energy units**
- **Case studies**

**Fourth day of the course covered the presentation of Dr.S.S.(Mani)Venkata in the areas of**

- **Distributed Energy Resources (DER)**
- **What are DER and DG?**
- **DER benefits and challenges**
- **Distributed Generation (DG) Sources and Models**
- **Smart grid generation issues**
- **Smart grid integration issues**

**Fifth day of the course covered the presentation of Dr.S.S.(Mani)Venkata in the areas of**

- **Existing versus future (Smart) protection systems**
- **Advanced protection philosophy and design**
- **Influence and impact of rapid changes**
- **Challenges and opportunities**
- **Impact on operations**
- **Advanced and adaptive protection**

**Sixth day of the course covered the presentation of Dr.S.S.(Mani)Venkata in the areas of**

- **What is power quality (PQ)?**
- **Why is PQ important?**
- **Power quality indices**
- **PQ Indices Interpretation**

The presentations and interactive discussions during the course were designed to give thorough understanding on the foundational concepts involving Smart Distribution Systems.

## **Closing address and Vote of thanks by Mrs. S.V.N.L LALITHA**



Dr S.V.N.L LALITHA in her closing address, appreciated the efforts of EEE department at KLU in organizing very useful and much needed short course. She was of the view that this course had presented many examples of how Smart Distribution Systems are going to play a key role in intelligent distribution of Power. She also added that many of the concepts presented in this short course were new. This course presented numerous examples of progress and illuminates potential opportunities.

Dr Lalitha thanked the extended support of resource persons, officials and all other involved in the successful organization of this short course. She also extended her gratitude to the course participants for their sincere efforts, attention and fruitful interactive sessions that contributed greatly towards the success of the workshop.

## **Certificate distribution to training participants**

Certificate distribution ceremony to the successful participants of the short course. Honorable chancellor Dr. M Ramamoorthy, Vice- Chancellor Dr LSS Reddy, and Dr.S.S.(Mani)Venkata presented the certificates to the successful participants.





### List of Workshop Participants

S.No.	Name	Organization
1	M. Suresh Reddy	Achrya Nagarjuna University C E
2	A. V. Ravi Kumar	DVR & HS MIC College of Technology
3	G.Sreehari	Kasireddy Narayanareddy College of Engineering and technology
4	S. Suresh	DVR & HS MIC College of Technology
5	N. D. V. Prasad Pandalaneni	Achrya Nagarjuna University C E
6	A. Sowjanya	TKR Engineering College
7	M. Sai Sandeep	Annamacharya institute of Technology and sciences
8	M. Ramesh	Annamacharya institute of Technology and sciences
9	B. Ramesh	TKR Engineering College
10	S Sivarajan	Brilliant Group of Institutions,Hyd
11	M.Kiran kumar	Sri Vasavi engineering college
12	Dr.A.V.Naresh Babu	DVR & HS MIC College of Technology
13	G.Pranava	Vasavi college of engineering of hyderabad
14	Dr.V.Joshi Manohar	Guntur Engg.College

15	O Sobhana	VNR VJIET
16	G. Srinivas Rao	SV Engg. College
17	Sd.Abdul Mujeer	RVR &JC
18	T Renuka	K LU
19	N Narendar Reddy	SV Engg. College
20	Ch Amarendra	Aditya Engg. College
21	Srinivas ArunTej	K LU
22	B Venu Gopal Reddy	SV Engg. College
23	A Ramesh	Aditya Engg. College
24	M Naga Jyothi	VNR VJIET
25	G MeeriMatha	SRIT Anantapur
26	G C Prabhakar	VNR VJIET
27	V Ramesh	K L U Research scholar
28	B Naga Raju	K L U Research scholar
29	K S Ravi Kumar	K L U Research scholar
30	B Mabu Sarif	K L U Research scholar
31	V Naga Siva Rama murthy	QIS College of Engineering
32	O Ranjith Kumar	QIS College of Engineering