



Department of Electrical and Electronics Engineering

AICTE sponsored

Online Short-Term Training Program (STTP) on

“Smart Grid Technologies for Energy Efficiency and Active Demand Side Management”

Phase No	Date		Title
	From	To	
1	07 December 2020	12 December 2020	Introduction to Smart Grid Technologies; Opportunities and Challenges in Future world – Case Studies
2	04 January 2021	09 January 2021	The role of Smart Grids on loss reduction and rural electrification.
3	01 February 2021	06 February 2021	An overview of Smart Grid Infrastructure for Demand Side Management.

Summary Report

Phase III - An overview of Smart Grid Infrastructure for Demand Side Management.

(1st Feb 2021 to 6th Feb 2021) AICTE Sponsored on line Short Term Training Program On “the SMART GRID TECHNOLOGIES FOR ENERGY EFFICIENCY ACTIVE DEMANDSIDE MANAGEMENT” was inaugurated on 04.01.2021. Dr. M. Mahesh, HoD/EEE, New Horizon College of Engineering welcomed the participants and guests. He mentioned that attending the program like this is essential for the faculty members to understand the needs of industry and implement the strategies in teaching learning process. He also Emphasized the importance of smart grid, energy management, energy efficiency and demand side management.

Overview and Advancement of Peak Load Saving Methods using Smart Grid Technologies

Dr. M Mahesh, Professor & Head, New Horizon College of Engineering, Bangalore.

An Energy Management Information System (EMIS) is an important element of a comprehensive energy management program. It provides relevant information to key individuals and departments that enable them to improve energy performance. Today it is normal for companies, particularly in process sectors, to collect huge amounts of real-time data from automated control systems, including Programmable Logic Controllers (PLCs), Supervisory Control and Data Acquisition (SCADA), etc. The captured data is shared and analysed in an orderly and precise way that identifies problem areas and provides solutions, this mass of data is merely information overload.

Internet of Things in smartgrid-overview

Dr. Vijayakumar K, Assistant Professor, IIITDM Kancheepuram.

Internet of things (IOT) is based on internet protocols, connecting the physical objects over internet. Smart grids are the essential part of the power sector, which connects all the components in the power system to make the existing grids more reliable. IOT being the latest technology in the field of data handling and data analysis, if the same is incorporated in the smart grids, the data transfer capability and the controlling of the grid equipment and the equipment placed at the distribution side is made easy.

Smart Grid Architecture and its use cases

Dr. Ashok Kumar L, Professor & Head, PSG College of Technology, Coimbatore.

The smart grid is a planned nationwide network that uses information technology to deliver electricity efficiently, reliably, and securely. It also called "electricity with brain", enables a two-way communication, two-way flows of Energy and information. It has some of attractive features. Unlike the existing grid, smart grids have the capability of self monitoring, self healing, pervasive control and adaptive islanding, enhanced interoperability.

Coordinated Voltage Control in distributed system with distributed generation and loss minimization using optimal sizing and location of DGs

Dr. Shivarudraswamy R, Associate Professor, Manipal Institute of Technology, Manipal.

A system of power generation whereby the generating equipment is located close to the point of usage, thereby reducing losses and operation cost is called distributed generation (DG). However, it is imperative that DGs are sited such that the quality of power delivered is optimized and the total real power loss within the system minimized.

Importance of Smart Grid in Electrical Technology

Dr. E. Chandirasekaran, Professor, Coimbatore institute of Technology, Coimbatore

The technology has been improving day to day and as per the improvement of technology the power system also improved with that. The main part of power system is Grid along with changes it is changed to Smart grid. This difference between conventional grid and smart grid and the advantages of it and how smart grid is improving day by day with the internet of things (IOT) and it is making path for saving money and it is making easiest way to control the grid system.

Power quality in Smart grid

Major Dr PS Raghavendran, Associate Professor, Kongu Engineering College, Perundurai.

Power quality in the future electrical network so-called smart grid, which consists of many microgrids, is discussed. A unified power quality conditioner (UPQC-S) based microgrid configuration with solar photovoltaic panels for voltage sag/swell, as well as for active and reactive powers compensation and harmonics mitigation. To achieve high performance during transition without any saturation issues, proportional integral and proportional resonant controllers based on new ant windup feedbacks are used.

Self tuning fuzzy control structure for integrated power systems

Dr. Puneet Mishra, Assistant Professor, BITS Pilani

During the past several years fuzzy control has emerged as one of the most active and fruitful areas of research in the field of control engineering especially, in the realm of industrial processes. Fuzzy control, based on fuzzy logic is a logical system which incorporates human thinking rather than traditional analytical methods. The rule base for tuning the input gains is defined on error (E) and rate of change of error (DE) of the controlled variable. Intelligent Power Control Architecture for Distributed Energy Resources Effective Power Management

Self healing characteristics to the smart grid through demand management and line reactance control

Dr. Balamurugan S, Professor & Chairperson, Amrita School of Engineering, Coimbatore

In the contrary, the emergence of time-variant and non-deterministic renewable and distributed energy resources are continuously causing new challenges to the Smart Grid across the world. Optimal control and efficient operation of renewable & distributed energy resources are one of the greatest challenges that are spontaneously leading the Smart Grid to an unstable state from its steady-state. Frequent and large instability results brown-out of the grid equipment which leads plant failure as well as power outage of the grid.

An Overview of Demand Side-Management and Demand Response

Mr. Panneerselvam S N, Asst. Exe. Engineer, TANTRANSCO

Demand Response refers to programs that encourage participants to make short-term reductions in energy demand. These short-term “responses” are triggered by price signals from the electricity hourly market, or initiated by the TSO or DSO. Demand Side Management (DSM) is any program that encourages the end user to be more energy efficient – so DR falls under this category, but so do longer-term or permanent energy efficiency measures such as lighting retrofits, building automation upgrades, and HVAC improvements

SCADA for Distribution Automation - A Case Study of BEC Infrastructure for Energy Management

Dr. Suresh H. Jangamshetti, Professor, BEC Bagalkot

Nowadays, computer control is one of the most cost effective solutions for improving reliability, optimum operation, intelligent control and protection of a power system network. Having advanced data collection capabilities, SCADA system plays a significant role in power system operation. Typically, at distribution side SCADA does more than simply collecting data by automating entire distribution network and facilitating remote monitoring, coordinate, control and operating distribution components just like in Smart Grid System

Design of Smart Energy System using Open Source Tools

Dr.A.Prasanth, Assistant Professor, PSNA College of Engineering and Technology, Dindigul.

Historically, digital near-real-time energy consumption data have not been widely available for electric energy users. Access to pulse output ports that are available on some meters requires specialized knowledge and interface equipment to access the data. More recently, however, digital smart meters, known as the advanced meter infrastructure (AMI), have been installed in California to provide two distinct mechanisms for transmitting energy consumption data. One is secured to a communication network directly to the utility for billing purposes.

Demand Side Management: Opportunities and Challenges in Indian Distribution System

Dr. Hitesh D. Mathur, Professor & Head, BITS, Pilani.

Demand Side management (DSM) is considered as a new facet in Indian power industry to solve the problems of power shortage and energy shortage. Load management or rather peak power management is the only focus of DSM programs in Indian utilities. "Load shedding" is the main tool for load management across the utility in all state in India. DSM in its true sense is yet to be implemented in Indian power market. Demand Side Management involves steps taken by the customer on their meter to change and regulate the amount or timing of energy consumption.

Vote of Thanks by Dr. A. Singaravelan.

A big 'Thank You' to all resource persons for their efforts towards the AICTE Sponsored online Short-Term Training Program On "the SMART GRID TECHNOLOGIES FOR ENERGY EFFICIENCY ACTIVE DEMANDSIDE MANAGEMENT". I am thankful to all participants for attending the STTP. I also extend my thanks to Chairman, Principal, HoD and organizers for their cooperation and support.

Glimpses of Phase III

