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	
2	04 January 2021	09 January 2021	The role of Smart Grids on Loss reduction and rural electrification.

Summary Report

Organized by

Department of Electrical and Electronics Engineering

NEW HORIZON
COLLEGE OF ENGINEERING
New Horizon Knowledge Park, Ring Road, Marathalli
Autonomous College Permanently Affiliated to VTU, Approved by AICTE & UGC
Accredited by NAAC with 'A' Grade, Accredited by NBA

Department of Electrical and Electronics Engineering

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"Smart Grid Technologies for Energy Efficiency and Active Demand Side Management"

Phase No	Date		Title
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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 II - The Role of Smart Grids on loss reduction and rural electrification.

(4th Jan 2021 to 9th Jan 2021) AICTE Sponsored on line Short Term Training Program On"the SMART GRID TECHNOLOGIES FOR ENERGY EFFICIENCY ACTIVE DEMAND-SIDE 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.

Role of stand alone wind driven DFIGs for rural electrification
Dr. K. Vijayakumar, Professor, IIITDM, Kanchepuram
Wind farm based distributed generations have gained wide attention in recent years as strong candidate of an efficient energy source particularly in rural local communities. Wind farm has already gained popularity in Europe where the total capacity if installed wind turbine generator systems is continuously increasing which most of them are located in Germany, Denmark, Spain, China & India.

SControl and Management of Energy Storage System for Energy Efficiency

Dr. S. Berclin Jeyaprabha, Associate Professor, CHRIST University, Bangalore.
Distributed generation (DG) systems are the key for implementation of micro/smart grids of today, and energy storages are becoming an integral part of such systems. Advancement in technology now ensures power storage and delivery from few seconds to days/months. But an effective management of the distributed energy resources and its storage systems is essential to ensure efficient operation and long service life

Electric Vehicle Grid Integration: Enabling Support through Electricity Storage

Dr. Prateek Jain, Assistant Professor, MIT Manipal

The dependency on petroleum imports for transportation purposes is also reduced by electrification of transportation, thereby increasing energy security. However, the adoption rate of EVs remains slow owing to factors, such as high initial cost, battery degradation, inadequate charging infrastructure, range anxiety, etc. Various policies and incentives are made available by governments around the world to promote the uptake of EV and to prevent these barriers from realizing a complete shift to electrified transportation.

Challenging and Opportunity on Demand Side Management

Dr. Velamuri Suresh, Assistant Professor, SASTRA (Deemed to be University) Thanjavur.

The importance of the diversity of electricity load is discussed and the negative effects of DSM on load diversity issues. Ageing assets, the growth in renewable and other low-carbon generation technologies and advances in information and communication technologies are identified as major additional drivers that could lead to wider applications of DSM in the medium term. Potential benefits of DSM are discussed in the context of generation and of transmission and distribution networks.

DG integration on loss reduction and peaking loading in rural areas

Dr. C. Lakshminarayana, Professor, BMS College of engineering, BANGALORE.

The impending deregulated environment facing the electric utilities in the twenty first century is both a challenge and an opportunity for a variety of technologies and operating scenarios. Of all the different parts of an electric power system, customers identify closely with the distribution subsystem due to its proximity and visibility on a daily basis. Several recent developments have encouraged the entry of power generation and energy storage at the distribution level.

Development of Smart Grid Infrastructure

Dr. Balamurugan S, Professor, Amrita Vishwavidyapeetham University, Coimbatore.

Smart grid infrastructure includes automation technologies for smart power delivery is DGs, Storage, EVs (Electric vehicles); smart and faster sensing and measurement; integrated communications among all smart grid entities, automation technologies for smart power delivery; fault detection, energy pricing, and energy market, grid data management, data security or data protection; and energy policy under new smart grid environment.

Power Converters for Smart Grid Architecture and its use cases

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

Exponential growth of renewable energy has been enabled in recent years, this is only because of technological advances in 'Power Electronics' devices and their ability to control power flow. Power electronics based Flexible AC Transmission (FACTS) technologies and automation technologies are necessary for smooth integration of renewable energy sources with the main grid.

AI based demand side Integration

Dr. A.Immanuel Selvakumar, Professor & HoD, Karunya Institute of Technology and Sciences, Coimbatore

As the energy sector is increasingly becoming complex, intelligent tools/mechanisms are needed to manage the system effectively and make timely decisions. In general, the artificial neural network (ANN), reinforcement learning (RL), genetic algorithm (GA), and multi-agent systems are well-known AI techniques to solve the problems of classification, forecasting, networking, optimization, and control strategies

Digital Society: Transforming Society for the future

Dr. J. Jayakumar, Professor, Karunya Institute of Technology and Sciences, Coimbatore.

Digital technologies have become ubiquitous and part of everyday life. Things that would have been regarded as science fiction just a few decades ago are taken for granted, such as modern smart phones, global information networks or virtual reality. At the same time, societies are becoming ever more dependent on digital technologies and infrastructure. Banking, electrical grid management, health records and other personal information are increasingly relying on digital networks and databases.

A novel multilevel inverters with reduced circuit components for Solar PV Applications

Dr Dhanamjayulu C, Assistant Professor (Senior), VIT Vellore.

Power electronic converters are used to nullify the input fluctuations from a solar photovoltaic unit due to intermittent solar irradiance and to make the terminal voltage grid compatible with desired frequency. The conventional two-level converters suffer from low power quality and high voltage stress. In this paper, a new multilevel inverter topology called Dual Source Multilevel Inverter (DS-MLI) with fewer power switches is proposed for solar PV power conversion systems.

Control of grid-connected power converters
Dr. Arun Kumar G, Professor, VIT Vellore.

The connection of electronic power converters to the electrical network is increasing mainly due to massive integration of renewable energy systems. However, the electrical dynamic performance of these converters does not match the behavior of the network, which is mainly formed by generation facilities based on big synchronous generation systems. Depending on the desired electrical operation mode different control structures can be implemented in the converters in order to get adapted with the grid conditions.

Protection Strategies in Smart Grid Scenario
Dr. Hitesh D. Mathur, Professor & Head, BITS, Pilani.

Smart grids (SGs) deployments have made power systems operation more efficient by the application of distributed computing schemes in grids' interoperation. However, these schemes have triggered various security issues which are growing to be of major concerns. Physical attacks, cyber-attacks or natural disasters are major notable form of threats to SGs deployment which could lead to infrastructural failure, blackouts, energy theft, customer privacy breach, endangered safety of operating personnel, etc. Hence, the need to critically examine the security issues aimed at preventing possible threats or failures

Vote of Thanks by Dr. A. Singaravelan.

A big 'Thank You' to all resource persons for their efforts towards the AICTE Sponsored onlineShort-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 II