

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE (UGC - AUTONOMOUS)

Report on National Workshop on Challenges, Approaches and Practical Implementation of Microgrids Organized by Dept. of EEE - MITS 26 - 30 September 2015



Submitted by: **Dr. A. Anbarasan, Associate Professor, Dept. of Electrical & Electronics Engineering**

The Department of Electrical and Electronics Engineering organized Five-Day National Workshop on **“Challenges, Approaches and Practical Implementation of Microgrids”**, during 26th – 30th September, 2015.

Theme of the workshop:

Recently, Microgrids have earned numerous research interests due to their flexibility. They can provide high quality uninterrupted power supply to the consumers. Microgrids are connected to the grid or operated autonomously and are highly beneficial. Currently, several research groups across the globe are investigating the feasibility and benefits that Microgrids may provide. This workshop provides an insight knowledge about the challenges, approaches and practical implementation of Microgrids. This workshop helps all the participants to be familiar with various concepts of Microgrid which include difficulties involved, troubleshooting, operation, maintenance, recent developments and practical execution.

Inaugural Session:

The inaugural session of the National workshop started at 10.00 AM in main seminar hall. Program Co-coordinator Dr. A. Anbarasan, Program Coordinator Dr. K.V.R.B.Prasad, Vice - Principal Dr. G. Hampamma and Chief Guest Prof. P.S. Nagendra Rao, Professor, Dept. of Electrical Engineering, IISC, Bangalore were present on the dais and

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inaugurated the seminar by lighting the lamp. 64 participants attended the workshop. The faculty from various colleges and students attended the workshop.

Program Co-coordinator, Dr. A. Anbarasan gave the opening remarks about the theme of the seminar, details of participants, detailed schedule of the program and expertise of the resources persons.

Program Coordinator, Dr.K.V.R.B. Prasad presented the profile of E.E.E. department including the programmes offered by the department and various activities conducted by the department. Vice-Principal, Prof. G. Hampamma presented the profile of the institute along with the various activities of the institute.

Prof. P.S. Nagendra Rao, Professor, Dept. of Electrical Engineering, IISC, Bangalore was chief guest of the function and given the inaugural speech. During his speech, he stressed the importance of Microgrids in the current scenario and their applications. Dr. B. Rama Kumar, Professor, Dept. of EEE proposed Vote of Thanks.

Day 1 :

Prof. P.S. Nagendra Rao, Professor, Dept. of Electrical Engineering, IISC, Bangalore discussed about **“Overview of Microgrids”**. In his presentation, he mentioned details about the conventional grid, drawback of existing centralized grid system and necessity of Microgrids for rural electrification. Also discussed about the challenges in the Microgrids.

Day 2 :

Dr. S. Umashankar, Associate Professor, School of Electrical Engineering, VIT University, Vellore discussed about Electrical and Electronics Engineering and **“Future Grid for Sustainable Energy Systems”**. During his presentation, he explained about the basic components of automation, necessity of automation, challenges in automation, efficient method of power utilization and street light automation. In addition, the operational and cost challenges of Microgrids also discussed.

Day 3:

Mr. D. Nitesh Kumar, Engineer, R& D team, M/s. PRDC Pvt. Ltd., Bangalore discussed about **“Protection of Large Interconnected Power Systems -Part-I and Part-II”**. **During the morning session**, he explained about the necessity of change in protection philosophy, calls for advanced technology to improve the performance of protection scheme, protection of various transmission system equipment's from various faults, necessity of special protection scheme, its design, implementation, case studies, WAMS Based Protection Scheme, its components and Wide Area Protection.

In second session, he discussed regarding **“Automated Fault Analysis System (AFAS)”**. In this session, he discussed about the ability of a specialized computer program to correlate and analyze available data regarding power system faults as well as disturbances. He also discussed about the information extracted from automated fault analysis and its usage by operating personnel, protection engineers as well as maintenance crew.

Day 4 :

Mr. A. Kamal, Assistant Manager, M/s BGR Energy Systems Ltd., Chennai, morning session discussed about **“Over View of Power Plants”** and **“Gas Insulated Systems”**. He discussed about the Gas insulated substation, Air insulated substation, comparison, advantages, disadvantages and challenges in the practical implementation GIS. He also shared his power plant erection field experiences and necessity of software knowledge, certificate courses offered by various agencies to get placement in power sectors.

Dr. K. Uma Rao, Professor, Department of EEE, RV College of Engineering, Bangalore, second session discussed about **“Wide Area Measurement – part-I, Wide Area Measurement – part-II and Introduction to Next Generation Microgrids”**. She discussed about the importance of Wide Area Measurement, Wide Area Measurement for line bias control and economic dispatch, WAMS process, data resources, Components of SCADA, functionalities of SCADA software, communication channel requirements, challenges and implementation of SCADA. She also discussed about the challenges in implementation of SCADA & WAMS.

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Day 5:

Mr. V. Suresh Babu, Assistant Director, PSTI, Bangalore discussed about **“Challenges in Renewable Energy Integration in Urban”**. He discussed about the Potential of Renewable Energy, Installed capacity in India, State wise – installed wind power capacity, penetration level, Annual Wind Energy Generation Patterns, Typical Solar Power Generation Patterns, Typical Transmission Arrangement of RE Generation Farm with Grid, Solar Power Evacuation Scheme, integration issues, Regulatory Issues, Mitigating Measures for Large Scale Renewable Integration, Energy storage alternatives, Implementation and Strategy of renewable energy sources.

Valedictory Function

The valedictory session of the National Seminar held on 30th September 2015 at 4.00 P.M. in Mini-Seminar hall. The Program Co-coordinator, Dr. A. Anbarasan, Program Coordinator Dr. K.V.R.B.Prasad, Chief Coordinator, Dr. C. Yuvaraj, Principal, Chief Guest, Mr.V. Suresh Babu, Assistant Director, PSTI, Bangalore, Dr. B. Rama Kumar, Professor, Dept. of EEE attended the valedictory function. Dr. C. Yuvaraj, Principal gave the valedictory speech and appreciated the department for the efforts to conduct the seminar effectively. He congratulated all the participants for their active participation during the seminar. The Chief Guest, Mr. V. Suresh Babu appreciated the participants for their active participation and urged the participants to use the knowledge gained during the seminar to work in Microgrids.