Gujarat Power Engineering and Research Institute

Report of

One Day Faculty Development Program

"ADVANCES IN ANALYSIS AND CONTROL OF ELECTRICAL MACHINES"

Organized by

Department of Electrical Engineering

on

7th June – 2014

One days Faculty Development Program was organized by Electrical Engineering Department on "Advances in Analysis and Control of Electrical Machines". The workshop was held at Gujarat Power Engineering and Research Institute, Mewad on 7th June, 2014. Senior Faculty from reputed Institute and Industry were invited to deliver the content of FDP.

Speaker's Profile:

Mr. S. B. Mahajani is currently working as a Deputy General Manager of Amtech Electronics (Ind) Ltd, Gandhinagar. He is having more than 30 years of experience in the field of Variable frequency drive for induction motor. His areas of interests are power electronics, induction motor drive and converter.

Dr. P. N. Tekwani is Head of the Electrical Engineering Department, Institute of Technology, Nirma University, Ahmedabad. He is having more than 15 years of experience in teaching and Research. His area of Interest are Power Electronics, Power Quality, Power Supplies, Industrial Electronics, Motor Drives, Converters, Inverters, UPS and Power Electronics for Nonconventional Energy Sources. He is the author / co-author of more than 63 national / international research publications focused on power electronics converters, power supplies, induction motor drives, multi-level inverters and power quality issues.

Dr. Ketan Badgujar is currently working as an Associate Professor in Electrical Engineering Department, IIT RAM, Ahmedabad. He is having experience of more than 15 years in teaching and research. His areas of interest are Transformer diagnostics techniques and high voltage engineering. POSOCO Power System Award 2014 for the doctoral thesis on transformers. He has published 9 papers on Transformer Diagnostics.

Dr. S. N. Pandya is currently working as an Associate Professor in Electrical Engineering Department, L. D. Engineering College, Ahmedabad. He is having more than 15 years of experience in teaching and Research. He is the author / co-author of more than 19 national / international research publications

Dr. Axay Mehta is currently working as a Director of Gujarat Power Engineering and Research institute, Mevad, Mehsana. He is having more than 18 years of Teaching Experience at UG and PG level at various institutes of the state. His research domain and interest is Non-linear Sliding Mode Control and Observer, Networked Control System. He has published more than 35 research papers at National/International Journals and Conferences.



Highlight of Workshop

The one days FDP was attended by 26 participants which includes faculty members and PG students of various engineering college of state. At the beginning, Dr. Axay Mehta, Director Gujarat Power Engineering and Research Institute, Mewad delivered the welcome address to all the eminent dignitaries and participants. A delightful briefing was made by Dr Axay Mehta on Advances in Analysis and Control of Electrical Machines. Importance of analysis and control of machine has also been explained nicely. He had also briefed out the course content of the FDP. Detailed planning of entire day had been explained by him nicely. He encouraged the participants to make the session active and lively by making it interactive

Technical Sessions I

Keynote speaker Mr. S. B. Mahajani opened the session form introduction of Variable frequency drive and its importance. He explained current trends of technologies VFD, and it's integration with web services. His session includes explanation of various types of Drive, topology of VFD, various application.

The session was further carried by Dr. P. N. Teakwani. He introduced the modern control techniques for electrical drives using multilevel inverter. Then he lightened the various PWM control technics for modern inverters up to 72 levels.

Dr. Ketan Badgujar continued the session introducing Causes of transformer health deterioration and Techniques to access transformer health like Insulation resistance & polarization index, Capacitance & tan delta, Oil dielectric strength, Temperature Monitoring, Dissolved gas analysis and also modern techniques like Duval's triangle Furan Analysis and Frequency Response Analysis.

Technical Sessions II

After lunch time Dr. S. N. Pandya started the session by explaining the Applications of Electric Drives like Lowering the speed of a fan or pump, Electric crane, Assembly robots, Electric elevators, Electric motor control in hybrid vehicles, trains, streetcars, or CD players. He also lightened Energy Saving using Electric Drives such as Throttling to control the flow rate, Power Electronics drive to control the flow rate and Motoring and braking operation.

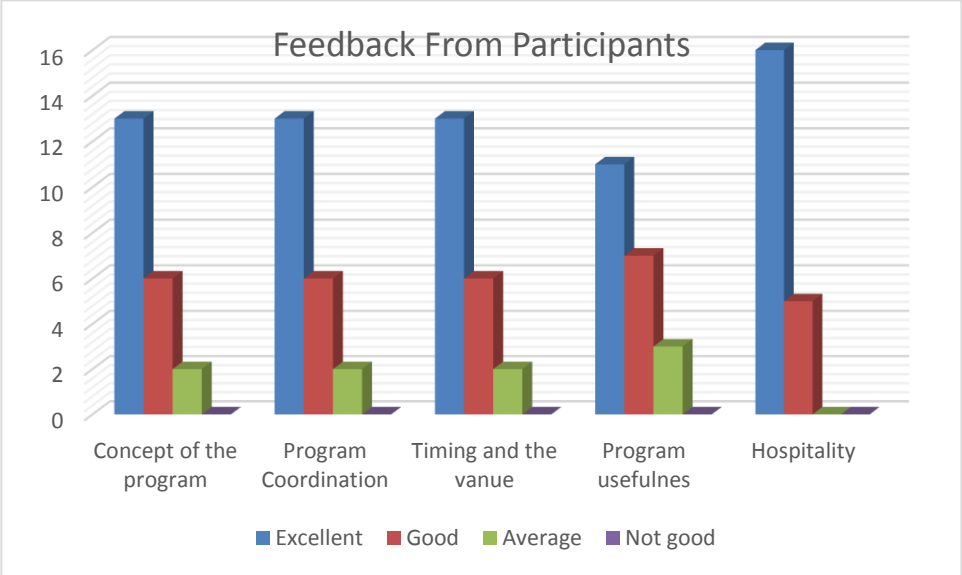
At the end Dr. Axay Mehta continued the session giving brief introduction about the recent developments in the field of “Sliding Mode Control Technique”. How sliding mode can be used in place of conventional PWM techniques and what are the advantages of sliding mode control over conventional PWM was very nicely explained by him.

Participants Like About workshop:

- Initiative taken by of the department
- Knowledge shared by expert speaker
- Methodology of teaching
- Course content

Suggestions for Improvement:

- Allocate more time for such workshop; it should be of 4-5 days workshop
- Arrange such workshop on Power System.



Finale:

The FDP was concluded with presenting word of thanks to the Expert by Dr Axay Mehta, coordinator of the FDP, which was followed by certificate distribution to the Participants by Department of Electrical engineering.