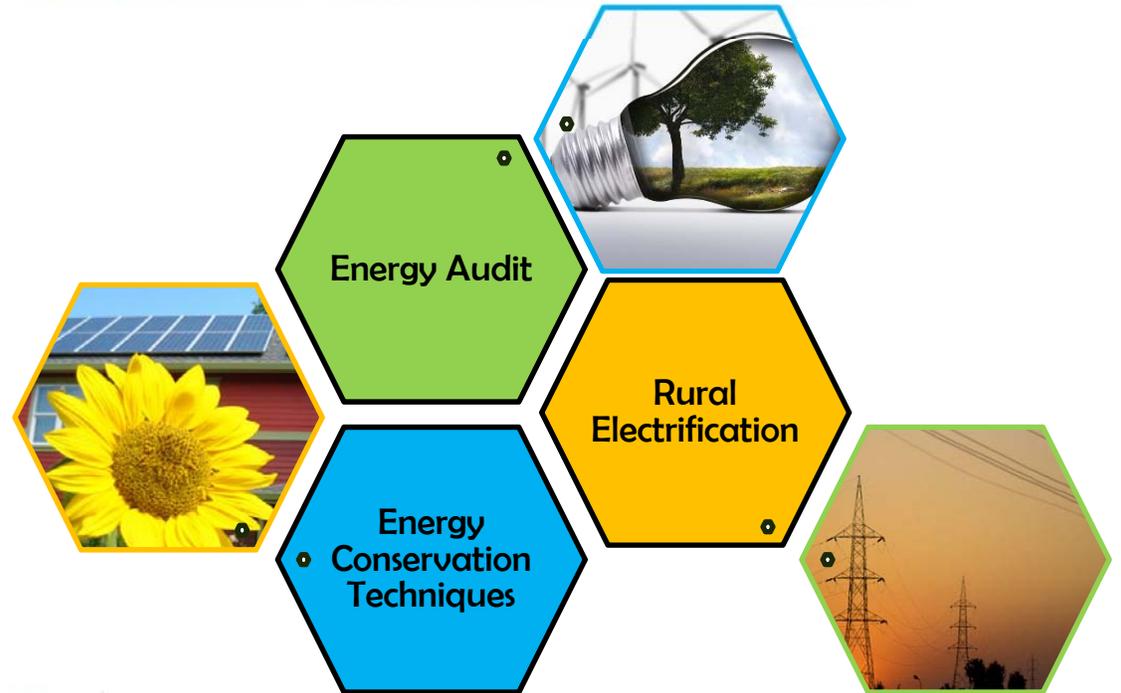


A
Report on
Technical Workshop for
Energy Economics & Rural Electrification



Date: 26th September, Saturday, 2015

Venue: Seminar Hall, GTU-Gandhinagar Campus,
Gandhinagar



Presented by:

Prof. (Dr.) Indrajit Patel
Ms. Jagruti Shah



**Gujarat Technological University,
Ahmedabad**

**Gujarat Technological University,
Ahmedabad, Gujarat.**

Technical workshop of Vishwakarma Yojana at GTU, Gandhinagar Campus

(26th September, 2015)

Gujarat Technological University had organized a One Day Technical Workshop of Vishwakarma Yojana Phase-III for the students of Electrical Engineering on “**Energy Economics & Rural Electrification**” held on 26th September, 2015 at GTU, Gandhinagar Campus.

Ms. Darshana Chauhan, OSD welcomed experts, all invitees & participants in the workshop. Expert speakers Mr. Alpesh Pandya (Certified Energy auditor), MD of Aatman Corporation, Prof. Kashyap Mokariya, Assistant Professor in Dr. S. S. Gandhi Government Engg. College, Surat, 4 Nodal officers and 118 students from 59 Institutes affiliated with GTU were remain present.

Technical Session has been grouped in Two core themes:

- (I) Energy efficient devices, Rural Electrification & Methods of energy economics.
- (II) Energy Conservation Techniques and Energy Audit for Villages.



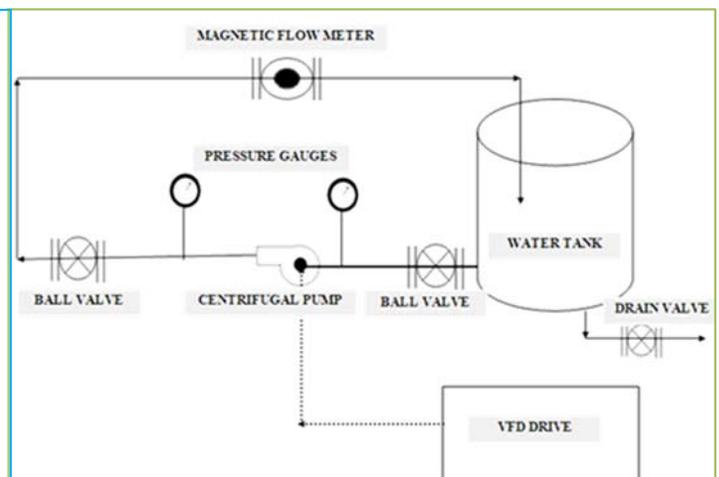
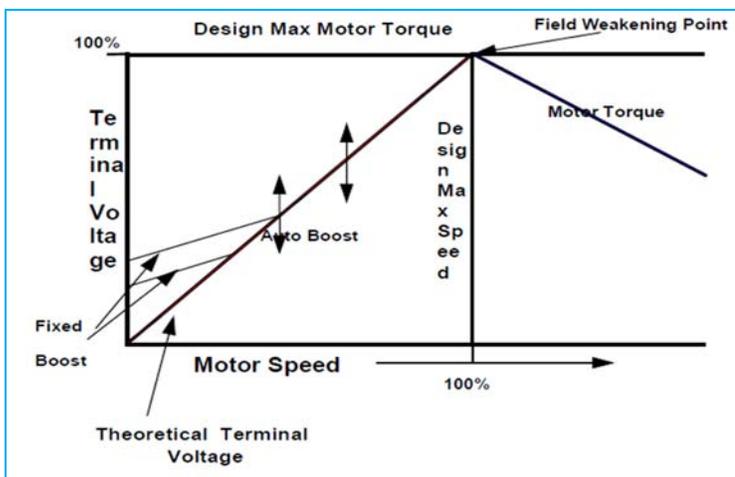
Technical Session I

The first Session has been conducted by Prof. Kashyap Mokariya from Dr. S S Gandhi College, Surat. He has more than one decade of academician and research Experience. He is also recipient of Pedagogical Innovation award by GTU on 14th Feb 2014.

He has explained four methods of calculating mechanical loading and efficiency of motor which students has to perform with their guide at their respective villages motors and calculate mechanical loading and efficiency accordingly. Students were given proper understanding when to operate motor in star mode, delta mode, delta-star, star-delta mode and even when to use soft starters for saving energy. If by efficiency measurement the efficiency of the motor is poor than if it is replaced by energy efficient motor than what will be the payback period it was explained by case study just as case study for efficiency calculation.



Design and Operation of very low cost single phasing preventer was explain to students and they were encouraged to design a classroom timer for 1 hour, low cost water level controller etc. Sources of low power factor was explained and methods to improve power factor was discussed with benefit of power factor improvement. Readymade tables were given and explained to students such that when they go at their villages they can have directly do inspection of capacitor KVAR needed for particular rating motor and they were asked to



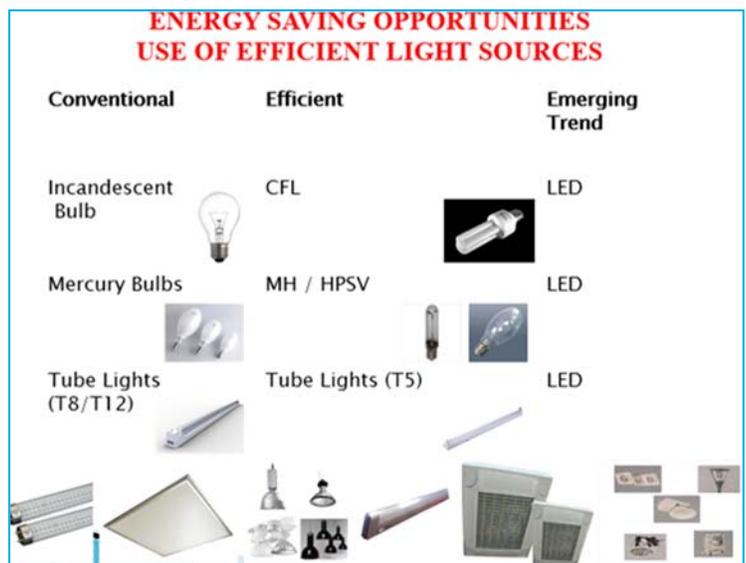
compare the answers to their design equation that they have studied in their syllabus for deciding KVAR of capacitor. To give industrial exposure to these final year students hardware design of automatic power factor controllers with detailed programming using Programming Logic Controller was explained and students were encouraged to do power factor improvement after study of bills and measuring power factor at site and do similar design using microcontroller to reduce the cost. Concepts of Variable Frequency drive and its construction, hardware implantation and programming with results comparison of throttling and VFD were shown to students and energy saving feature with power factor improvement by VFD was explained to students and students were encouraged to work for pumps in their area for energy saving. He thanked Hon'ble VC - Dr. Akshai Aggarwal, GTU for bringing such a prestigious project for Students of GTU & giving them opportunity to get real world experience.

Technical Session II

The Second Session has been conducted by Mr. Alpesh Pandya from Aatman Corporation. He is having more than 18 Years of Industrial experience. He is a certified Energy Auditor from Govt. of India, Authorized Energy Auditor Govt. of Gujarat (GEDA).

In his presentation, he has presented Energy Scenario, Energy Audit steps, methodology and instruments needed for energy audit. He explained rural electrification and building electrification for lighting scheme and replacement of less efficient lamps, fans, and domestic devices with energy efficient one. Street lighting and home lighting was also covered. He explained the main resources of energy like coal, oil and gas, which have taken three million years to form, are likely to deplete soon. In the last two hundred years, we have consumed 60% of all resources. For sustainable development, we need to adopt energy efficiency measures. Today, 85% of primary energy comes from non-renewable and fossil sources (coal, oil, etc.). These reserves are continually diminishing with increasing consumption and will not exist for future generations.

He also briefed about gap between energy demand and generation, possible fuels are used in transportation and



various industrial processes and in power plant; if these sources are depleting in the same manner then at the life of human beings, vehicles and industries is not easy to live but impossible. The population is increased many times hence there will be a need of new houses, complexes, transportation etc. Every day the gap between energy demand and generation is increasing, so to bring this gap energy should be conserved.

He presented various solutions for energy conservation in villages and explained all parameters to student in context with villages. India currently ranked as the eleventh greatest energy producer of the world, according for about 2.4% of the world's total energy production, and as the sixth greatest energy consumer of the world, according for about 3.3% of the world's total annual energy consumption.

Mr. Alpesh Pandya and Prof. Kashyap Mokariya interacted with the Students in the end of the session and asked all the problems. Ms Jagruti shah, OSD has explained about semester project report and explained all the technical parameter to the students.



Students were also encouraged to arrange seminar for energy conservation in rural areas with prior permission of respected authorities to promote the use of energy efficient devices at remote area.

Ms. Darshana Chauhan thanked Hon'ble Dr. Akshai Agrawal, VC, GTU, Shri J. C. Lilani, I/C Registrar, Prof.(Dr.) Indrajit Patel, Hon'ble Director-VY, all Students, Nodal Officers, Experts & team of GTU for making Programme success for Vishwakarma Yojana.

On Behalf of GTU

Dr. Indrajit Patel
Ms. Jagruti Shah
Ms Darshna Chauhan

