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ELECTRICAL MIRROR

An outlook of the electrical & power industry

Energy Conservation Future of Tomorrow

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The Indian Power sector scenario remains gloomy, surrounded by the dark clouds. Although Power reforms started about a decade back, the achievements are only dismal. Financial health of most of the State Electricity Boards (SEBs) remains critical, mainly due to the uncontrolled use of low efficiency, Power wasting Equipment and Appliances, back breaking heavy subsidies for agricultural and some other sectors, and huge power thefts and pilferage resulting in heavy loss of revenue for the State Electricity Boards (SEBs) and other Utilities. The major problems faced by the Power sector are due to increasing gap in the Demand and Supply of Power, High Transmission and Distribution (T&D) losses as well as Power theft/Pilferage and wastage of expensive and limited Energy due to the use of Low Efficiency Equipment in various sectors. The prescription and implementation of Energy Conservation building codes has to be done in Consultation and co-operation by Central & State Governments which will have the majors powers.

Energy Conservation:

The Energy Conservation Bill-2001 was passed by the Parliament in August-2001 and was expected to clear the way for to check Wastage Energy. This Bill was suppose to control huge wastage of Power. The Energy Conservation Bill 2001 prepared by group of expert committees discussed and debated at various forums, was passed by the Indian Parliament in August-2001.This a Bureau called the Bureau of Energy Efficiency (BEE) was established and managed through Governing council. However the implementation of Energy Conservation Bill-2001 has to be done through well qualified and experienced Energy Managers with the designated consumers and the Energy Auditors to check & certify that every such consumer complies with the provisions of this bill, thereby conserving the Energy, which of course will benefit the consumers themselves reducing their own Energy Bills and such savings increasing their profitability. Bureau of Energy Efficiency (BEE) also play key role in creation of professionally qualified energy managers and auditors with expertise in energy management, project management , financing and implementation of energy efficiency projects as well as policy analysis. It is a Law to force firms to make more profit and not an Act to control and monitor Energy Consumption of Industry.

Under the BEE's PAT Scheme (Perform, Achieves & Trade) for Eight following Industrial Sectors, it is mandated to compulsorily improve their Energy Efficiency by adopting all the available measures including replacement of their old Equipments with New and Energy Efficient Equipments:-

- Aluminum
- Cement
- Chlor
- Alkali
- Fertilisers
- Iron & Steel
- Pulp & Paper
- Textile and Thermal Power Plants

All the Assets, Liabilities and Employees of the existing Energy management center was suppose to be transferred to this bureau. The central government through its Ministry of Power, the Bureau of Energy Efficiency & the State Governments will have a major role to achieve the desire objectives. Bureau of Energy Efficiency (BEE) has estimated a potential of more then 25% savings through energy conservation. With the move towards deregulation within the Power utility industry, customers are demanding superior Power quality and reliability of Supply. Many utilities have responded to the needs of their customers by establishing Power Quality Divisions within their marketing departments.

Some of the main Objective of Energy management programmers are as follows.

- Cultivating good communications on Energy matters.
- Improving energy efficiency and

reducing energy use and to reducing cost from the same.

» Developing and maintaining effective monitoring, preparing reports and implementing steps for wise energy usage from the reports after analyzing.

» Finding new and better ways to increase returns from Energy investment through research and development

» Developing interest in and dedication to the Energy management programme from all employees

» Reducing the impact of curtailments brownouts or any interruption in energy supplies.

Energy Audit & Accounting

The Energy accounting gives the overall picture of Energy availability & its use. The Energy Audit enables analyzing the data in meaningful manner to evolve measure to introduce checks & balances in the system to reduce leakages and losses and also to improve technical performances. Energy Audit is carried out with the following objectives.

» Review of technical efficiency of system elements in T& D System.

» Review of performance of Equipment, Meters, Control Panels, and distribution Transformers, etc.

» Analysis of the techniques for measuring energy received, energy billed and revenue collection.

» Review and up gradation of procedure for energy accounting.

» Establishment of norms for checking the consumption of various categories of consumers and overall energy balance in the circle.

» To clearly audit the segregation of technical and Non-technical losses.

Theses losses depend on pattern and nature of demand, load density and the capability and configuration of system, equipment used and vary for various system elements. However system where total percentage loss lie beyond aforementioned values, should become a matter of serious concern. Target for reduction of Technical/Non-Technical loss should accordingly be fixed measures identified and action taken to accomplish the same within given time period.

All the details pertaining to Energy Accounting may be fed to the computerized billing system and the MIS report of each feeder may be generated through software package. MIS Report in the desired format could be generated by the Billing computer. The system may be made available at various levels i. e. sub-station / Sub division / Divisions / Circle. It can thus be concluded that energy accounting and audit is very essential for reducing the T&D loss within optimum permissible limits, for which target are to be fixed and concerned efforts are to be mad to plug the leakages in the T & D system so that revenue collection of State Electricity Boards as well as Utilities increases which in turn will give a face-lift to them and improve their financial health.

As can be seen from the above, this is a stupendous work and needs full co-operation from everybody. All manufacturers and the users of the Energy, as well as the Central and the State Governments.

MECO "POWER & HARMONICS ANALYZER - Model 5850" Analyzer which is a state of art versatile instrument using micro controller technology and having various functions that would be ideal for any Energy Auditor, Engineer, Inspector for carrying out Energy Audit, Surveys, Periodic Audit with visit for checking at Industrial and Consumers end.

The measurements can be done without disconnecting the Live loads. It is able to do almost all the Analysis for 1 / 3 Phase Power System and capable of analyzing IT standby Power consumption to the Maximum Demand of Factory. LCD Display with Backlight of 35 Parameters in One Screen to monitor Active, Apparent & Reactive Power, Power Factor, Energy, TRU RMS Value, AC Current, and Average Demand & Maximum Demand with Programmable Time Interval, CT & PT Ratios.

It displays Harmonics up to the 99th Order & T.H.D. with Waveform. PHA5850 Display Power Parameters and Harmonics with waveform. Analyzer having features like Real time Graphic Phasor Diagram & Capture 28Transient Events with Programmable Threshold (%). MECO PHA- 5850 has inbuilt memory of 512K for 17000 records and Optical Isolated RS-232 ~ USB Interface with users friendly Software for easy downloading of recorded data is the key features. Analyser has facility to retrieve Power Data & Harmonics on Meter Screen.

Analyser available with Clamps on CTs having Multiple Range of 1/10/100A or 10/100/1000A or 300/3000A (Flexible CTs) as per application.

The objectives of this Energy Conservation are very good but the road ahead is very long, rough and tardy but with the cooperation and strong will, nothing is impossible ■

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