



TO SUCCESSFULLY MANAGE RISING ENERGY COST & ENERGY VOLATILITY AT RETAIL STORES

SHAKTI CHAUHAN

Research Scholar, Mumbai University

Email id: 1979.darshan@gmail.com

ABSTRACT:

Energy Management System plays significant role for managing the energy consumption at Retail Stores. Following are basic understandings on Energy Consumption at Retail Store

- Energy is second largest operating expense for any conventional Retail store.
- A typical Energy Load Balance will be (6:2:2) , 60% HVAC/Refrigeration, 20% Lighting & UPS & 20% others
- Effective Monitoring can improve efficiency up to 5 %
- Controlling & fine tuning Energy Consumption up to 10 %
- Optimizing Energy Usage can improve from 15-30% overall efficiency

INTRODUCTION:

Energy management is now in the global spotlight, due to the pressing need to save energy and reduce greenhouse gas emissions worldwide. Energy-saving technologies and facilities are only part of the methodologies for improving energy efficiency.

A more sensible and systematic approach to improve an enterprise's energy performance sustainably is to establish and implement a standardized, process-based energy management structure.

The ever increasing energy cost due to scarcity and constant increase in demand is challenge for any enterprises. Over and above at times the non-availability of power becomes the show stopper. There is an earnest need to control and judiciously use the energy and to manage the overheads on energy cost. At some region the staggering cost due to high consumption of power is enormous.

CHALLENGES:

- a) The awareness about the methodology to control the energy cost is lacking with most of the enterprises
- b) No professional approach to Energy Management
- c) Facilities are built without considering the energy saving perspectives
- d) Non realization of benefits from low cost energy saving measures
- e) Non availability of training to facility occupants on Energy Savings and best practices

SOLUTION

- 1) Professional approach to Energy Management should include following:
 - a. **Monitor** daily load pattern and **Derive** Baseline
 - b. **Ask** reasons for deviation
 - c. **Correlate** historical data of the whole building energy use / air conditioning energy use to weather data (degree days)
 - d. **Perform** energy balance Do not assume. Measure & Verify performance
 - e. **Account** for expansion plans and changes in loads/ operational hours
 - f. **Gather** accurate information related to hours of operation and variations in load on working days and holidays



- g. **Adapt** a holistic approach rather than a piece meal approach while evaluating opportunities especially if the ideas have an overlapping influence for example upgrading with energy efficient lighting and occupancy sensor.
 - h. **Use** IPMVP (International Performance Measurement & Verification Protocol) techniques such as segregated metering to measure and verify energy saving performances
- 2) Building Proper Load Distribution
 - a. Equal distribution of load to avoid heating losses
 - b. Grouping of load and monitoring
 - c. Connected load Vs actual monitoring and study on gaps
 - 3) Ensure to take all Low Cost measures as below :
 - a. Study, Create and implement policies – periodic reviews
 - b. **Evaluate** contract demand,
 - c. Analyse tariff options,
 - d. Setting point changes,
 - e. Understanding part load performances
 - f. Utilizing in-built equipment capabilities in terms of load dispatch especially for UPS, Chillier etc.
 - g. Maintaining power factor
 - 4) Implement Best Practices :

FOR HVAC:

- a. Use climate control algorithms
- b. Implement Chillier load dispatch strategies
- c. Re-commission BMS if required
- d. Minimize building envelope heat gain wherever possible (walls/ insulation/ leakage/ glazing)
- e. Get back to basics and fundamentals & Follow systems approach

FOR LIGHTING:

- i. Energy Efficient Lamps (LED)
- ii. Appropriate input voltage for lighting circuits
- iii. Occupancy Sensors
- iv. Utilize natural lighting
- v. Use of cool lights