Session5

Class1 on Energy Audit

Performing a field survey on energy audit involves assessing the energy consumption patterns, identifying energy-saving opportunities, and evaluating the overall energy efficiency of the organization. Here's an outline for conducting a field survey on energy audit:

Objective: Define the objective of the field survey, which could be to evaluate the organization's energy consumption, identify areas of energy waste, and recommend energy-saving measures.

Energy Consumption Analysis:

a. Utility Bills and Data: Review the organization's utility bills and energy consumption data for the past year or a representative period. Assess the energy consumption trends and patterns, including peak demand, load profiles, and seasonal variations.

b. Energy Monitoring Systems: Evaluate the availability and effectiveness of energy monitoring systems, such as smart meters or sub-metering devices. Verify if these systems provide real-time data on energy consumption at various levels, such as building, department, or equipment.

Energy Efficiency Assessment:

a. Building Envelope: Evaluate the condition of the building envelope, including walls, roof, windows, and doors. Assess if there are any air leaks, insulation deficiencies, or thermal bridging that contribute to energy loss.

b. HVAC Systems: Assess the efficiency of heating, ventilation, and air conditioning (HVAC) systems. Verify if these systems are properly sized, regularly maintained, and equipped with energy-efficient components, such as programmable thermostats or variable speed drives.

c. Lighting Systems: Evaluate the lighting systems in use, including the type of lamps, fixtures, and controls. Assess if there are opportunities to switch to energy-efficient lighting technologies, such as LED bulbs or occupancy sensors.

d. Equipment and Appliances: Assess the energy efficiency of equipment and appliances used in the organization, such as refrigerators, computers, printers, and machinery. Identify energy-saving opportunities, such as replacing outdated equipment or implementing power management settings.

Energy Waste Identification:

a. Energy Losses: Identify areas of energy waste, such as air leaks, inefficient equipment operation, or excessive lighting levels. Conduct thermal imaging or energy audits of critical areas to detect hidden energy losses.

b. Behavioral Practices: Assess the energy consumption behavior of employees and management. Identify any practices that contribute to energy waste, such as leaving lights on in unoccupied areas or operating equipment during non-productive periods.

Renewable Energy Potential:

a. On-site Generation: Assess the feasibility of on-site renewable energy generation, such as solar panels or wind turbines. Evaluate the available space, solar/wind resource potential, and economic viability of such systems.

b. Energy Storage: Evaluate the potential for energy storage solutions, such as batteries or thermal storage, to optimize energy usage and reduce peak demand.

Energy-Saving Recommendations:

a. Energy Conservation Measures: Provide recommendations for energy-saving measures based on the findings of the survey. Prioritize recommendations based on their potential energy savings, cost-effectiveness, and payback periods.

b. Energy Management Systems: Evaluate the potential benefits of implementing energy management systems or software tools to monitor and optimize energy consumption.

Report and Recommendations: Document the findings of the field survey, including energy consumption analysis, identified energy-saving opportunities, and recommended actions. Provide an estimate of potential energy savings and associated costs for implementing the recommended measures. Prepare a comprehensive report to share with relevant stakeholders and management.

Note: Ensure the field survey is performed by qualified personnel with expertise in energy audit and efficiency. Follow all applicable safety protocols, regulations, and guidelines during the survey. Consult local energy efficiency standards and organization-specific procedures for guidance on energy audit practices and requirements.