



Electrical Engineering

Electrical Energy Saving in Industrial & Commercial Utilities

Course Introduction

Energy management

The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. Energy management requires a careful balancing between efforts to use energy efficiently and meet quality of life requirements, while insuring that primary mission requirements are met. Effective energy management strives to avoid conflicts between the two, while achieving substantial energy reductions and cost savings.

To establish a successful energy program, the energy manager must have a good understanding of both the technical and managerial aspects of energy management. Energy Audit is the key to a systematic approach for decision-making in the area of energy management. In general, Energy Audit is the translation of conservation ideas into realities, by lending technically feasible solutions with economic and other organizational considerations within a specified time frame. The primary objective of Energy Audit is to determine ways to reduce energy consumption per unit of product output or to lower operating costs.

Consider electric energy as a product: It is generated, transmitted, distributed, and sold to customers. The end user converts the electric energy into other forms such as mechanical, thermal, and light energy. The users of electric energy expect a reasonable degree of reliability and quality of service. The quality of service depends on two major effects that result from the interactions among a particular load, other electrical loads, and the supplying system. First, the effect of a certain electric load or cluster of loads on the environment, i.e. on other electrical devices or equipment; Second, the effect the environment has on the performance and life span of the equipment.

Target Audience

- Design Engineer
- Electrical Controls Engineer
- Electrical Design Engineer
- Electrical Engineer

Learning Objectives

- Understanding energy management and energy saving opportunities in details.
- Understanding types and methodologies of energy audits and identification of energy saving opportunities.
- Analysis of practical energy audit studies and analysis of ways of taking decisions and methods implementing energy saving measures in integrated buildings.
- Study of economic and financial factor related to energy management and auditing of projects and programs.
- Understanding power quality problems and related standards.
- Detailed analysis of various power quality disturbances, causes, methods of identification & mentoring, mitigation technologies and equipment.
- Practical and simulation studies of various power quality problems as affected by both system equipment and topology.
- Understanding of renewable power resources and technologies as tools for enhancing of energy use and power quality.

Course Outline

- DAY 01

Module (01) Energy Saving Management and Audit

- 1.1 Definition and Objectives of Energy management
- 1.2 Benefits Of Energy Conservation
- 1.3 Energy Management: A Systems Approach
- 1.4 Energy Audit – Types and Methodologies
- 1.5 Identification of Energy Conservation Opportunities
- 1.6 Technical and Economic feasibility
- 1.7 Classification of Energy Conservation Measures
- 1.8 Energy Audit Reporting Format

• **Day 02**

1.9 Understanding of Energy Costs

- 1.10 Benchmarking and Energy Performance
- 1.11 Plant Energy Performance
- 1.12 Fuel and Energy Substitution
- 1.13 Energy Auditing Equipment

• **Day 03**

Module (02) Economic and Financial Evaluation of Energy Efficiency

- 2.1 Introduction to Energy Efficiency
- 2.2 Energy Services Company Model
- 2.3 Performance Contracting
- 2.4 Energy Efficiency Project Development Process
- 2.5 Financial Analysis
- 2.6 Risk in Energy Efficiency Projects
- 2.7 Finance & Contract Arrangements
- 2.8 Creating an ESA
- 2.9 International Monitoring & Verification Standards

• **Day 04**

Module (03) Integrated Building Energy Use and Energy Reduction

- 3.1 Site and Massing Considerations
- 3.2 Interior Layout/Spatial Design
- 3.3 Building Envelope
- 3.4 Day-lighting/Sun Control
- 3.5 Light Pollution
- 3.6 High Performance Lighting
- 3.7 Electrical Systems and Equipment
- 3.8 Energy Sources
- 3.9 Mechanical Systems
- 3.10 Energy Load Management

• **Day 05**

Module (04) Power Quality and Energy System

- 4.1 What is Power Quality (PQ)?
- 4.2 Power Quality Standards
- 4.3 Susceptibility Criteria
- 4.4 The electrical environment and causes of PQ Disturbances
- 4.5 Classification of Power Quality Disturbances
- 4.6 Monitoring Equipment and Techniques
- 4.7 Voltage Sags on Utility and Industrial System
- 4.8 Harmonics, Non-integer Harmonics and Resonance

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
June 16, 2025	June 20, 2025	5 days	5950.00 \$	switzerland - Geneva
July 14, 2025	July 18, 2025	5 days	4250.00 \$	UAE - Abu Dhabi

FROM	TO	DURATION	FEEs	LOCATION
Dec. 22, 2025	Dec. 26, 2025	5 days	4250.00 \$	UAE - Abu Dhabi