

Course No. 1571

Energy Performance Indicators & Monitoring Training Course

ENERGY MANAGEMENT & SUSTAINABILITY
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Energy Performance Indicators & Monitoring Training Course provides an advanced and practical framework for developing, implementing, and managing energy performance measurement and monitoring systems across industrial, commercial, utility, and public-sector environments. The course focuses on transforming energy consumption data into meaningful management information through appropriate performance indicators, reliable energy baselines, trend analysis, variance analysis, benchmarking, and continuous performance monitoring.

Energy performance indicators are essential tools for understanding how efficiently energy is being used and whether improvement objectives are being achieved. However, effective indicators require more than simply measuring consumption. They must be properly defined, linked to relevant operational drivers, supported by reliable data, and interpreted within the appropriate production, weather, occupancy, process, and operating context. The course provides a structured approach to developing meaningful indicators that reflect actual energy performance.

The program covers energy baseline development, significant energy use identification, electricity and fuel consumption analysis, steam and thermal energy monitoring, energy intensity measures, operational performance indicators, data validation, measurement systems, and performance comparisons. Participants will learn how to establish appropriate measurement boundaries, identify energy drivers, normalize data where necessary, detect abnormal consumption, and evaluate actual performance against defined baselines and targets.

A strong emphasis is placed on continuous monitoring and management reporting. Participants will examine methods for detecting performance deterioration, analyzing deviations, identifying root causes, and developing dashboards and reports for operational and executive decision making. The course also covers benchmarking and the measurement and verification of energy savings, helping organizations determine whether energy improvement initiatives are producing sustainable and measurable results.

Through practical energy data analysis, baseline development, indicator design, monitoring exercises, benchmarking activities, dashboard development, and performance improvement workshops, the Energy Performance Indicators & Monitoring Training Course develops capabilities that can be applied across government entities, ministries, oil and gas organizations, utilities, manufacturing facilities, commercial buildings, and large corporations. The program is suitable for

energy managers, engineers, operations professionals, maintenance specialists, sustainability teams, performance analysts, and senior decision makers.

Objectives

- Analyze the principles of energy performance indicators and their role in measuring and improving energy efficiency during the course.
- Develop reliable energy baselines using appropriate historical data, measurement boundaries, and operational variables.
- Evaluate energy data quality and establish practical requirements for measurement, validation, and data collection.
- Design relevant energy performance indicators for processes, equipment, facilities, and organizational functions.
- Apply structured methods for analyzing electricity, fuel, steam, thermal energy, and other energy consumption data.
- Evaluate actual performance against baselines, targets, benchmarks, and defined energy objectives.
- Analyze energy performance deviations and determine the technical, operational, environmental, and behavioral causes.
- Develop continuous monitoring methods for identifying efficiency deterioration and abnormal energy performance.
- Design energy dashboards and management reports linking energy consumption with production, cost, and operational performance.
- Apply benchmarking and energy normalization techniques to improve performance comparisons.
- Develop measurement and verification approaches for assessing the results of energy efficiency initiatives.
- Align energy performance monitoring with sustainability, cost management, operational excellence, and continuous improvement objectives.

Who Should Attend

This course is designed for professionals working in energy management, energy efficiency, engineering, operations, maintenance, facilities, industrial performance, sustainability, and energy data analysis. It is particularly relevant to Energy Managers, Energy Engineers, Electrical Engineers, Mechanical Engineers, Process Engineers, Facilities Managers, Operations Managers,

Maintenance Managers, Energy Analysts, Performance Specialists, and professionals responsible for measuring and monitoring energy performance.

The program is also suitable for Engineering Directors, Operations Directors, Plant Managers, Sustainability Managers, Asset Managers, Energy Performance Leaders, and senior decision makers responsible for energy costs, efficiency improvement, performance management, and operational optimization. Professionals working in government entities, ministries, oil and gas companies, power and utilities organizations, manufacturing facilities, petrochemical plants, commercial buildings, infrastructure organizations, and large corporations can benefit from the methodologies covered in the course.

The course is particularly valuable for professionals involved in energy audits, measurement and verification, energy data management, benchmarking, performance reporting, operational optimization, and energy efficiency programs. It also provides useful knowledge for finance, procurement, project management, and sustainability professionals who need to understand how energy performance indicators connect technical performance with financial and organizational outcomes.

Learning Outcomes

- Explain the principles and practical applications of energy performance indicators within energy management systems.
- Identify significant energy uses and the operational factors that influence energy performance.
- Develop appropriate energy baselines using reliable historical and operational data.
- Evaluate energy data quality, measurement requirements, and validation processes.
- Design energy performance indicators linked to energy consumption, production, operations, and cost.
- Analyze electricity, fuel, steam, thermal energy, and other consumption patterns to identify abnormal trends.
- Compare actual energy performance with baselines, targets, benchmarks, and expected operating conditions.
- Conduct structured variance analysis and identify root causes of significant energy performance changes.
- Develop energy monitoring dashboards and management reports for operational and executive

use.

- Apply normalized performance indicators that account for production levels, weather, occupancy, operating conditions, or other relevant variables.
- Measure and verify the results of energy efficiency projects using appropriate performance evidence.
- Develop an integrated energy performance monitoring framework that supports continuous improvement and management decision making.

Course Outline

DAY 01

Energy Performance Measurement and Energy Baselines

- Principles of energy performance measurement and monitoring
- Role of energy performance indicators in energy management
- Relationship between energy consumption, production, operating conditions, and performance
- Identification of significant energy uses
- Measurement boundaries and levels of analysis
- Energy baselines and baseline development principles
- Historical data, energy trends, and reference consumption
- Energy performance drivers and influencing variables

PRACTICAL APPLICATION

Develop an energy baseline for a representative facility and identify the major variables influencing its energy consumption

DAY 02

Energy Performance Indicators, Data Collection and Validation

- Principles for selecting appropriate energy performance indicators
- Absolute energy indicators and production-based indicators
- Energy intensity and normalized performance indicators

DAY 02 — CONTINUED

- Electricity, fuel, steam, thermal energy, and utility indicators
- Energy metering systems and measurement technologies
- Data collection, aggregation, and reporting structures
- Data validation, accuracy, completeness, and consistency
- Detecting abnormal and unreliable energy data
- Linking energy data with production and operational information

PRACTICAL APPLICATION

Design an integrated set of energy performance indicators and connect each indicator to data sources and validation requirements

DAY 03

Monitoring, Trend Analysis and Energy Performance Variance

- Continuous monitoring of energy performance
- Trend analysis and time-based consumption patterns
- Comparison of actual performance with energy baselines
- Energy performance variance analysis
- Root-cause analysis of significant deviations
- Detecting gradual deterioration in energy efficiency
- Impact of production levels, load, weather, and operating conditions
- Early warning indicators for abnormal energy performance
- Monitoring performance by site, process, equipment, and organizational unit

PRACTICAL APPLICATION

Analyze a real-world energy dataset, identify significant deviations and deterioration trends, and develop corrective recommendations

DAY 04

Benchmarking, Energy Dashboards and Savings Verification

- Principles of energy performance benchmarking
- Internal and external energy benchmarking
- Comparing facilities, processes, units, and equipment
- Normalized energy performance analysis
- Development of energy performance dashboards
- Daily, weekly, monthly, and executive energy reporting
- Linking energy performance with energy cost, productivity, and operational results
- Measurement and verification of energy savings
- Evaluating the impact of energy efficiency initiatives

PRACTICAL APPLICATION

Develop an integrated energy performance dashboard and prepare an executive report highlighting trends, deviations, savings, and priority actions

DAY 05

Energy Performance Management, Governance and Continuous Improvement

- Developing an integrated energy performance monitoring framework
- Establishing energy targets and performance thresholds
- Governance of energy data, indicators, and measurement processes
- Review and maintenance of energy baselines and performance indicators
- Identifying improvement opportunities from monitoring results
- Measuring and verifying energy efficiency improvements
- Linking energy performance indicators with cost management and sustainability
- Using energy data to support operational and investment decisions
- Building a measurement-driven culture of energy performance improvement

DAY 05 — CONTINUED

FINAL WORKSHOP

Develop and present an integrated Energy Performance Indicators & Monitoring framework covering baselines, data quality, indicators, monitoring, variance analysis, benchmarking, dashboards, savings verification, governance, reporting, and continuous improvement

Register or Request More Information

Course page: <https://quest-training.com/courses/energy-performance-indicators-monitoring-training-course>

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