

Metallurgy for Industries

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A Monthly News Letter

March, 2015

Volume 27

Energy Audit

A tool for energy management

Energy Audit is the key to a systematic approach for decision-making in the area of energy management. It attempts to balance the total energy inputs with its use, and serves to identify all the energy streams in a facility. It quantifies energy usage according to its discrete functions.

Industrial energy audit is an effective tool in defining and pursuing comprehensive energy management programme.

As per the Energy Conservation Act, 2001, Energy Audit is defined as "the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption".

In commercial and industrial real estate, an energy audit is the first step in identifying opportunities to reduce energy expense and carbon footprints.

The objective of Energy Management is to achieve and maintain optimum energy procurement and utilization, throughout the organization and:

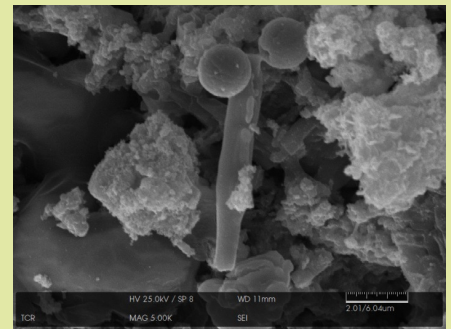
- To minimize energy costs / waste without affecting production & quality
- To minimize environmental effects.

Need for energy audit

In any industry, the three top operating expenses are often found to be energy (both electrical and thermal), labour and materials. If one were to relate to the manageability of the cost or potential cost savings in each of the above components, energy would invariably emerge as a top ranker, and thus energy management function constitutes a strategic area for cost reduction. Energy Audit will help to understand more about the ways energy and fuel are used in any industry, and help in identifying the areas where waste can occur and where scope for improvement exists.

The Energy Audit would give a positive orientation to the energy

Microstructure of the Month

**Magnification:** 5000X**MOC:** Carbon steel**Component:** Pipe spool

Observation: The photograph shows shape and morphology, suggesting sulphur reducing bacterial (SRB) attack on carbon steel.

Useful hints:

Presence of bacteria like activity and its consequence on corrosion of material was confirmed through SEM analysis along with other testing like EDS/Water analysis. SEM was found very useful to confirm the diagnosis.

cost reduction, preventive maintenance and quality control program which is vital for production and utility activities.

Such an audit program will help to keep focus on variations which occur in the energy costs, availability and reliability of energy supply, decide on appropriate energy mix, identify energy conservation technologies, retrofit for energy conservation equipment etc. 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. Energy Audit provides a “bench-mark” (Reference point) for managing energy in the organization and also provides the basis for planning a more effective use of energy throughout the organization.

Energy Audit: Types and Methodology

The term energy audit is commonly used to describe a broad spectrum of energy studies which can be bifurcated into principally three types as under

Preliminary Energy Audit

To establish energy consumption, Estimation of scope for energy saving, Prioritization of area for energy improvement, Identify immediate energy saving potential, Setting up of base line reference and identification of area for detailed study.

Targeted Energy Audit:

Based on Preliminary Audit targeted Audit will be for detailed analysis to achieve targeted energy efficiency. Detailed Energy Audit – A comprehensive Audit:

It is a detailed study of energy consumption, analysis of energy consumption, recommendations for reduction of energy consumption with cost benefit calculations and project implementation recommendations. The Audit also will include monitoring the implementation of the recommendation and achievement of final energy reduction.

Benefits of Energy Audit:

The energy audit will provide following key benefits.

- Energy Audit will lead to improved Energy Efficiency and reduced Energy Bills.
- Reduced Energy Bill will improve competitiveness.
- Energy Efficiency for increased productivity.
- Better work practices for Energy Efficiency & improved quality product.
- Increased Profits.
- Image Building through Energy Efficient Company in the Market/Society
- Motivation to the employees for environment protection
- Compliance of mandatory requirements for submission of Energy Audit report to statutory authority

Impact of energy saving:

- 1 Kwh saved at consumer end will save generation of 2 Kwh units.
- Aid in global environmental issues
- Reduction of acid rain
- Contribution towards ozone layer depletion
- Contribution towards global warming & climate change
- Loss of Biodiversity

- Green House Effect- CO₂, Carbon sequestration, Methane, Nox, CFCs, SF₆
- Dwindling fresh water supply

TCR can provide energy auditing services through experienced team of BEE certified energy auditors. Our energy auditing team is dedicated to the work for result orientated service for the industries.

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