1. Introduction

The Energy Management Section (EMS) of ERDA was established in the year 1995 with the objective of providing energy conservation services to the Nation. The energy audit studies undertaken by the EMS have covered Industries, Power Generation Utilities (GENCOs), Power Distribution Utilities (DISCOMs), Commercial Complexes, Hospitals, Dairies, Municipal Corporations, etc. EMS has carried out more than 250 energy audits until now and the benefits realized by our esteemed clients by implementing our recommendations are quite handsome. Over the years, EMS has specialized in energy conservation related to conventional fuels such as coal, oil & gas. These conventional fuels are limited and will be exhausted shortly and thus the need arises to reduce their consumption by efficient utilization. The supply and demand gap of electric power is increasing every year and is expected to increase even further due to the huge cost required in setting up of Thermal Power Stations as well as the associated environmental pollution.

Energy conservation is an optimal operational practice, which improves the efficiency of the equipment associated with both supply side and demand side i.e. at the user end. Since the industries account for a greater share of power consumption, energy conservation programs will benefit them by reducing their Specific Power Consumption and making them more competitive in the market. ‘Negawatt’ (a negative ‘Megawatt’), a term coined by the renowned energy analyst Amory Lovins, highlights the fact that a Negawatt produced by reducing energy need saves more than a Megawatt generated. Energy audits lead to the generation of “NEGAWATTS” and thus result in virtual augmentations to the installed power generation capacity of the Nation!

2. Energy Audit Study

Energy Audit is the basic tool of energy conservation and is defined as a systematic exercise to identify the end-uses that consume significant amount of energy, estimate the efficiency in each of these end uses and devise methods for improving efficiency and thus curbing losses and wasting energy.

A walk-through audit at the client’s place is undertaken to study the manufacturing process, the type of equipment available, their operating strategy and potential areas of energy conservation. The detailed list of equipment is collected along with the electricity bill for the two previous months for working out a detailed quotation for the energy audit to be conducted at the client’s premises.

EMS is having all sophisticated portable non-invasive instruments and highly skilled & experienced staff for conducting measurements at site. The energy audit report is prepared on the basis of these measurements and includes the saving potential, investment required and the payback period for investments made. Due emphasis is also given to “No Cost” measures that include good housekeeping practices, minor changes in the operation practices, etc. No cost saving potential of 11% to 100% was realized during the course of energy audit programs in addition to other energy conservation measures with payback period ranging from few days to 2 years.

3. Core Areas of Activity

- Energy audit study
- Energy conservation measures
- Seminars, workshops and in-house training programs on energy audit
- Certification of energy efficient equipment
- Research and development in the area of renewable energy
4. **Summary of Major Achievements in a Nutshell**

- More than **250 comprehensive energy audits** have been successfully completed.
- The list of auditees includes Navaratna companies such as ONGC, GAIL, NTPC, etc.
- Other prestigious clients include IPCL, ESSAR Steel, General Motors, KRIBHCO, Heavy Water Plants of DAE, GNFC, GSFC, etc.
- Successfully completed the energy audit for both process and equipment at **Tata Steel, Jamshedpur, and Jindal Steel & Power, Raigard**.
- Power Generating Units of utilities such as National Thermal Power Corporation (NTPC), Nuclear Power Corporation of India Ltd., (NPCIL), Gujarat State Electricity Corporation Ltd., (GSECL) Maharashtra State Power Generation Co. Ltd., M.P. Power Generating Co. Ltd., Torrent Power etc.
- Unique distinction of having completed energy audit of 129 Generating Units of 59 Power Plants including 77 Coal based Thermal Units, 3 Lignite based Units, 13 Gas based Units, 27 Hydro Units, & 9 Nuclear Generating Stations. Saving potential of up to **64% and 43%** were identified for electrical and thermal energy, respectively.
- Annual recurring savings to the tune of **Rs. 163 crores** have been reported as achieved by the audited industries and utilities.
- The identified saving potential is equivalent to **49 MW per year**

5. **Major Recognitions**

EMS, ERDA is recognized as authorized energy auditor by Bureau of Energy Efficiency (BEE), New Delhi (under Energy Conservation Act-2001), Petroleum Conservation Research Association (PCRA), Gujarat Energy Development Agency (GEDA), Maharashtra Energy Development Agency (MEDA), Energy Management Centre (EMC)-Kerala, Chhattisgarh State Renewable Energy Development Agency (CREDA), Commissioner of Electricity, Gujarat for Statutory Energy Audits in Gujarat State.

6. **Honors & Awards received by Energy Audit Group**

- Best Improvement in Performance Award from PCRA consecutively for 3 years.
- Best Energy Auditor Award from PCRA consecutively for 2 years.
- MEDA Award for the years 2004 & 2005