



POWER (A) DEPARTMENT

**G.O. (Ms.) No. 12/92/PD, dated, Thiruvananthapuram,,
30th May 1992**

Abstract- Power Department-Conservation of Electrical Energy-Energy Audit Implementation orders issued.
Read.- Letter dated 14th January 1992 from the Chief Electrical,, Inspector (Statutes), Thiruvananthapuram

ORDER

The Government has been giving very high priority to Power Sector. Government is making every effort to setup new project as expeditiously as possible to augment power generation in the State steps have also been taken to attract private participation in generation of electricity. Government are of the view that in addition to the above long term measures, measures such as conservation of energy should also be introduced in order to reduce the wasteful use of power in all sectors. There is no mechanism at present in the State to the Major Power Consuming Sector and to get corrective measures implemented wherever they are needed. Government would emphasize the pivotal role to be played by energy audits in bringing about energy conservation.

2. Energy audit in industrial sector aims at reducing specific energy consumption i.e. energy per unit output in processes and tasks and is regarded as a key to a scientific approach of indicate the actual status of industrial facilities and systems with regard to energy utilizations, efficiencies of different activities, equipments and processes and to suggest remedial measures to reduce wasteful use of energy in specified areas with well defined economic implications. The same is equally applicable to commercial establishments.

3. In view of the necessity of conducting energy audits in the State, especially in the industrial sector and commercial establishments, Government in pursuance of section 22 (B) of the Indian Electricity Act 1910 hereby order that energy audits will be made mandatory in order to regulate the consumption and use of electric energy. Government also order that all consumers of High tension and extra High Tension installations as well as high rise buildings/apartments will conduct energy audit and forward audit report along with a report in the manner on implementation prescribed in the annexure to this order to the Government or to any other body notified by Government or to any other body notified by Government for the purpose.

4. This order will come in to effect immediately.

(By order of the Governor)
BABU JACOB
Secretary to Government.

Annexure
Guidelines for energy audit

1. *Types-* Energy audits mean different things in different things in different contexts. The type of energy audit to be performed depends on the functions and type of industry or establishment and the depth of final audit needed. They can however be broadly divided into two categories.

- (i) Preliminary
- (ii) Detailed audit

1.1. *Preliminary energy audit-* This is conducted by collecting relevant information from available data/records, visual and other information. This gives preliminary idea of plant energy situations and forms the basis for detailed energy audit.

1.2 *Detailed energy audit-* This covers estimation of energy input for different processes , losses, collection of past data on production levels and specific energy consumption in the subject unit as well as inn other systems.

2. *Methodology-* This mainly depends on the type of plant, size and process.

2.1. *Pre-requisite-*The first step before starting an energy management programme; is to select the auditor to whom the responsibilities of energy accounting, auditing and analysis is entrusted. The auditor should be directly answerable to the Chief Executives of the organisation and should get full support form other executives such as those controlling production, maintenance, finance utilities etc.

2.1.1. *Qualification of energy auditors-* A person who conducts industrial or commercial electrical energy audit shall.

- (1) be a licensed professional or a chartered electrical engine
- (2) have an engineering degree from a College or University with a minimum of 5 years of subsequent experience in one or more of the following:

(i) for commercial energy auditing experience in air conditioning plant and illumination engineering

(ii) have an engineering degree form a College or University with a minimum 5 year's of subsequent experience in one or more of the following:

2.2 *Date Collection-*Utmost care should be taken to collect data accurately. The relevant data to be collected are:

- 5. review records of maintenance engineer
- 6. instrumentation and equipments installed
- 7. capacities and efficiency of all equipments
- 8. prescribed operating parameters of equipments
- 9. present operating parameters
- 10. Overloading details
- 11. steps involved in the production process.

2.3 *Data Analysis*-The data collected under 2.2 are analysed to identify

- (I) Energy wastage that can be prevented by maintenance or operational actions against
 - (i) equipment running when not needed
 - (ii) equipment rated much higher than what is needed
 - (iii) overloading
 - (iv) substandard switch gears and wiring
 - (v) mechanical defects in the driven equipments.
- (2) Possibility of waste heat recovery to generate steam and additional electric power using steam and turbines, such as in co-generation.
- (3) Possibility of eliminating or modifying production process to reduce energy usage.
- (4) Justification for replace equipments with energy saving equipment.
- (5) Modernising the plant to save energy.

2.4 *Energy Conservation Scheme*- Based on the data analysis, energy conservation measures should be selected. The following procedures may be adopted:

- (1) Calculate energy saving for each equipment in each feeder.
- (2) Calculate total cost of energy conservation measures and annual savings.
- (3) Evaluate pay back period, return on investment etc.
- (4) Assign priorities based on (3) above.
- (5) Select measures for implementation.
- (6) Implement approved energy conservation projects.

2.5 *Continuing efforts*- The results achieved after implementation should be monitored on a continuous basis so as to ensure that the measures taken do deliver the desired results.

3. *Submission of Report.*

3.1 The electrical energy audit should be completed by 31st day of December every year and report thereon submitted with proper certification of the auditor on or before 31st March of the succeeding year.

3.2 Government or Authority nominated by Government for the purpose will analyse the audit reports and furnish comments thereon to the Chief Executive of the establishment within 3 months from the date of receipt of the audit report.

3.3 Notwithstanding the Government nominee's comments on the audit report, the establishment shall commence implementation of the energy conservation measures outlined in the auditor's report and follow up action thereon, within 6 months from the date of audit report.

4. Authority to whom report is to be submitted.

5. Chief Electrical Inspector to Government is nominated for the purpose of implementing energy conservation measures in the State.

6. Chief Electrical Inspector shall submit to the Government an annual consolidated statement on the energy conservation measures implemented in the state during the financial year.