

Improving Industrial Efficiency by Energy Audit

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ABSTRACT

First of all we have find out more energy consumption area just like a pump, light and water, etc. In Some analysts we use the average cost of electricity for calculating energy savings with the help of instruments. Instrument measures the actual running condition of pumps and lumens, primarily based on lighting, pumping, cooling and water observation was adopted to investigate. During energy audit process we have collects some important data's, with the help of energy audit process. We reduces the losses in (water, lighting, pumping system performance etc.) and increases the overall efficiency of the plant by reducing these losses. A frequent criticism of energy audits is that they overestimate the savings potential available to the customer. This paper addresses several problem areas which can result in over-optimistic savings projections, and suggests ways to prevent mistakes. Performing an energy and demand balance is the initial step a careful energy analyst should take when starting to evaluate the energy use at a facility. These balances allow one to determine what the largest energy users are in a facility, to find out whether all energy uses have been identified, and to check savings calculations by determining whether more savings have been identified than are actually achievable.

Key words:-energy, audit, lighting pumping, energy saving, reduces losses etc.

INTRODUCTION

The main focus of an energy audit for the industrial is to find out energy savings opportunities that would reduce their early operating costs Savings such as energy cost and power factor incentives may be identified during the audit process. Critics of energy audit recommendations often say that auditors overestimate the savings potential available to the customer. This possibility of overestimation concerns utilities who do not want to pay incentives for demand-side management programs if the facilities will not realize the expected results in energy or demand savings. Overestimates also make clients unhappy when their energy bills do not decrease as much as promised. The problem multiplies when

a shared savings program is undertaken by the facility and an Energy Service Company. One of these approaches is to collect data on the energy using equipment in an industrial or manufacturing facility and then to perform both an energy and a demand balance to help insure that we have reasonable estimates of energy uses - and therefore, energy savings - of this equipment. In addition, we have developed few methods and approaches to deal with these potential problems, and we have found a few ways to initiate our energy audit analyses that lead us to improved results

IMPORTANCE OF AUDIT

Auditing is the analysis of the financial accounts/records, by a qualified accountant, and procedures of a firm or organization. This is essential in order to gain a fair perspective on the company's financial statements. With auditing, potential investors and creditors can look at the financial statements to decide whether to invest in a business or not. Auditing is important as it also protects the public from scams and corrupt business procedures. In terms of auditing on water treatment plant lalpur, Water utilities are intensive energy users and continually seek ways to improve their productivity through the effective and judicious use of energy.

• It can reduce energy costs:-

Reducing the energy expenses can help the water utilities to redirect the resulting savings to improve the facility for municipal water utilities especially; the energy cost reduction can help achieve a lower water tariff, increased service connections, and additional operational funds for expansion or improvement of service. It can help the utility to improve the quality of its product. example, improving pump performance in a water utility can ensure the right volume and pressure of water that needs to be supplied. It can lead to corollary benefits such as reduced maintenance costs and improved worker safety. It can also help in reducing pollution. Municipal water utilities in

India spend more than 60 percent of their budgets on energy used for water pumping. The CII (Confederation of Indian Industry) estimates that the typical Indian municipal water utility has the potential to improve water pumping system efficiency.

SAFETY

We also conduct Health Assessment and Safety Audits of existing plants to minimize the incidences of accidents. We continuously strive to improve our safety practices and we dedicate significant time and effort to ensure that we provide a safe work environment for our employoes.

Method description

Detailed energy auditing is carried out in three phases: Phase I, II and III.

Phase I - Pre Audit Phase

Phase II - Audit Phase

Phase III - Post Audit Phase

Industry-to-industry, the methodology of Energy audits needs to be flexible. Following steps are adopted methodology for detailed energy audit(figure no.1)

Step 1 : In this step study of process and energy uses are taken from employees, this understanding helps in planning the resources available and time required for conducting energy audit.

Step 2 : In this step importance of energy uses are discussed with the section officers so that awareness could be build this will also help in future cooperation. (Kick off meeting)

Step 3 : In this step collect the plant data and electric bill find out the more energy uses of area, which are using and work properly for different process and collect name plate review and some data use with the help of measurement device.

Step 4 : In this step measurement are taken with the help of portable instrument such as lux meter, techo meter, power analyzer etc. The energy is mainly being use in pumping and other process for purification of water. This data is compare with operating design data and baseline energy use is determined.

Step 5 : In this step calculation of all performance data (standard parameters) involve in the process is prepared and present performance data is compared with baseline data (design). Based on technology availability and compression, recommendations are proposed to save /conserve energy. These recommendations are as investment grade (payback period). Reduction in energy consumption will take place after implement of recommendations.

Step 6 : In this step flow up the methodology & technical advice on the plant than rapid will be concur best result.

FEATURES OF THE WALK-THROUGH AND DETAILED PROCESS AUDIT

Reatire	Walk-thought audit	Detailed Energy audit	Comments
Purpose	Awake for audit process	Save energy	Best result perform
Conduct kick-off meeting	May be done	must	
Collect plant data	Salient features	Detailed observations is required	Design summary, drawings, utility bills, plant flow and performance information.
Explain electric bill and schedules	May be review	must	Explain the importance of demand and energy and how changes are made.
Conduct field investigation	No	Highly essential	Limited investigation for walk-through audit; comprehensive investigation for detailed process audit.
Create equipment inventory and distribution of demand, energy	No	Desirable	Desirable for walk-through audit but usually not performed. Detailed inventory prepared for processes.
Develop ECMs and implementation strategies	No	yes	Walk-through audit identifies some ECMs but detailed analysis is usually not performed. Detailed process audit develops ECMs and determines which ones will be implemented
Follow-up	No	yes	

Table 1.1- Represent walk-through and detailed process audit

Lighting: -

Most electric utilities have successful audit programs to assist customer in reducing energy for their lighting systems in industry facilities. The first major category we analyze is lighting because this is usually the category that we have the most confidence in for knowing the actual demand and hours of use

Pumping: -

This performed by some electric utilities is especially useful for water and waste-water facilities because pumps consume a significant percentage of electrical energy at the facilities.

Motors

Very few energy auditing organizations can afford the time and effort to make long-term measurements of the load factor on each motor in an industrial or manufacturing facility. Thus, estimating motor load factors becomes a critical part of the energy and demand balance, and also a critical part of the accuracy of the actual energy audit analysis. Motor name plate data shows the horsepower rating, the manufacturer, and sometimes the efficiency.

Water quality/audit:-

To be able to control the processes and to locate the points to improve, it is important to have a good knowledge about the quality of the water in different sections of the plant and in the distribution systems.

Outlines the drinking water quality standards considering, conductivity pH and turbidity

Property	Units		Threshold value
Turbidity	NTU	Water plant disinfected tap water	0.5(t) 1(h,t) 3(e,t)
Conductivity	ms/m	-----	<40
pH	-	Keep stable (recommended)	7.5<pH<9

Table;-threshold values for drinking water {(t) technical value ;(h) hygienic value ;(e) aesthetic value.}

PROBLEMS WITH ENERGY ANALYSIS CALCULATIONS

Over the course of performing 120 industrial energy audits, we have identified a number of problem areas. One lies with the method of calculating energy cost savings: whether to use the average cost of electricity or break the cost down into energy and demand cost components. Other problems include instances where the energy and demand savings associated with specific energy efficiency measures may not be fully realized or where more research should go into determining the actual savings potential.

CONCLUSION

Energy auditing is not an exact science, but a number of opportunities are available for improving the accuracy of the recommendations. Techniques which may be appropriate for small-scale energy audits can introduce significant errors into the analyses for large complex facilities. We began by discussing how to perform an energy and demand balance for a company. This balance is an important step in doing an energy use analysis because it provides a check on the accuracy of some of the assumptions necessary to calculate savings potential. We also addressed several problem areas which can result in over-optimistic savings projections, and suggested ways to prevent mistakes. Finally, several areas where additional research, analysis, and data collection are needed were identified. Once this additional information is obtained, we can all produce better and more accurate energy audit results.

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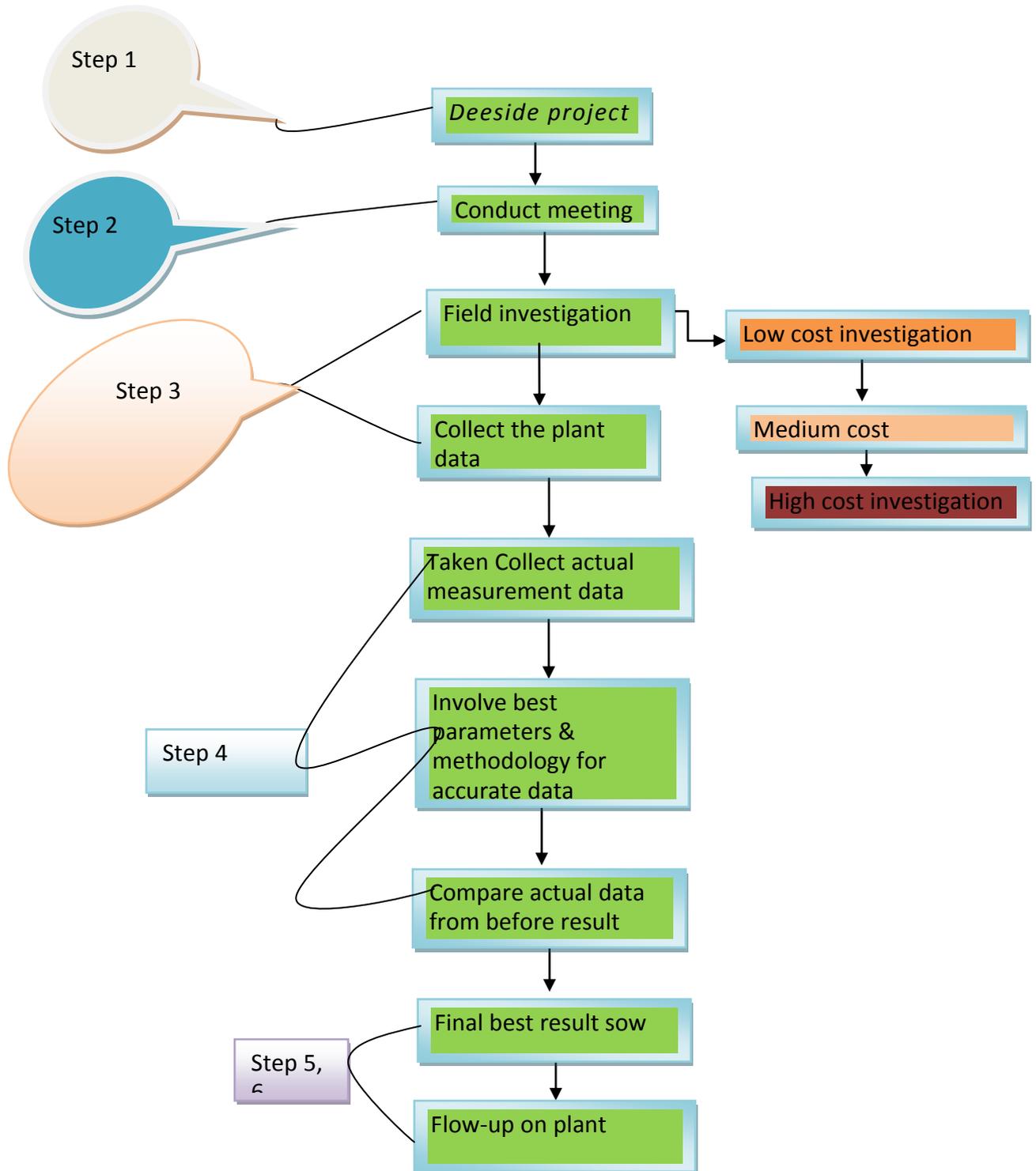


Fig 1-.Flow chart of methodology process