

Energy Management Practices

1. Pulp & Paper Sector

1.1 Energy / Environment / Quality policy

Most of the pulp and paper mills have the environmental and quality policies. These are also displayed prominently inside the plant as well as at plant gate for the general public.

1.2 Commitment for energy conservation

Energy Management is the critical focus of the top management. Top management of the company participates in planning and review of various energy management projects on a regular basis. The annual reports of the many companies mention the details of energy conservation activities and various achievements by the company regarding energy conservation projects.

1.3 Energy Management Cell, its organisation and role

Paper plants understand the importance of energy conservation and to perform this function, energy management cell (EMC) has been constituted. Almost all larger paper manufacturing plants have EMC. Some companies given additional responsibility of energy conservation other than to their primary jobs related to production. Few companies also have one or two members permanently placed in EMC as core members and other members are drawn from the other sections. The posting of EMC is on a rotation basis to increase the awareness and commitment of the plant personnel. The job of EMC is to generate the energy management plan, energy budget, etc for the company in a year advance, based on the last year's consumption.

1.4 Small group activities

The frequency of the meeting depends on the level of participation which varies from once in a week to quarterly. Few plants organise as and when it needed. This activity help in generation of ideas and thereby improving the plant performance by implementation of these. This platform is used for creating the awareness, discussing the ideas and reviewing the activity and achievements in the department.

1.5 Role of energy audit

In-house energy audits are more frequent and it is the regular activity in the plants. Frequency of the energy audit by external agency varies from once in a year to two years. There are also few paper plants that take up external study after a long gap or as and when need arises. Major recommendations evolving from the audits are implemented and outcome monitored by energy cell.

1.6 Energy conservation budget

Separate budget earmarked for the energy conservation / management activities in every financial year. But most of the paper mills, the decision of making on energy investment is centralised and it is decided at top management level. These decision are taken based on the techno-economic analysis and return on investment is an important criteria.

1.7 Targeting and energy budgeting

The target for energy conservation or the energy budget is normally planned for every year in advance in paper industry. Some units also plan for long-term. The long-term planning, generally, consists of either large investment or adopting renewable energy sources. These guidelines are framed at the year start and all departments try to achieve it.

1.8 Motivation

There are a number of schemes in paper mills to educate and motivate the plant personnel. All employees are encouraged to participate in such schemes. The most common schemes prevailing in paper plants, are slogans and suggestion schemes. In plant training is also imparted to the employees on the subjects related to energy conservation to improve their awareness on energy related issues. Outside faculty are also called for if needed for such programmes. Some of the mills also encourage its employees to publish energy management achievements in journals.

1.9 Barriers for energy conservation

The problem in adopting latest technology available readily in world market, is its larger size, which normally does not suit to smaller sized Indian plants. The suppliers have to fabricate lower size tailor made equipments according to Indian paper plant capacity which does not fit to their normal practices. As they have to manufacture special machinery, the cost of these equipments is unproportionately higher.

2. Proposed energy management policies in Pulp and paper industry

2.1 Top management commitment

It is very important for the shop floor worker to see the commitment of the top management towards energy conservation. Demonstration of the top management's participation and encouragement are hence very important to the shop floor worker and the CEO should make this visible to them. It sends the right message for the employees at the lower end. Top management's commitment could be in the form of company's energy policy, regular interaction with lower end people on the matters related to energy conservation etc.

2.2 EMC headed by a full time manager

To make EMC more effective, it would be very useful to appoint a full time manager who will concentrate only on every aspect of energy conservation.

2.3 Energy management information system (EMIS)

Reporting of energy consumption is a very important activity. It helps in understanding the consumption pattern over a longer period as well as with the variation in any point. It also helps in understanding the reasons such change in raw material mix or seasonal variation or break down etc. behind the change in consumption pattern. In order to ensure quick grasping of variation in every related data and it's speedy correction, instrumentation and control is an effective measure. An online computer controlled system could be of much use in this.

2.4 Monitoring

Poor quality of monitoring and record keeping as the key lacunae in energy management practices at the unit level. It is needed to keep the performance tracking of various energy consuming equipments.

2.5 Internal energy award system

Starting an internal award system would be a good motivating agent among the various departments in a paper mill. This should be yearly basis.

2.6 Target setting

It is important to set long-term goals and based on this, year wise targets may be framed. Every plant should create own target as it is unique and its technology, vintage, consumption patterns, location, products, etc are different as compared to others.

2.7 Energy Audit

Energy audit can further firm up the efforts of EMC regarding the energy conservation. It can be carried out internally and externally. Frequent energy audit will identify the grey areas and energy wastage can be thus identified and process optimised. To further consolidate plant's endeavour, external energy audit should be carried out regularly.

2.8 Capability enhancement / motivation

It is important that there should be regular augmentation in the capability of the persons engaged in energy conservation related activities and directly in production.

2.9 Energy efficient equipments

It is very common in India that while setting up a new plant, it is tried to keep capital cost as low as possible and, therefore, technology / equipments having low first costs (less efficient) are preferred. A low first cost technology may, finally result in to higher operating cost compared to the more efficient technology/equipment having the higher first and lower operating cost.

2.10 Need of the energy policy

The industry is doing energy conservation but it lacks commitment. The commitment may come in and be shown in the form of industry's energy policies. Like quality and environment policy displayed publicly, energy policy should also be framed and be displayed publicly. This will bring the commitment for energy saving.

2.11 Separate energy budget

In order to implement energy saving technologies, rational budgeting support is a must. This should be made possible under the guiding policies of the company on investment and should be evaluated thoroughly on its energy conservation and economic aspects. There should be the separate budget allocated for energy conservation every year which ensures smooth execution of such activities.

2.12 Small group activity

Energy management and conservation activities should be taken up at all levels starting from lowest as it can only be achieved by joint efforts of all plant personnel. Thus small group activities project team activities and technology development all form important parts of the energy saving promotion.

2.13 Information sharing and role of industry association

The case study can be shared with other plants of the sector or associations by getting it published. The plants should also share other information related to production and consumptions, etc with associations so that can maintain/publish the statistics about the sector. The association should also keep the track of international players and should have the information about their energy consumption, technologies, market conditions etc.

2.14 In-house Research & Development

In-house development of energy saving technology or adaptation of a technology to suit plant conditions is also important part of generating energy savings. In general paper mills spend very little amount in in-house R&D activities. Such activities need to be taken up at a larger scale.

Reference:

Energy Management Policy – Guidelines for Energy Intensive Industry in India, Chapter 7, pp 120-161 by Bureau of Energy Efficiency