

Energy Management Practices

1. Steel Sector

1.1 Energy / Environment / Quality policy

There was no energy management policy for any of the plants. However, some of the plants had the quality policy as well as the environment policy in place. The policies are publicly displayed indicating that there is a concern about these issues.

1.2 Energy Management Cell, its organisation and role

Energy management organisation had responsibilities both for energy generation (power plant) as well as monitoring etc. The functions were limited to monitoring and small projects while there are no such formal organisation and activities were implemented through a group of people drawn from different departments.

1.3 Small group activities

Small group activities were undertaken and were found to be successful. They usually involved the shop floor people and the junior management. Regarding reporting of EM data was done in all the plants but the frequency differed. There was a marked correlation between the success of plants on the EM front and the frequency of meetings as well as the formalised structure of the EM cell.

1.4 Role of energy audit

Though energy audits were carried out in plants; they were not very regular in those plants that did not have a good performance on the energy front or at least a decreasing trend in energy consumption per unit of output. The same trend was also evident vis-à-vis the regular training activities and the budget allocation for the same.

1.5 Energy conservation budget

A tendency to keep to the top management the decisions regarding the energy management activities was evident, however, this may also be related to the scale of production.

1.6 interaction with other industries and associations

The plants view interaction with the peer industry as a very important source of information and valued the information provided through the associations through seminars and other activities.

1.7 Barriers for energy conservation

The plants found the cost of technology, the cost of servicing the finances as well as the cost of expertise to be the major barriers that were preventing the promotion of energy management activities.

2. Proposed energy policies in Steel industry

2.1 Top management commitment

It is very important for the shop floor worker to see the commitment of the top management to EM. Demonstration of the top management's participation and encouragement are very important. The CEO should make this visible through the EM policy statement and regular review of energy conservation projects. This will ensure employee participation, which is probably the most important tool for energy management.

The commitment of the top management to EM can be in terms of a self set target which would spell the activities on the shop floor to achieve this target.

2.2 Reinforcement of organisation

In order to bring about energy savings it is extremely important that an EMC be created within the individual companies. Some Indian steel companies already have such a cell while many other have some other group carrying out similar activities. But the current inefficiencies in the industry indicate that there is lot of potential that is still not realised. Both these types of systems need to perform better so that further energy saving could be achieved, and in order to do so there is need for reinforcement of such a cell. This can be achieved by way of having a proper structure for the EMC and enhancing the effectiveness of its interaction with the manufacturing divisions of the company. The cell should be able to interact with manufacturing divisions and other divisions that can be the power & utilities or any other like the blast furnace or the steel melting shops.

2.3 Energy conservation policy

The company should enunciate a clear-cut policy that will be a guide to company personnel involved directly or indirectly in efforts to reduce energy consumption in the plant. Such a policy would have a long-term perspective with the activities for the medium term and short term being derived from it. Thus the Indian steel making companies should endeavour to have longer term campaigns with targets set for many years; broken up into achievable smaller parts.

2.4 Road map for energy efficiency

To work out the inefficiencies related to the poor quality of raw material, especially coal. Taking these into consideration as well as the current level of performance a roadmap should be chalked out which will define how the company intends to reduce its energy consumption over the years. Additionally environmental concerns can also be built into the roadmap.

2.5 Means of energy conservation

The core of the energy management lies in having the infrastructure, the motivation and the means for actual energy saving activities. The first step is to grasp the actual energy statistics and then to act upon those. The activities could range from motivating the workers to save energy through education campaigns, small group and project team activities, and development of projects and technologies, their budgeting and evaluations of the same.

2.6 Aspect of energy monitoring and targeting system

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| Recording | - | measuring and recording energy consumption |
| Analysis | - | correlating energy consumption to a measured output, such as floor area, outside air temperature or production quantity. |
| Comparing | - | comparing energy consumption to an appropriate standard or benchmark |
| Setting targets | - | setting targets to reduce or control energy consumption |
| Monitoring | - | comparing energy consumption to the set target on a regular basis |
| Reporting | - | reporting the results including any variances from the targets which have been set |
| Controlling | - | implementing management measures to correct any variances which may have occurred. |

2.7 Budget for investment

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. A detailed evaluation system of the energy conservation / management plans should be worked out in order to comprehensively analyse the benefits and costs to the company. The benefits should be calculated in terms of energy savings, savings in energy costs and long-term use and viability of the project. Evaluation should also take into account the 'invisibles' such as safety, improved environment, improved quality and reduced maintenance.

2.8 Energy saving promotion activities

Energy resources find such varied use in plants that it is important that energy management and conservation activities be taken up at all levels starting from the lowest. Thus small group activities, project team activities and technology development all form important parts of the energy saving promotion.

2.9 Project team

Technological improvements can be brought about through in-house resources of the plants in India as the plant are usually equipped with sufficient trained manpower to design develop and implement energy conservation projects. A culture of energy consciousness is very important to build the edifice of better energy efficiency. Small daily activities should like putting off lights when leaving workplace and other such small things would not only save energy but also reinforce the culture of energy conservation.

2.10 Development of energy saving technology

Another important part of the development of energy savings is the in-house development of energy saving technology or adoption of such a technology to suit Indian conditions. In general, companies which conduct in-house research and development spend a very small part of turnover on such activities. Such activities need to be taken up at a larger scale. In-house design and development has the benefit of being tailor made for the plants' specific conditions while being available at a lower cost.

2.11 Audits

Energy audits are effective in crosschecking the energy statistics and also bring to the companies external knowledge on energy conservation technologies. Audits can also be a way to determine the possibilities of process optimisation.

3. Conclusions

As the current state of technology in the Indian steel industry is low and in most cases, the potential for energy conservation is large. The technology driven solutions could be expected to give good results. But on the other hand a closer analysis revealed that a lot of savings are also possible by implementing small projects especially those of waste heat utilisation and process optimisation. Education and motivation of employees and their involvement in the project group activities would be greatly benefiting the energy conservation and management activities. These are to be implemented mainly through the small group activities.

Prioritising the actions that have to be taken to initiate an effective energy management campaign, the activities would be

1. Organising the EMC headed by a competent person
2. Exploring opportunities and planning for investment
3. Enhancing operational improvements.

However, the priorities may change from plant to plant depending on the current level of activity that has already been undertaken in that plant.

Reference:

Energy Management Policy – Guidelines for Energy Intensive Industry in India, Chapter 8, pp 162-188 by Bureau of Energy Efficiency