

Energy Conservation in the Process Industry – Customer’s Perspective

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Abstract: Energy conservation is one of the words one is hearing more and more. Unfortunately, a lot of the places one will hear it will be in advertisements, marketing products or lifestyle habits that may have nothing to do with actual energy conservation. To learn what real energy conservation techniques are, we have to begin to understand the theory of conservation behind them.

Energy conservation is not about making limited resources last as long as they can, that would mean that you are doing nothing more than prolong a crisis until you finally run out of energy resources all together. Conservation is the process of reducing demand on a limited supply and enabling that supply to begin to rebuild itself. Many times the best way of doing this is to replace the energy used with an alternate.

Energy prices have increased at an alarming rate, and interest in environmental responsibility is at an all-time high. Many organizations are looking for ways to conserve energy, reduce carbon emissions, and save on overall utility costs.

While total energy management is very complex, there are some relatively simple strategies that can reduce a company’s energy consumption, lower costs, and advance your conservation goals.

This paper deals with the Customer’s (Buyer and / or User of Energy Conservation Systems) perspective to Energy conservation practices.

Key words: Energy - conservation, efficiency, systems, management customer, utility, emission, steam, compressed air, electricity, water

I. INTRODUCTION TO ENERGY IN PROCESS INDUSTRY

India is both a major energy producer and consumer. India currently ranks as the world’s eleventh greatest energy producer, accounting for about 2.4% of the world’s total annual energy production and as the world’s sixth greatest energy consumer, accounting for about 3.3% of the world’s total annual energy consumption. Despite its large annual energy production, India is a net energy importer, mostly due to the large imbalance between oil production and consumption.

Energy conservation has emerged as a major policy objective, and the Energy Conservation Act, 2001 was passed by the Indian Parliament in September 2001. This Act requires large energy consumers to adhere to energy consumption norms; and encon systems to meet energy performance standards and

to display energy consumption labels. The Act also created the Bureau of Energy Efficiency to implement its provisions.

In a scenario where India tries to accelerate its development process and cope with increasing energy demands, conservation and energy efficiency measures are to play a central role in our energy policy. A national movement for energy conservation can significantly reduce the need for fresh investment in energy supply systems in coming years. It is imperative that all-out efforts are made to realize this potential.

Energy conservation is reduction in the amount of energy consumed in a process or system, through economy, elimination of waste, and rational use. Energy conservation is nothing but a strategic use of energy in order to reduce the energy requirements per unit output.

The process industry typically uses energy in several forms such as steam, hot water, compressed air, chilled water and electricity. The process industry has to ensure both the aspects, i.e., maintaining a high product quality and simultaneously reducing the production and energy cost. Energy plays a major role in processing products. In a process industry, primary energy sources such as furnace oil, light diesel oil, etc are used in boiler for generating steam which in turn is used for various heating applications depending upon the type of process. Electricity is another energy source utilized in compressors and refrigeration units. The typical cost of energy used in a process industry is approximately 30%-40% of its entire manufacturing cost, and that’s substantial! The cost bifurcation between thermal and electrical energy is 60% and 40% respectively. Two major application areas for energy conservation systems in a process plant are:

- a) Thermal energy conservation in Boilers and steam distribution systems
- b) Electrical energy conservation in Compressor and Refrigeration systems

Energy conservation today is no longer an option – with the increasing scarcity of natural resources and spiraling costs of energy, energy conservation today is an absolute necessity to sustain the milk processing business. On a larger scale, energy conservation is an important element of energy policy. Energy

conservation systems reduce the energy consumption and energy demand per capita.

II. CUSTOMER PERSPECTIVES TOWARDS ENERGY CONSERVATION

Technology impact on customer behaviour:

With the age of technology, customer attitudes are evolving with each passing day, and developing new market value propositions had never been more challenging. Customers' approach to energy management is changing as they have new tools and avenues at their disposal; unlike the past when they engaged with the energy management companies only when there were critical issues. With the energy prices burgeoning, many Customers have started producing their own electricity, or are getting involved in managing their utilities through advanced automation and control instrumentation. This approach has opened up new opportunities for energy conservation companies.

This behavioural challenge emanating from the advanced technology also results in the customer changing suppliers. Since energy or utility has traditionally been a low attention commodity, suppliers have been able to rely on significant level of customer inertia, especially in the liberal markets. In the United Kingdom for example, a market study conducted in 2015 noted that the switching rates have been showing a falling trend since 2008; this despite there being continued price differentials accompanied with potential larger savings from switching. But today's era is of online and digital tools which is making switching of suppliers easier. Coupled with a much higher energy awareness amongst today's customers, energy system sellers are seeing customer churn a greater threat. This kind of churning and seller availability is resulting in rising expectations of good customer service, as customers are getting prompt service experience from other companies. In this online world of ecommerce, wherein one can order almost anything online, have it delivered practically the second day, get service calls rather than waiting on hold, can have their menu readied even before going to a restaurant; customers are expecting the same level of service from their utility management companies.

Technology is fast changing the way customers interact with businesses and with each other:

- Social media – has almost enables two way communication with mass appeal.
- Smart mobility – the global characteristics of mobiles mean that the customers are always connected with each other.
- Analytics and big data – are not only changing the ways in which organisations communicate strategies, but also in how that insight can be passed back to the customers.

- 'Set and forget' services – using technology that covers things such as monitoring of rates, usage, energy efficiency and real-time billing plus automatic rate-switching when rates change.
- Information and interactive apps – Energy management system sellers like Forbes Marshall have come up with an informative and interactive app "SteamHub", wherein the customers can get lot of information on energy management of utilities like steam and condensate and can post technical queries to be answered by company's technical experts.

Role of organization culture impacts customer attitude:

Culture of an organization stems from the values emanating from the individuals working there. Collectively, these values shape the organization's culture which in turn governs the behaviour of these individuals. Normally, culture is shaped top – down, meaning the set of values defined and practiced by the top management eventually become the organization's culture. Times demand change, and if the organization has to change the behaviour among the individuals has to change! There is no will to change where people are satisfied, but will offer least resistance to a change where they are dissatisfied. Here, role of the top management to create a perception of satisfaction and drive the change throughout the organization is very critical.

For a process industry or any manufacturing company, it is quite important to analyse and understand how the energy management work is related to production and maintenance. Energy conservation systems and practices leading to a better process efficiency, and vice-versa, are better ways of driving this change and reduce the specific energy bill of the product manufactured. It's vital for the organization to have a system perspective while improvements are carried out and change implemented. For technicians and engineers working on the processes, it is important to achieve stable systems.

Lot of organizations in India like Welspun industries, Lupinpharma, SAB Miller, etc. have driven this change in their process plants and have implemented state of the art energy conservation systems which have resulted not only in better productivity but also reduced energy bill and lesser emission of greenhouse gases.

III. CONCLUSION

Energy is pretty vital to humankind, and thus the way it is generated, transmitted and consumed have wider implications on the nature and humans. Energy resources are depleting and the energy costs are rising; hence it is critical that energy is used very efficiently and effectively by the process industry. Customer behaviour and attitudes have changed in the last few years due to environmental awareness, spiralling energy costs and technological innovations. Energy management which

was a lax area a while back, is now a priority focus courtesy the benefits accrued.

The buyer and the consumer, both are exposed to lot of supplier alternatives and superior technologies respectively, and that has been an enabler helping change the customer's perspectives to energy conservation – an area so significant for the sustenance of nature, and mankind.

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