Chapter 8
Energy Management

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ABSTRACT

Energy is described as the amount of work that can be done by force. There are various forms of energy such as kinetic energy, potential energy, thermal energy, light energy, sound energy, and electromagnetic energy. As per the law of conservation of energy, it is neither created nor destroyed. In this modern era, energy became an integral part of our life. The life without energy is not at all possible nowadays. The energy is not offered at free of cost and it comes at an affordable prize. The generation of energy requires natural resources which are exhaust day by day. At the same time, the usage of energy is increasing exponentially. Managing and reducing energy consumption not only saves money but also helps in mitigating climate change and enhancing corporate reputation. The organizations can achieve appreciable energy reduction by adopting simple measures. This chapter discuss about the present scenario of energy, need for energy management, energy management program, and its various steps involved.

INTRODUCTION

In this modern era, energy became an integral part of our life. The society which depends on energy is ours than before. Just thing about the equipments or utilities used in our day to day life either in home or work place which need energy for operation. The life without energy is unimaginable now a days. Also our productivity would drastically fall down, our society with computers cease to function and our gross domestic product (GDP) also reduced. Similarly, if oil supply stops then the fabric of our society also fall quickly. The example for the above said instants are power cut in California in the year 2001 and the strike of oil protesters in UK in September 2000. But in case of developing countries the scenario is just opposite to the developed countries. In such countries, the power is only supplied to the major

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cities not to the rural areas. This situation will not affect the life of the people living there but it shows the change in low GDP of that country. The developing countries has majority of population but they consumes minority of energy. One - third of the world's population utilizes energy very easily but the remaining two-third population are unable to secure enough energy to grow economically. This concept can be highlighted by the example of USA consumes approximately 26% of all the world's energy but having 4.4% of the World's population.

The demand for energy will grow due to the developing economies of the world. This will indeed increase the pressure on the earth's dwindling fossil fuel supply and also increase atmospheric pollution due to excess green house gas emissions. The issues like climate change and atmospheric pollution has no national boundaries and impinging on the comfort and security of the developed world. The perceived threat of the global climate change is the driving force for all intergovernmental environmental summits of the latest years. Based on the resolution passed in the summits, many countries has implemented the alternatives. The most of the people are looking only the consumption of the energy but the energy supply itself is the large and important sector of the world's economy. Apart from all these summits and discussions, now the energy and its utilization became forefront of the public consciousness.

ENERGY

Energy is defined as the *"one joule of work done when a force of one Newton acts on an object and it moves to one metre distance in the direction of the force"*. There are various forms of energy such as kinetic energy, potential energy, thermal energy, light energy, sound energy and electromagnetic energy. As per the law of conservation of energy, it neither created nor destroyed. The generation of energy requires natural resources which are exhaust day by day. At the same time, the usage of energy is increasing exponentially.

ENERGY CONSUMPTION AND GDP

The GDP of any nation is related to its energy consumption. To illustrate this concept the energy consumption from an historical viewpoint is given in Table 1. It shows the average daily consumption of people in various societies from early period to recent. The increase in per capita energy consumption exponentially as the advancement and industrialization took place in the society is shown in Table1. In early years the humans were lived in forest and had fruits, nuts and vegetables. Then the people started to hunt the animals and they learnt to use fire for cooking and heating. After later stages, societies developed and the first energy usage applied for agricultural and then for industrial practices. Now a days the advancements took place in each and every aspect and all requires energy. It is clear from Table 1, the per capita energy consumption approximately increases from 2000 kilocalories to 21000 kilocalories from ancient days to late 1990's.

From the above Table and discussion it is clear that there is a strong relationship between the GDP and energy consumption of a nation. For the development of the nation, they should manage the energy consumption in proper way.