

# Possible alternatives to reduce electricity

[Environment](#), [Electricity](#)



## **Introduction**

### **Energy**

Having a strong and reliable source of energy is a key foundation and fundamental for all economies. While economies continue to grow and become dependent on more complex based infrastructure and sophisticated technological systems, energy becomes ever more important to individuals, enterprises and nations. In the midst of all of this, the world encounters a number of energy-related problems that potentially threaten continued industrialization and economic growth. Such problems include:

### **The threat of resource depletion**

International action to address the threat of catastrophic climate change

Rapidly growing energy demand in oil-producing countries that could reduce exports

Threats to energy production from global terrorism

growth in electricity demand above the expansion of supply infrastructure

Worsening of indoor and outdoor air quality

Ageing of energy infrastructure in industrialized countries On a global scale, energy usage in the year 1973 was 4, 672 million tonnes of oil equivalent (Mtoe). However, by the time we reached the year 2012, energy usage had increased to 13, 361 million tonnes of oil equivalent (Mtoe).

The same dataset from the International Energy Agency (IEA) shows us that, while Europe's total final energy consumption had declined, in all other

<https://assignbuster.com/possible-alternatives-to-reduce-electricity/>

regions energy consumption had increased – with the most significant growth being in Asia and the non-OECD Americas. Statistics tell us that the global breakdown of total energy consumption between all sectors, the industry sector alone accounts for 29% of global energy consumption.

### **Energy efficiency**

Minimising the use of energy has become a critical and vital form of practice in the manufacturing industry due to having a finite source of energy resources such as fuel resources (oil, gas and coal) as well as mineral resources which are used to make everyday products. The challenge we face on global sustainability is that while these resources remain finite, the demand continues to grow. When we look at what steps should be implemented to tackle this challenge, we see that we need to rethink the current business paradigms about how we run businesses and how we organize businesses as well. The most important aspect to look at when dealing with this challenge is to tackle the topic of energy efficiency!

If we look at energy efficiency, we will find that the International Energy Agency (IEA) has established that 36% of our current energy usage globally can be saved by different measures. The equivalent of this is that if we had resources on our planet that is sufficient to deliver resources for another century, and if we had 36% less usage of those resources then we can generate an affordable life and lifestyle for an extra generation.

### **Main purpose of this paper**

Manufacturing businesses that have and are adopting new energy efficient technologies and practices for their processes and systems can stand to

significantly reduce and minimise their energy consumption (Shahin Rahimifard & Elliot Woolley 2013). To make energy reduction and energy consumption possible to achieve within manufacturing industries, there is a need for detailed real-time information regarding both products and processes (Taisch et al. 2011). However, current research in energy and existing commercial energy management products have focused mostly on auditing and monitoring of energy consumption so as to provide historical records to aid energy-saving efforts. As a result, these improvements are usually incremental and, most of the time, fail to provide sufficient support for decision making.

On the other hand, we find that decisions taken at the design phase of a product can influence the energy savings more significantly than optimisation procedures taken later on in the product development process (Duflou and Dewulf 2004). Modelling can be a very useful means of implementation for analysing complex systems due to the fact that various aspects can be plotted into models and analysed in place of real-life systems (Shahin Rahimifard & Elliot Woolley 2013).

A model or modelling is a computer representation of a real-world system or process. It may be too expensive or disruptive to experiment on the real process; or perhaps the real process does not yet exist and is still being designed. Despite the situation, a computer model can perform experiments or provide 'what-if' scenarios that can add to your understanding of the real world system and can identify and compare alternatives that improve the system in some way, usually to reduce costs or optimize the throughput.