Advantages and Disadvantages of Coal for Power Plants


Fossil fuels are indeed the top fuels used all over the world for generating power and electricity. Among the fossil fuels, coal is the most widely used fuel in power plants. Coal fired plants use different kinds of machinery that convert heat energy produced from combustion into mechanical energy.

Coal, gas, and oil are the fossil fuels responsible for most of the world's electricity and energy demands. Coal, which is readily available in most of the developing and developed world, has been used as a major source of fuel even in ancient human civilizations. It also found its use in historic steam engines at the dawn of the industrial revolution.

Advantages of Coal as Power Plant Fuel

Today, advances in technology have allowed coal to improve living conditions with its current role in meeting man’s fuel needs. Coal has been used extensively in power generation where better technology is employed to ensure that there is a balance between ecology and economics in producing sustainable and affordable energy. But, is coal really the answer to affordable and sustainable energy? To find answers for this question, it is best to learn about the advantages- and disadvantages- of coal fired plants. Some of its advantages include reliability, affordability, abundance, known technologies, safety, and efficiency.

Reliability. One of the greatest advantages of coal fired plants is reliability. Coal’s ability to supply power during peak power demand either as base power or as off-peak power is greatly valued as a power plant fuel. It is with this fact that advanced pulverized coal fired power plants are designed to support the grid system in avoiding blackouts.

Affordability. Energy produced from coal fired plants is cheaper and more affordable than other energy sources. Since coal is abundant, it is definitely cheap to produce power using this fuel. Moreover, it is not expensive to extract and mine from coal deposits. Consequently, its price remains low compared to other fuel and energy sources.

Abundance. There are approximately over 300 years of economic coal deposits still accessible. With this great amount of coal available for use, coal fired plants can be continuously fueled in many years to come.

Known technologies. The production and use of coal as a fuel are well understood, and the technology required in producing it is constantly advancing. Moreover, coal-mining techniques are continuously enhanced to ensure that there is a constant supply of coal for the production of power and energy.

Safety. Generally, coal fired plants are considered safer than nuclear power plants. A coal power plant's failure is certainly not likely to cause catastrophic events such as a nuclear meltdown would. Additionally, the welfare and productivity of coal industry employees has greatly improved over the years. In fact, injuries, time lost, and fatalities have decreased significantly in the past years.
Disadvantages of Coal-Fired Power Plants

On the other hand, there are also some significant disadvantages of coal fired plants including Greenhouse Gas (GHG) Emissions, mining destruction, generation of millions of tons of waste, and emission of harmful substances.

**Greenhouse gas emissions.** It cannot be denied that coal leaves behind harmful byproducts upon combustion. These byproducts cause a lot of pollution and contribute to global warming. The increased carbon emissions brought about by coal fired plants has led to further global warming which results in climate changes.

**Mining destruction.** Mining of coal not only results in the destruction of habitat and scenery, but it also displaces humans as well. In many countries where coal is actively mined, many people are displaced in huge numbers due to the pitting of the earth brought about by underground mining. Places near coal mines are unsafe for human habitation as the land could cave in at anytime.

**Generation of millions of tons of waste.** Millions of tons of waste products which can no longer be reused are generated from coal fired plants. Aside from the fact that these waste products contribute to waste disposal problems, these also contain harmful substances.

**Emission of harmful substances.** Thermal plants like coal fired plants emit harmful substances to the environment. These include mercury, sulfur dioxide, carbon monoxide, mercury, selenium, and arsenic. These harmful substances not only cause acid rain but also are very harmful to humans as well.

Fig. 2. Coal fired plant
Source: