

# COMPARISON OF THE DIFFERENT FORMS OF ENERGY GENERATION

## Comparison of the Different Forms of Energy Generation

1. **Hydropower:** This is one of most dominant form of energy generation in the world due to its



Ultimate distribution of Power after Generation

low-operating cost, build-and-forget nature, and one of the cleanest form of energy generation. There are almost no by-product in this form. Almost all the potential energy of water falling from reservoir at some height is converted to electrical energy.

2. **Fossil Fuels:** It is one of the most popular method of producing electricity from home generators of different sizes to the commercial and retailing Independent Power Plants (IPPs) used in developing economies like. IPPs are used for short term solution of energy crises. As they're not permanent so are placed in highly movable areas like sea-ports etcetera. Petrol, Diesel, Coal,

Natural Gas, and Coal gas are some of the methods used for that purpose. Different structural refinements are construction is required for the construction of different fuel generators.

3. **Solar Energy:** With advancements in Photovoltaic (PV) technology these are becoming the norm instead of exception. On-grid and off-grid are both on the rise. Pakistan's first on-grid Solar Power Plant is installed on Pakistan Engineering Council (PEC) building, Islamabad. On-grid Power Plant is attached to the national grid. It can take power in off-peak hours as well as provide power to the grid during peak-hours of electricity generation. When we see the graph of PV cell we see it electricity generating in downward-opening parabola.

4. **Bio-gas Energy:** This is the form of Energy in which some countries are considering to invest due to depleting resources of the Natural Fossil Fuels. Methane gas is produced from marshy places of the municipality, and this gas being flammable, burns to give Electrical Energy by different systems constructions or generator assemblies.

5. **Coal Energy:** This is the raw material for production of Energy which is abundant in Pakistan, thanks to Allah. Different projects have been initiated by the Government to convert those resources into Coal Gas, up to these huge investments have also been made, but, according to some resources, the results are not satisfactory of this technology of Coal Gas.

6. **Nuclear Energy:** This is the form of Energy which Developed countries had been using for decades now. Due to very low consumption of Nuclear Fuel, Enriched Uranium, the raw material cost is very low. In order to run this very highly trained and skilled engineer, scientists are required, so maintenance and

running costs are high. Nuclear Emission from Nuclear Reactors may have negative effects on the health of the personnel.

**7. Hydrogen–Oxygen Fuel Cells:** Hydrogen and Oxygen are kept in separate vessels to allow their Chemical Reaction to take place in the Chamber, thus releasing immense amount of Heat. This heat is used to produce steam which in turn runs the turbine to produce Electricity. The only by–product is Water. This is one of the safest mechanisms of producing Energy while having very low emissions and noise.

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