Electricity Generation/ Regulation the Modern Necessity – A Study

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Abstract

This paper seeks to study Electricity is essential for modern life, yet almost one billion people live without access to it. Challenges such as climate change, pollution and environmental destruction require that we change the way we generate electricity. Over the past century, the main energy sources used for generating electricity have been fossil fuels, hydroelectricity and, since the 1950s, nuclear energy. Despite the strong growth of renewables over the last few decades, fossil-based fuels remain dominant worldwide. Their use for electricity generation continues to increase in both absolute and relative terms: in 2014, fossil fuels generated 64.5% of worldwide electricity, compared with 61.9% in 1990. Access to reliable electricity is vital for human wellbeing. Currently one in seven people in the world has no access to electricity. As such, electricity demand will continue to rise. At the same time, greenhouse gas emissions must decrease drastically if we are to mitigate climate change, and we must switch to cleaner sources of energy to reduce air pollution. This will likely require large increases of all low-carbon energy sources, of which nuclear is an important part. In order to achieve a sustainable world, all sectors of the economy will need to be decarbonised, including transport, heat and industry. Electricity provides the means to utilise low-carbon energy sources, and so widespread electrification is seen as a key tool for decarbonising sectors traditionally powered by fossil fuels. As the end uses for electricity grow, and as the benefits of electricity are extended to all people, demand will grow significantly.

Key words: feminism, interrogation, Kashmir, women writing, regional, religious.

Introduction

The power from one kilogram of uranium is about the same as 1 tonne of coal. As a result, a correspondingly small amount of waste is generated. On average, a reactor supplying a person's electricity needs for a year creates about 500 grams of waste – it would fit inside a soda can. Just 5 grams of this amount is used nuclear fuel – the equivalent of a sheet of paper. There are several management strategies available for the used fuel, such as direct disposal or recycling in reactors to generate more low-carbon electricity.Renewables, such as wind, solar and small-scale hydro, produce electricity with low amounts of greenhouse gas emissions across their entire life-cycle. In 2014, wind and solar generated 4.4% and 1.3%, respectively, of the world's electricity.

Objective:

This paper intends to explore generation/regulation of electric power is usually produced by electric generators, but can also be supplied by sources such as electric batteries. Also its supply to businesses and homes (as domestic mains electricity) by the electric power industry through an electric power grid.

Electricity's journey to your plug is very long, but occurs at astonishing speed. It is not magic; it is not science fiction. It is a step-by-step process which explains many of the doubts that arise with regard to the electricity sector:

Generation: electricity is produced in plants capable of drawing electrical energy from primary energy sources. These primary energies may be renewable (wind, solar power, tidal power, etc.) or non-renewable (coal, natural gas, oil, etc.). The companies which (fully or partly) own the various power plants sell the energy generated to companies which supply it commercially.

Transmission: once the energy has been processed and turned into electricity, it is sent through overhead or underground wires from the plants to substations. There, transformers ensure sufficient electrical voltage. Substations tend to be above ground near to power plants, or on the outskirts of cities, though if they are not too large, they may also be within the actual city, inside a building.

Distribution: from the substations, electricity is distributed to the homes in the surrounding area. As a consumer, you cannot choose your electricity distributor; it is determined by where you live. That company is responsible for ensuring electricity reaches your home properly, and takes care of repairs when needed. It is also the company which owns your electricity meter, and sends readings from it to your commercial energy supplier.

Hydroelectric energy

A study by NASA states that the origin of life may be found in the electricity generated naturally on the sea floor some 4,000 million years ago. Water and movement are a source of life and, thus, also a source of energy.

Our ancestors knew this and used the currents in rivers to move large mills. More sophisticated versions of these water mills are used in hydro-electric power plants. A dam blocks a river with a concrete wall, flooding the area around the plant and creating an artificial lake. The retained water harbours enormous potential energy.

Water is one of the strongest and most powerful forces of nature. That torrent can be converted into kinetic energy (the energy of a body in motion). Under the force of gravity, the water travels downward through a series of large pipes called penstocks. This makes the blades of the turbines spin quickly.

The turbines supply mechanical energy to the plant's electric generators. A transformer increases the electric power and transmits it to the power grid, which then supplies power to your TV or washing machine.

Tidal energy

A lesser-known variant of hydroelectric energy in tidal energy.

This system utilises the vertical movement of seawater, which is caused by the gravitational force of the moon and sun on the sea. The ebb and flow of the tides generates tidal power.

At present, there are three different types of tidal power plants:

Tidal barrages: built at river mouths, tidal barrages are quite similar to hydropower plants. They harness the potential energy generated by the difference in height between high and low tides. Although they produce large amounts of energy, these facilities are quite costly to build and maintain.

Tidal stream generators: the tidal flows drive a series of axial turbines, similar to wind turbines, which generate mechanical energy. This is the simplest and most economical method, with the lowest impact on nature. As no dam needs to be built, it does not alter the ecosystem in the sea.

Dynamic tidal power: this method is merely theoretical, as it has never yet been successfully applied. It would combine the two methods described above. To do this, dams would be built off the coast and further out to sea creating a T-shaped structure that, on one side, would retain the force of the high tides and, on the other, the energy of the low tides.

Tidal energy stems from the movement of water caused by the high/low tide cycle.

Geothermal energy

Moving out of the water and onto dry land, let us know look at geothermal energy, a system which uses the heat stored inside the earth, in hot rocks and/or hot springs.

The thermal energy contained under our feet is tremendous. By simply digging to a depth of some 10 metres, we find temperatures of around 17°C year-r due to the thermal inertia of the soil.

To harness this energy, geothermal heat pumps are used to extract heat from the earth or release heat into it, depending on whether the goal is to heat or cool the air, or to heat water.

One of the most precise methods is to inject liquid water deep into the earth to raise its temperature; the water is turned to steam and returns to the plant carrying a great deal of energy, ready to be transformed into electricity.

- This energy can be used for different purposes depending on the characteristics of the source:
- Resources at high temperatures (over 150°C) are used to generate light.
- Below 100°C they are used to supply electricity to heating/air conditioning systems.
- At very low temperatures (less than 30°C) they are used directly for heating water.

Conclusion

Electricity is all around us--powering technology like our cell phones, computers, lights, soldering irons, and air conditioners. It's tough to escape it in our modern world. Even when you try to escape electricity, it's still at work throughout nature, from the lightning in a thunderstorm to the synapses inside our body. But what exactly *is* electricity? This is a very complicated question, and as you dig deeper and ask more questions, there really is not a definitive answer, only abstract representations of how electricity interacts with our surroundings. Electricity is a natural phenomenon that occurs throughout nature and takes many different forms. In this tutorial

we'll focus on current electricity: the stuff that powers our electronic gadgets. Our goal is to understand how electricity flows from a power source through wires, lighting up LEDs, spinning motors, and powering our communication devices.

Electricity is briefly defined as the flow of electric charge, but there's so much behind that simple statement. Where do the charges come from? How do we move them? Where do they move to? How does an electric charge cause mechanical motion or make things light up? So many questions! To begin to explain what electricity is we need to zoom way in, beyond the matter and molecules, to the atoms that make up everything we interact with in life.

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