

УДК 621.315.17=111

Kovzan A., Litosh V., Matusevich O.
Extraordinary Power Lines

Belarusian National Technical University
Minsk, Belarus

In the context of energy, supply is the process of bringing energy from the point of creation, such as a power plant, all the way to the point of consumption at a home or business.

The process of energy creation starts by collecting the source, whether it be a traditional fossil fuel or a renewable source, such as wind or solar. Energy can be harnessed from these sources in a number of ways. For example, a power plant can use a furnace to burn fossil fuels to release energy. Or turbines can be used to turn renewable energy like wind into energy that can be used to power our homes [1].

After the energy is created, it is distributed to consumers. Power lines span thousands of kilometers, carrying electric energy from generators to cities. Some of the electric energy travelling in the lines is changed into heat due to the wire's resistance. This heat is wasted.

One way to prevent such waste is to send low currents through power lines. In order to transmit useful amounts of electric power using low currents, thousands of volts are required. However, most generators produce much lower voltages. Such voltages result in wasted energy.

However, electric energy from a generator is usually conducted to a transformer. The latter is a device that changes voltage. A transformer near a generating station increases voltage. At the same time, the current is lowered so that waste is avoided. The high-voltage electricity is then sent through power lines to our homes.

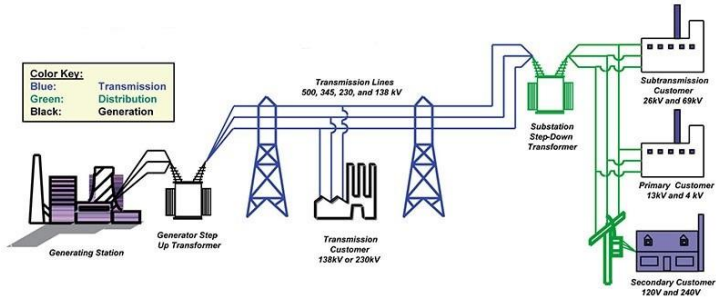
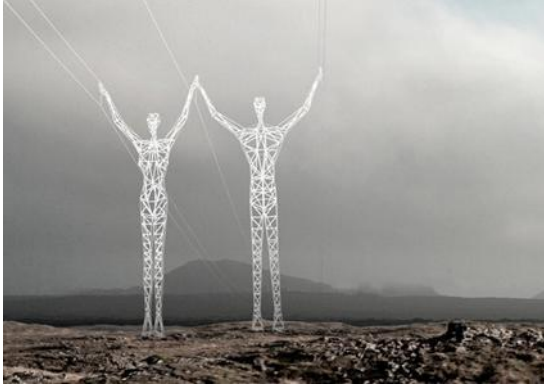


Figure 1: Basic Structure of the Electric System

High voltages, however, are dangerous. As a safety precaution, high-voltage power lines are held high above the ground on steel wires. Before the electricity reaches your home, it first reaches a power distribution station. Here the electricity flows through another kind of transformer. The latter lowers the voltage to safer levels. From the power station the electricity is sent to consumers. Before entering our homes, the electricity passes through one more transformer. This transformer lowers the voltage to 220 volts. This level is safe for household circuits.

Overhead lines run above the ground and are installed on pylons of various shapes. The selection of the pylon form depends on the necessary number of systems and the features of the environment where the pylon will stand [2].

The architects from Choi+Shine turned boring electricity pylons into majestic human-shaped statues in Iceland. They created the original project the Land of Giants and proved that even a simple industrial object can be turned into an example of art design. The idea came to the designers from their long car journey from Boston to Montreal. It was about five or six hours of driving and they got bored seeing only monochromatic landscape. The car was fast-moving and they couldn't perceive all the objects from the eyes of travellers.



The Land of Giants, Iceland

Transmission towers reminded them of living gigantic insects or some mythical creatures. So, they decided to transform transmission towers into open structures and they gave more legible and figurative form to power lines that are now very familiar with the form of human beings. The architects wanted to share their thoughts, ideas and feelings with other people and they managed to do it. One of the Italian newspaper called their invention “a poem to the eyes”. Undoubtedly, the goal of these constructions is to attract more tourists to Iceland from all over the world [3].

References:

1. What is Electricity Supply? [Electronic resource]. – Mode of access: <http://www.directenergy.com>. – Date of access: 24.04.2019.
2. Shapes of Electricity Pylons [Electronic resource]. – Mode of access: <http://www.eles.si>. – Date of access: 13.03.2019.
3. The Land of Giants [Electronic resource]. – Mode of access: <http://www.tea-after-twelve.com>. – Date of access: 23.02.2019.