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Набокова О. В.<sup>1</sup>, Голубцова В.Р.<sup>2</sup>

<sup>1</sup>доц. НУ «Запорізька політехніка»

<sup>2</sup> студ. гр. Е-411а НУ «Запорізька політехніка»

## HOW HYDROELECTRIC UNITS WORK AT THE DNIEPER HYDROELECTRIC POWER PLANT

The basic concept behind a hydroelectric power plant is simple: water flowing through a turbine generates mechanical energy, which is then converted into electrical energy. However, the process of generating electricity from water involves many complex steps and requires a lot of engineering and infrastructure.

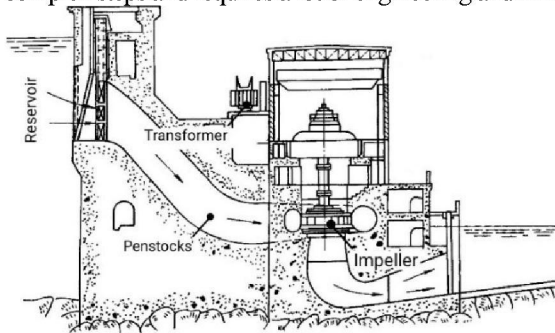


Figure 1 - Cross section of the hydroelectric building

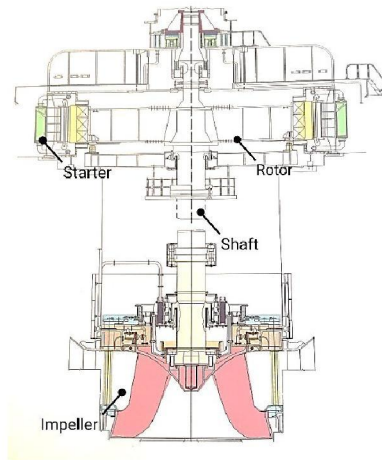


Figure 2 - Section of the DHPP-1 hydraulic unit

Nine vertical hydro units with a capacity of 72 MW and an auxiliary unit of 2.6 MW are installed in the engine room of HPP-1. Each of the main hydraulic units is connected to three single-phase transformers with a capacity of 3x30 MVA, with a voltage of 13.8/154 kV, except for hydraulic units 4,6,7,8,9, where three-phase transformers with a capacity of 95 MVA and 125 MVA were installed during the reconstruction.

Let's take a closer look at how it works:

1. Water is collected in a dam or reservoir, which creates a large body of water.

2. When the water is needed, it is released from the dam through large pipes called penstocks. The penstocks direct the water to a turbine in the impeller.

3. As the water flows through the blades, it causes the shaft to spin, with which the rotor also begins to rotate.

4. The rotor together with the starter is a generator, which converts the mechanical energy of the spinning turbine into electrical energy.

5. The electrical energy produced by the generator is then sent to a transformer, which increases the voltage of the electricity so that it can be transmitted over long distances.

6. The electricity is then transmitted over power lines to homes, businesses, and other customers.

7. After the water passes through the impeller, it is released into a river downstream.

In conclusion, hydroelectric power plants are an important source of renewable energy that harnesses the power of flowing water to generate electricity. While the process of generating electricity from water is complex, the benefits of hydroelectric power - including its reliability, cleanliness, and renewability - make it an attractive option for countries looking to reduce their reliance on fossil fuels.