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Tidal Power as a Component of Ecological Energy

Electricity production is one of the main criteria for mankind development. We can not live without heat and electrical energy. Production rate of organic fuel rises so fast that today there is a global problem of environmental pollution because of the fuel combustion products.

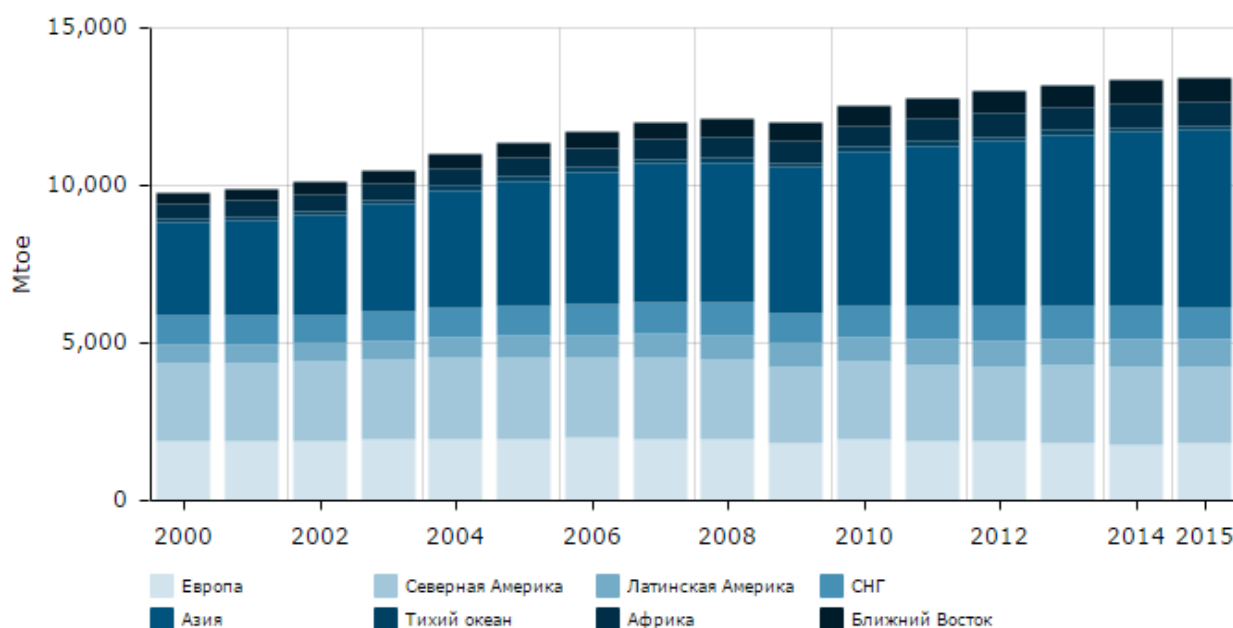


Figure 1. Energy consumption (source: <https://yearbook.enerdata.ru/>)

Solving this problem is a must. People are searching for and developing alternating energy sources. The energy of the sun and wind are being actively used now. However, the tidal energy, in spite of being perspective, remains underrated.

According to research carried out by the scientists [1] the total tidal power is estimated as 1 billion kW/h. Due to the Earth's rotation tidal power is inexhaustible, so it is classified as renewable power source. As a result, the tidal power station (TPS) may be build anywhere thanks to a number of rivers, seas and oceans on our planet.

Tidal energy has not been used to its full potential. Firstly, tidal power depends on the Earth-Moon system rather than Earth-Sun system and geography of coastline and the sea floor. Secondly, one must take into consideration that tidal energy depends on the time of the day. Tidal power is inherent in the moon day rather than the sun day. It leads to the issue of bringing the biggest and the smallest volume of energy. Thirdly, building TPS requires huge investment.

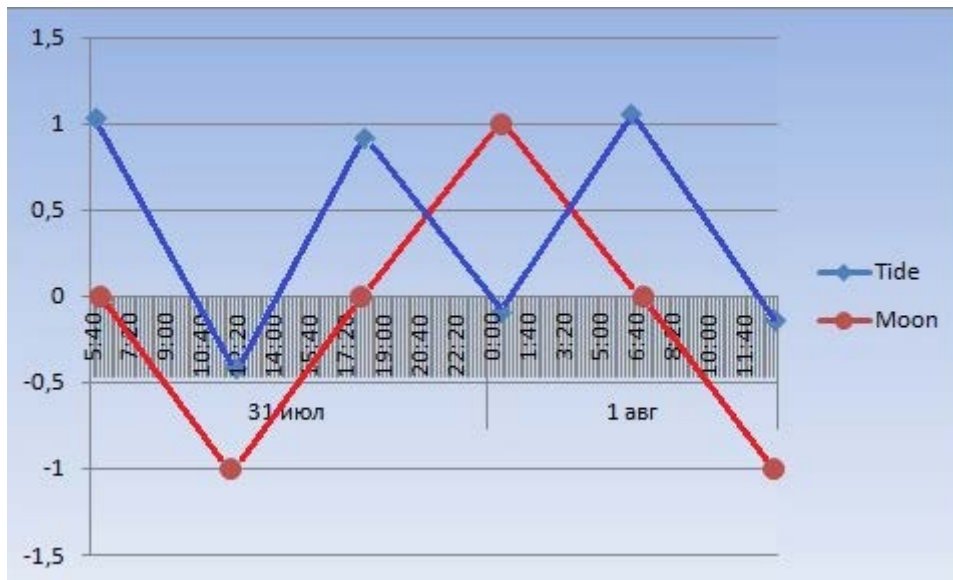


Figure 2. Tides in the moon day (source: <http://www.spacephys.ru/pochemu-proiskhodyat-prilivy>)

Here comes the question of advantages vs disadvantages of tidal energy.

Firstly, it brings no harm to environment. Secondly, tidal power station does not require any fuel. In this case, nature gives fuel. Thirdly, it is reliable because tides are not variables. The most important advantage is its highest efficiency compared to alternative energy sources. Efficiency of tidal power transformation is about 80%. For example, the efficiency of wind is about 30%, and the efficiency of the sun is about 5-15%. When compared with TPS efficiency, the difference is visible. The tidal power station on the banks of the English Channel is an example when the maximum production of electricity coincides with its maximum consumption. It produces about 544bil kW/h per year.

The conclusion can be made that tidal power is the most perspective renewable source of energy.

References

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