

Hydroelectric (Water) Energy Production



Renewable Energy Sources:

Renewable energy or alternative energy is energy that we can obtain over and over again like solar, wind, etc. These resources replenish themselves automatically over a short period of time (think of the wind, water and the Sun, we are constantly being exposed to them). Renewable energy is generally cleaner and more environmentally friendly than fossil fuels and doesn't leave hazardous waste like nuclear. Today, people use renewable energy to power their homes, run their industry and everything in-between.

Hydroelectric Energy:

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The use of water in the production of electricity started in the later years of the 19th century with the invention of turbines. In 1849, James Francis, a British-American engineer, developed the modern turbine that is still in use today.

The first hydroelectric plant was developed in England in the year 1878. It was used to power a single lamp in a Cragside Country house in Northumberland, England. Following its success, countries from all over the globe started using hydroelectric plants for producing energy. In 1893, the world's largest hydroelectric plant was built at Niagara Falls and was named the Edward Dean Adams Power Plant (IHA, 2016).

How it works:

Hydroelectric power harnesses the kinetic energy (energy of motion) present in moving water. This energy can be captured by placing a turbine in the way of the water flow. When the water flows from the higher to lower level, it is sent through a narrow

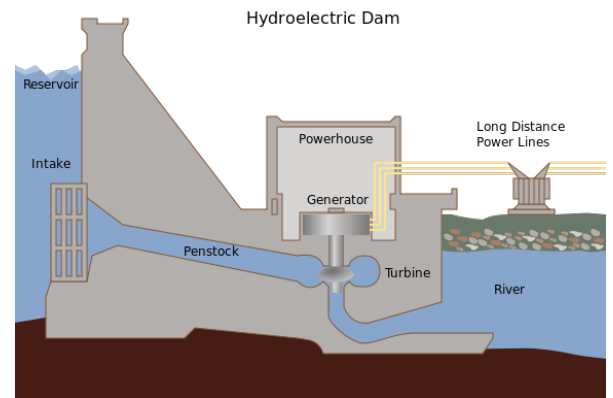


Photo by - Tomia

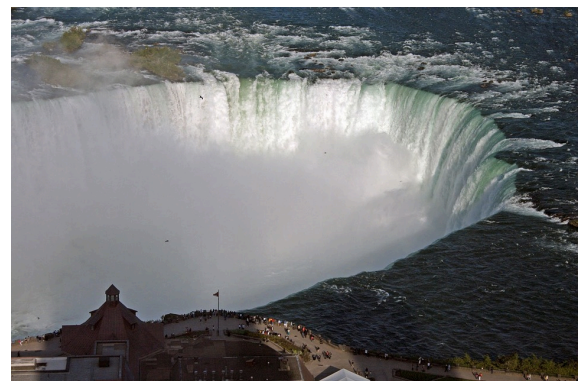
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Present Day:

Niagara Falls – Electricity was first generated from the Niagara River in 1893 when a 2,200 kilowatt power plant was built just above the Horseshoe Falls to power a nearby railway. Today, Niagara Falls generates power from both the Canadian and American side, producing more than 2.4 million kilowatts, enough to continually power 24 million 100 W light bulbs!



Niagara Falls, Canada



Hoover Dam, Nevada, U.S.A.

The Hoover Dam – Located just outside of Las Vegas Nevada, the Hoover dam produces an impressive 2,000 megawatts yearly and an average of 4.5 billion kilowatt hours, enough to serve 8 million people.

The Good and the Bad:

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Despite the possible negative effects, the overall impact of hydroelectric power on the environment is positive, as it has helped reduce our reliance on fossil fuels for generating electricity. The significant upside is that the power of water is limitless as more than 70 percent of Earth's surface is covered in water which can be used to generate electricity.

Reading Comprehension Questions

1. What are two differences between renewable and non-renewable energy sources?
2. Who were the first humans to utilize the power of water and when did this occur?
3. What
4. When
5. What is the name of the largest hydroelectric power plant built in Niagara Falls?
6. How is
7. How can

Extension Questions

For the next two questions, please go to the following site using the provided URL or the QR code.



<http://goo.gl/5hWifF>

8. Why
9. What causes the turbine to spin? The flow of water down the penstock
10. Do you think
11. Research the nearest hydroelectric plant to where you live. How far away is it located? How much electricity does it produce per day and how many homes does it supply with electricity daily?
12. The

Reading Sample



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References

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