Natel's Restoration Hydro Turbine comes in a variety of sizes and can be retrofitted to existing hydro plants | Photo source Natel Energy

NEW TURBINE DESIGN ALLOWS FISH TO PASS SAFELY

SCIENCE

A new hydroelectric turbine design can be retrofitted to existing turbines and allows fish to pass through waterways safely

Spotted: Hydroelectric turbines are used to produce renewable energy, but they come with risks to wildlife, particularly salmon and other fish that need to use the waterways. The fish can get sucking into the spinning blades of the turbines. To prevent this typically requires the turbines to have much larger, widely-spaced blades – which is more expensive to build and generally can't be used in smaller dams. Now, a new type of turbine has been designed that leaves the fish unharmed without taking up additional space.

Developed by California's Natel Energy, the Restoration Hydro Turbine has an inner diameter of just 1 to 3 metres and uses blades with a blunt, slanting edge. The design deflects the fish away from the blades. They also do not require the use of fish-proof screens, which can slow the flow of water and reduce the effectiveness of the turbines.

In a recent test of the new turbines, scientists found that a group of 60 tagged rainbow trout, along with a specially-designed sensor, all made it safely through the turbines alive and uninjured. The fish-friendly turbines are available in a range of sizes and configurations, making them useful in different settings.

According to Natel Energy, "Restoration Hydro Turbines can be installed in a range of settings, including retrofit of existing turbines (for low-cost compliance with environmental requirements, or to improve output of old units), existing non-power dams, irrigation canals, and run-of-river new stream reach developments."

Natel's fish-friendly turbines are just one of a number of innovations designed to make renewable energy easier and safer for people and animals. Other recent initiatives include a floating platform designed to harness wave power and a device that allows sailboats to easily capture microplastics as they sail.

Written By: Lisa Magloff

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18th December 2020
Website: natelenergy.com
Contact: natelenergy.com/contact

Takeaway:

Aside from cost savings, the fish-friendly turbines are important for another reason. They allow a more distributed approach to hydropower, using a series of smaller systems that operate as one integrated power plant. This is more efficient, but also has a potentially greater effect on fish safety because migrating fish need to pass through many projects. In what is sure to be the first of many projects, the turbines were recently successfully installed in the Monroe Hydro Project in Madras, Oregon.