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Hydro Green Energy Hydrokinetic Technology Proves Fish Friendly

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The first and only direct fish survival study performed on a hydrokinetic turbine shows that the technology is exceedingly safe for fish.

The hydrokinetic power turbine tested was designed and manufactured by Texas-based Hydro Green Energy LLC, which also operates the unit at U.S. Army Corps of Engineers Lock and Dam No. 2 in Hastings, Minnesota.

The 82-page study results were filed at the Federal Energy Regulatory Commission (FERC), the federal agency that regulates the hydropower industry.

The fish survival study was performed this summer at the only commercial, FERC-licensed hydrokinetic power plant in the United States, the 100-KW Hastings project.

The Hastings project was approved by a 5-0 vote by FERC on Dec. 13, 2008 and began operating in mid-2009.

At the Hastings project, Normandeau Associates, a consulting firm with 40 years of experience in providing ecological, environmental and natural resources management services, evaluated the direct effects to fish of the first of two hydrokinetic units.

The consulting firm conducted the fish survival study using their "HI-Z Turb N' Tag" methodology. Normandeau's patented methodology has been utilized at nearly 50 conventional hydro projects and by the Department of Energy, but never on a hydrokinetic turbine.

This methodology uses a controlled experiment approach and produces comprehensive, statistically reliable and verifiable results on injury and survival of fish passed through a turbine, spillway or over falls.

To accomplish this task, Normandeau deployed 502 balloon and radio tagged fish of a variety of species and sizes. 402 fish swam through HGE's hydrokinetic turbine, which rotates at 21 revolutions per minute, and 100 were allowed to swim freely in the river near the turbine.

Environmental scientists studied fish survival and injury rates of both groups after recapture of nearly all the tagged fish.

Pre-installation computer modeling performed by Hydro Green Energy, which relied on models created by the U.S. Army Corps of Engineers and the Department of Energy, indicated a 97 percent fish survival rating for the turbine, Hydro Green Energy reported.

Only one fish out of the 402 that were introduced into the hydrokinetic unit showed evidence of direct physical harm, and Hydro Green Energy reports that this may have been due to the fact that the fish was outfitted with a balloon tag, causing it rise to the surface to interact with the hydrokinetic device in a manner that otherwise would never occur.

“The comprehensive study performed on our hydrokinetic turbine wholly confirms what we had modeled with a computer before the turbine was installed, as well as what we knew in our minds: our hydrokinetic turbine is an extremely environmentally friendly technology,” said Wayne F. Krouse, Chairman and CEO of Hydro Green Energy. “From the first day this project was envisioned, Hydro Green Energy committed itself to performing this study as a way to not only advance our technologies and projects, but to advance the global hydrokinetic power industry as a whole. While the study specifically validates our technology, it also validates our pre-installation computer modeling, which can be performed on other technologies with a high degree of confidence.”