

J-POWER to Introduce New Inhouse-Developed Water Turbines First Water Turbine Designed by an Electric Power Company in Japan

Electric Power Development Co., Ltd. (headquartered in Chuo-ku, Tokyo; President and Chief Executive Officer: Toshifumi Watanabe; “J-POWER”) announced today the development of the shape design technology for water turbine blades. J-POWER applied engineering technology to increase the power generating efficiency of hydroelectric power plants, gained up to now from operating this type of power plant.

Employing fluid dynamics technology to investigate the causes and to reduce losses from water turbines, it is now possible to optimize the complex “blade” shape and make designs inhouse that are more technologically advanced than conventional manufacturers’ designs, resulting in more efficient power generation.

Today, in order to confirm the stability of long-term operation, J-POWER started a demonstration test on a water turbine generator (Francis turbine with 1500-kW output) that produces power at the Tagokura Hydroelectric Power Plant (Fukushima Prefecture).

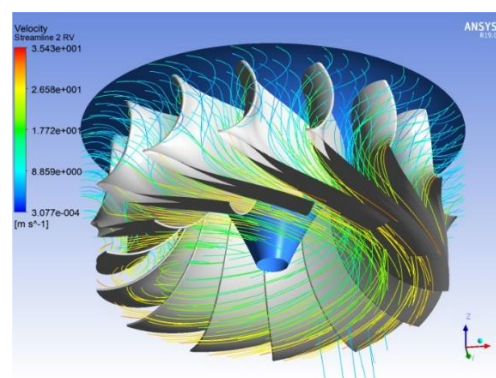
After the demonstration test, J-POWER plans to apply and deploy this technology in new construction, including for maintenance flow power generation in commercial systems and comprehensive refurbishing and capacity upgrading at a small hydroelectric plant (Suezawa Hydroelectric Power Plant, Niigata Prefecture, scheduled to start operations in fiscal 2024).

Hydroelectric power is clean energy that can supply a stable and certain amount of electricity, regardless of natural conditions, and it does not emit carbon dioxide (CO₂) when generating power.

Using ingenuity and technology development to keep increasing efficiency, J-POWER will drive new construction at untapped locations through comprehensive renovations and upgrading capacity at major plants that are aging. In this way, J-POWER will develop initiatives for expanding the introduction of renewable energy, and so contribute to the realization of a decarbonized society.



Installation of new water turbine
(Tagokura Hydroelectric Power Plant)



Example of fluid design
for the new water turbine

[Overview of Tagokura Hydroelectric Power Plant]

Address: Fukushima Prefecture (Tadami-cho, Aizu-gun)
Authorized output: 400,000 kW
Maximum water use: 420.0 m³/s
Dam: Tagokura dam
(Crest of embankment length: 462.0 m, Dam height: 145.0 m)
Start of operation: May 1959

[Overview of Suezawa Hydroelectric Power Plant]

Address: Niigata Prefecture (Uonuma-shi)
Authorized output: 1,500 kW
Maximum water use: 6.2 m³/s
Dam: Hiraishi dam
(Crest of embankment length: 38.5 m, Dam height: 11.0 m)
Start of operation: February 1958

[Location of Tagokura Hydroelectric Power Plant and Suezawa Hydroelectric Power Plant]

