

Media Release

Voith Group

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Voith demonstrates research and development competence: Model tests successfully completed for the Swiss pumped storage power plant Ritom

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- Voith has completed the model tests for two individual Pelton turbines and a storage pump for the pumped storage power plant Ritom
- The test results confirmed the guaranteed values and expectations
- The model test took place at the Brunnenmühle research and development center in Heidenheim

HEIDENHEIM, GERMANY. At its research and development center, the Brunnenmühle in Heidenheim, the Voith technology group successfully completed three fully homogeneous model acceptance tests for the Swiss pumped storage power plant Ritom. A 5- and 6-nozzle Pelton turbine and a storage pump were tested.

The Voith experts determined the efficiency, maximal output, throughput speed, hydraulic forces and the dimensions of the machines on the basis of the fully homogeneous models. The specialists also controlled the cavitation behavior at different operating points. As a result, the subsequent behavior of the machines were analyzed and the guaranteed parameters verified. The contractually assured guarantees were confirmed by the measurements and in some cases exceeded.

Sophisticated model test successfully conducted

Even before the model acceptance tests were carried out, the electromechanical parts of the new machines were examined with detailed simulation models and optimized with regard to all requirements. The Voith team initially started testing the two-stage storage pump.

"The results of the model acceptance tests for the storage pump were very positive. We were able to achieve parameters that exceeded the

contractually guaranteed performance," says Christian Matten, Project Manager at Voith Hydro.

Afterwards the model acceptance tests of the two Pelton turbines were carried out. Despite the high efficiency guarantees, the parallel development of two completely different Pelton turbines and numerous conversions on the test stand, the Voith team was able to achieve the guaranteed parameters and thus successfully complete the model acceptance tests.

"Currently, the engineering of all components of the hydraulic and electric machines is in progress. The components from earlier construction phases, for example, the turbine housing and the distribution piping, are already in production. If everything goes according to schedule, these components can be installed on site in May 2021," explains Matten.

About the Ritom pumped storage power plant

The four Pelton turbines with a total rated output of 44 MW, used in the existing Ritom storage power plant, will be replaced by significantly more powerful machine groups in the new power plant. Voith will supply two Pelton turbines, each up to 60 MW capacity and with a 60 MW storage pump.

The first machine unit will supply power for the 16.7-Hz-Grid of the Swiss Federal Railways and for operating its trains. The second machine unit will feed electricity into the public 50-Hz-grid. In conjunction with the turbine, the storage pump can provide control power for rapid grid regulation and stabilization with maximum flexibility. The new hydropower plant will thus provide a control band from 60 MW of feed-in to 60 MW of power consumption for the Swiss 50-Hz-grid. In addition, the storage pump can be accelerated and synchronized with the grid using the 50-Hz-Pelton group by means of back-to-back startup. Here, the power of the turbine is used to start the pump quickly and reliably.

About the Voith Group

The Voith Group is a global technology company. With its broad portfolio of systems, products, services and digital applications, Voith sets standards in the markets of energy, oil & gas, paper, raw materials and transport & automotive. Founded in 1867, the company today has more than 19,000 employees, sales of € 4.3 billion and locations in over 60 countries worldwide and is thus one of the larger family-owned companies in Europe.

The Group Division Voith Hydro is part of the Voith Group and a leading full-line supplier as well as trusted partner for equipping hydropower plants. Voith develops customized, long-term solutions and services for large and

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small hydro plants all over the world. Its portfolio of products and services covers the entire life cycle and all major components for large and small hydro plants, from generators, turbines, pumps and automation systems, right through to spare parts, maintenance and training services, and digital solutions for intelligent hydropower.



Model acceptance tests of the Pelton turbine, which will supply electricity for the 16.7-Hz-grid of the Swiss Federal Railways and operation of its trains.

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