Salzgitter AG and TU Braunschweig build hydropower research plant

Facts & figures

As Salzgitter AG sees it, the new technology is pointing the way into the future, which is why it is teaming up with TU Braunschweig in the research project as an industrial partner and general contractor. Following successful scientific and technical trials, the technology will be further developed with TU Braunschweig and qualified for an industrial production process so that significant potential can be tapped in the field of hydropower.

Main goal

The research project aims to verify the technical feasibility of a worldwide unique hydropower technology. Newly developed high-performance steel waterwheels in hydropower plants with low hydrostatic heads and high river water flow rates are to allow the exploitation of previously inaccessible hydropower potentials while taking into account specific ecological constraints. If the university research results are hopefully industrialized, then a non-CO_2 key technology can be introduced long-term for base load power generation and grid stabilization in Germany.

Technical data - High-performance steel waterwheel in Bannetze-Hornbostel

Suppliable households:	1,000
Annual power output:	2,500,000 kWh
Nominal capacity:	500 kW
CO_2 savings:	2,500 tpy
Diameter:	11 m
Width:	12 m

The intake capacity (in Bannetze, currently 60 m³/s) can be as much as 100 m³/s per high-performance waterwheel and thus 16.6 times that of the largest traditional waterwheels.

Costs

The total project cost is slightly above 11 million euros, including all research and development expenses at Salzgitter AG and TU Braunschweig – to be equally shared between Salzgitter AG and the public sector (Federal Government and the State of Lower Saxony).

Salzgitter AG: aspects and prospects in terms of steel

A large number of the structural components needed for the hydropower research plant stem from Salzgitter AG's product portfolio and are now being refined and further developed for building construction and mechanical engineering purposes in the context of the project. This includes structural elements, plate, tubes and rolled sections. The hydropower research plant is intended to provide results on the technical feasibility as well as the construction and operation of such a plant and, of course, the economically viable expansion of hydropower as a new sustainable energy source. For Salzgitter AG, the project opens up an opportunity for developing from a supplier to a systems integrator and/or operator.

The steel required per hydropower plant amounts to between 800 and 1,000 tons on average.

TU Braunschweig: aspects and prospects for research

The Technical University of Braunschweig will, together with Salzgitter AG, see and refine the technology it has developed through to its series production and market launch. Besides working on the engineering and economic aspects, this also includes researching into the relevant ecological implications.