From Nature the Power, from HOBAS® the Pipes

Pressure Pipes DN 2400 Feed Tyrolean Power Station with Water, AT

In Tyrol, Austria, two more than 100 year old hydropower stations have been replaced by a modern one. The penstock leading to the power house was erected with HOBAS Products. About 2.2 km pressure pipes DN 2400 make sure, that 4,000 households are supplied with green energy.

Project Planning
The TIWAG (Tyrolean Hydropower Corporation) had acquired the former stations Einöden and Söll-Leukental at the river Brixentaler Ache already in 2002. Regarding their advanced age of more than 100 years the investors decided for a tear-down with subsequent new construction. The project was applied for in 2008 and the plan was given green light after nature conservancy and water law negotiations in summer 2009. "We finally and completely disconnected the old power stations from the network in March 2010", explained TIWAG project manager Gebhard Senn; ground was officially broken for the new construction in April.

The Perfect Pipe Material
One of the most significant criteria for designing hydropower stations is the choice of penstock, a pressure pipeline. The design flow of 12 m^3 per second required a relatively large pipe diameter. Since steel pipes are costly and therefore out of the question, the constructor decided after careful consideration: "We were presented with different possibilities: starting with wood, through concrete to GRP. In the end we opted for glass fiber reinforced plastics pipes by the company HOBAS. These are easy to handle and present an economic solution", explains project manager Senn. Moreover, the long life time up to 100 years, high corrosion resistance and the low roughness coefficient spoke in favor of this material.

Installation
The penstock leads from the water catchment to the power house on a 2,180 m-long route and was installed in open trench: "It was important here to fix the pipeline with a geogrid. We are in ground water over long stretches – when the line is emptied it would otherwise float up", says Senn. The centrifugally cast GRP pipes were installed according a plan drawn up by HOBAS. Changes of direction were implemented via angular deflections in the couplings and thanks to the angular pre-cut system. Only one bend was therefore necessary for the complete 2.2 km-long route – saving time and money.

Project Completion August 2011
Construction works are currently in the final stages. The penstock successfully passed the pressure test in mid-march 2011 and since the major part of the line has been accomplished, construction works are now focused on the power house and the installation of machines. The small hydropower plant Bruckhäusl shall be connected to the network in August and generate about the double electricity amount of the two former stations together. Around 4,000 households are looking forward to consuming green electricity and enjoying the unspoiled nature thanks to a station that hardly affects the environment and which is also visually harmoniously integrated.

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Year of construction
2010 - 2011
Total length of pipeline
2,180 m
Diameter
DN 2400
Pressure Class
PN 3 - 5
Stiffness Class
SN 5000
Installation
Open trench

Application
Hydropower penstock
Client
ARGE TIWAG Bruckhäusl, Fröschl-Teerag-Alpine
Advantages
Saving bends thanks to the HOBAS Angular Cut System, easy handling, long lifetime, corrosion resistance, smooth inner surface