Make things happen. HOBAS®

Long Live HOBAS®

Helleren Hydropower Station in Norway Received a Durable HOBAS Penstock

Helleren hydropower station is situated along the Helleren River north of the polar circle between Narvik and Harstad in Norway. Its wooden penstock DN 2500 has been in service since 1958 and has reached the end of its lifecycle. Hålogaland Kraft AS, one of the numerous Norwegian electricity companies that base their business on 100% hydropower, opted for a long term durable and maintenance free HOBAS CC-GRP HydropowerLine DN 2500, PN 6 to replace the penstock.

NO08HYL_Helleren 1- The new durable HOBAS Penstock DN 2500

Winter 2008

After years of annual maintenance works, patching up the many leaks along the wooden line had become too costly. Apart from this, the plant's efficiency was increasingly reduced due to down times during repairs.

During Norway's cold winters in which temperatures may drop to -40°C, heavy blocks of ice fed on the line's leaking water and weighed down the heavily deteriorated penstock. In winter 2008, due to the load of the ice, the wooden construction was about to give way at its supports. Hålogaland Kraft AS had to act quickly and decided to exchange the long serving penstock.

NO08HYL_Helleren 2 – Wooden penstock with severe leakage

HOBAS Scandinavia NUF
Postboks 7, 1211 Kolbotn | Norway | T +47.66.99 56 31, F +47.66 99 563 2 | richard.hansson@hobas.com

Decision for a new and durable penstock

Bearing the wood's disadvantages on mind, Hålogaland Kraft sought after a long lasting, durable and maintenance free replacement. These characteristics should apply for both, underground as well as above ground installed pipes on supports.

A perfect match was found in HOBAS CC-GRP Pipes which serve all requirements and soon were the favored option of the power producer. Not only do they offer a long and maintenance free future, but maintain their outstanding properties whichever way they are installed. Be it above ground, without additional protection, or in soil, the UV and abrasion resistant outer surface protects the pipes' properties and ensures durability. Their easy assembly through the simple jointing system promised a short construction time, which was seen as a further decisive plus.

NO08HYL_Helleren 3 - Pipe transport to the site

Just in time delivery to construction site

Since the storage area at the construction site was restricted, the DN 2500, PN 6 CC-GRP Pipes were partly delivered directly to the supports on site. This was possible thanks to the close and well functioning cooperation between the pipe supplier HOBAS, the client Hålogaland Kraft and the contractor SKANSKA.

NO08HYL_Helleren 4 - Pipes being delivered directly to the supports on site

Construction of supports

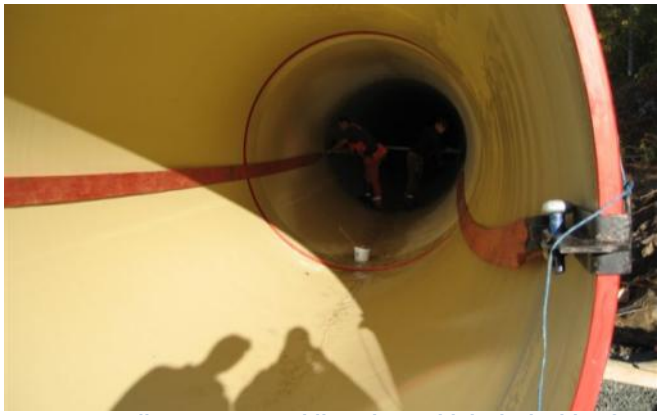
Once filled with water each pipe weighs 32 tons. This load is transmitted down into the ground by concrete supports. Each of them has a precast reinforced base and an upper pipe bearing that was cast on site after the line was fitted in place. Steel retainers with plate springs according to EN standards were then mounted to accommodate the strain resulting from working pressure.

NO08HYL_Helleren 5 - Casting the pipe supports on precast base

HOBAS Scandinavia NUF
Postboks 7, 1211 Kolbotn | Norway | T +47.66.99 56 31, F +47.66 99 563 2 | richard.hansson@hobas.com

Pipe Assembly

The HOBAS push-to-fit jointing system with its FWC Couplings ensures a rapid and safe assembly for all available pipe diameters. At Helleren, the adjacent pipes were easily pulled together from inside the pipe and with the mere help of jacks. This special method is employed to join larger diameter pipes such as DN 2500 and allows the crew inside the line to work independent of proceedings in the trench or support construction. The pipes' relatively light weight contributed to the rapid assembly and the installation ran smoothly as expected.



NO08HYL_Helleren 6 - Assembling pipes with jacks inside of pipe

Joining pipe to existing structures.

The HOBAS Pipe receives its continuously smooth and calibrated outer surfaces from centrifugal casting and can therefore be cut and joined at any point of its length. It is furthermore completely adaptable to other materials and structures. In this case, mechanical couplings were utilized to connect the penstock to the intake at the dam of Helleren power plant.

NO08HYL_Helleren 7 - Assembly of pipeline to steel intake with mechanical coupling

Looking back and into the future

The Helleren power station looks back on a long history worthwhile telling: Its two Voith turbines from 1907 and ASEA generators with an output of 1.8 and 2.83 MW from 1905 were originally installed for a power plant in Tinfos further south which was later used to produce electricity for one of the first artificial fertilizer production units. Due to the business' success, larger turbines were employed forming the base of what today is known as the Norsk Hydro company. The smaller turbines now over a 100 years old were bought by Vågsfjorden electricity company in 1958 and sent north to Helleren on small bumpy roads.

Hydropower plant operators have a good understanding of how make long term investments for the future. And naturally it is important that these pay. With the new HOBAS HydropowerLine the owners of Helleren plant have made an excellent choice and face years of maintenance free green power generation.

HOBAS Scandinavia NUF
Postboks 7, 1211 Kolbotn | Norway | T +47.66.99 56 31, F +47.66 99 563 2 | richard.hansson@hobas.com

Overview	
Year of Construction	2008
Construction Time	Approx. 1 month
Total Length of Pipe	114 m
Diameter	DN 2500
Pressure Class	PN 6
Stiffness Class	SN 5000
Installation Method	Above ground on supports and open trench
Application	HydropowerLine®
Client	Halegeland
Constructors	SKANSKA
Advantages	Long term durability, long lifetime, fit for all installation methods, easy assembly

HOBAS Scandinavia NUF
Postboks 7, 1211 Kolbotn | Norway | T +47.66.99 56 31, F +47.66 99 563 2 | richard.hansson@hobas.com