



INTERNAL PIPE HydraTite® JOINT SEAL

Market

Power Generation / Hydroelectric

Challenge

A remote hydroelectric facility in British Columbia, Canada, was experiencing an active leak at a flexible pipe coupling in a 72-inch penstock that conveyed cooling water from a lake. The original pipe coupling design did not provide a watertight connection, creating a persistent leakage problem that required rehabilitation during a limited maintenance window.

The operating conditions added another level of complexity. The penstock was expected to operate at approximately 340 psi, with potential transient pressures reaching 400 psi. Flow velocity also created a significant safety concern. In the unlikely event that an internal seal became dislodged in the future, the system's flow could potentially carry it downstream toward the pump station. The repair therefore needed not only to stop the leak, but also incorporate additional mechanical protection suited to the pipeline's operating conditions.

Engineered Solution

HydraTech engineered a custom 72-inch double-wide EPDM HydraTite® Internal Pipe Joint Seal to span the leaking pipe coupling. The seal was supplied with three 2-piece 316 stainless steel retaining bands, providing mechanical compression around the full circumference of the penstock. Project documentation confirms the custom 72-inch double-wide configuration and three-band stainless steel retention system.

Because of the high-pressure application and concern surrounding downstream movement if the seal were ever to become compromised, the design incorporated eight supplemental stainless steel retaining braces over the completed HydraTite® assembly. These braces provided a secondary means of restraint intended to prevent the seal from traveling downstream even in the event of a future failure. The additional restraint components were incorporated into the project before shipment.



Scope

The facility fully dewatered the penstock and prepared the pipe coupling before HydraTech's technical engineer arrived. Threaded studs for the supplemental retaining braces had already been welded into position, and the joint surface was prepared for immediate seal installation. This advance preparation was particularly important given the facility's remote location and the limited maintenance window available to complete the work.

An owner-supplied two-person crew performed the installation under the supervision of HydraTech's technical engineer. The double-wide EPDM sleeve was positioned over the pipe coupling, and three 2-piece 316 stainless steel retaining bands were expanded against the interior of the 72-inch penstock to mechanically secure the rubber.

Once the HydraTite® assembly was secured, the supplemental stainless steel braces were connected to the previously installed studs above the seal, providing the additional restraint required for the application. From the beginning of seal installation through completion, the process took approximately three to four hours.

Solution

The custom HydraTite® system successfully sealed the leaking flexible pipe coupling within the facility's limited maintenance window. By combining a double-wide EPDM internal seal, three stainless steel retaining bands, and eight supplemental retaining braces, the repair addressed both the immediate leakage and the unusual operating risks associated with this high-pressure penstock.

This project demonstrates HydraTite®'s ability to be customized for demanding power generation infrastructure where conventional joint configurations, elevated pressure, flow velocity, and restricted maintenance access require more than a standard repair. It also highlights the value of HydraTech's technical supervision model, allowing an owner-supplied crew to efficiently install a specialized internal pipe joint sealing system at a remote hydroelectric facility.



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