

Sediment Bypass Pipeline Design

Laxá Powerplants, Iceland

Challenge

During winter, previously deposited sediments are mobilized and transported towards the intake. Existing sediment removal systems discharge sediment immediately downstream of the intake, causing sediments to re-enter the river system and affect downstream hydropower facilities. A long-distance bypass solution was required to transport sediment past three powerplants using gravity only.



Laxá river during winter conditions



Present sediment discharge

Solution

SediCon designed a sediment bypass pipeline combining flows from an existing SediCon Gravel Excluder and SediCon Sluicer into a single HDPE pipeline.

Using advanced two-layer flow modelling and experience from hydropower and offshore sediment transport projects, SediCon optimized the pipeline geometry to ensure reliable transport of both sand and gravel entirely by gravity, bypassing three consecutive powerplants.



Project Location

Project facts

Client: Landsvirkjun / Verkís
Project: Laxá III
Location: Iceland
Technology: Study / design
Installed capacity: 13.5 MW
Design discharge: 43 m³/s

Results and benefits

- Gravity-driven transport
- No pumping required
- Bypasses three powerplants
- Optimized HDPE design
- Handles sand and gravel
- Reduced downstream impacts

For more than 30 years, SediCon has developed and supplied proprietary sediment handling technologies from Trondheim, Norway. Our solutions for reservoirs, intakes, desanders and tunnels have been successfully implemented in hydropower projects in more than 20 countries across five continents.