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Case Study

Resisting global warming to save fish life

Ensuring cold water intake – Salmon farm, Tervo, northern Finland

THE CHALLENGE

Summers are getting hotter in Finland (and all over the world), leading to all kinds of climate-related challenges. For a salmon farm in Tervo, central Finland, the salmon are starting to die as pond water temperatures exceed 27°C, which fish do not like. The near 200,000 kg annual fish growth is decreasing as a result of this warming.

To preserve salmon life, colder water needs to be moved efficiently to the warming ponds. One idea for making this a reality to build a 950-1000 meter pipe, but from what material?

Many options were considered – plastic and aluminium, for example.

THE SOLUTION

Costs and installation considerations for aluminium were much cheaper and faster for corrugated aluminium pipe than for plastic. This led to ViaCon as the provider of choice for the cold water intake solution using aluminium pipes. Also using bolted flanges did not require any special tools while plastic would have needed welding for connections.

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Installation of the aluminium solution was done in two days. Pipes were connected on shore and pushed out to float. The second day was used to steer the line into place by boat and then to sink the line to Nilakka Lake.

Aluminium pipes were produced with a seal in the fold to make them more watertight.

- 16m pipes were coupled with bolted flanges with seals
- The entire 560m of pipe was floating in the lake
- Lake end had a raft and other end was on the dry land
- Aluminium is light, so weights were required to sink the pipe. Used railway concrete with aluminium bands
- Pipe was filled with water from shore end and started sinking and went to bottom of lake

THE ADVANTAGE

In addition to being a significantly cheaper option than plastic, aluminium pipes do not corrode in Finnish lakes, so it is a lasting, durable solution. Bolts were stainless steel.

ViaCon Finland tested aluminium pipes for bending at the factory so the contractor could be sure about its capability for bending during installation.

With this solution fish farms can use outdoor ponds instead of indoor pools. They do not need to manufacture big halls to house large pools to farm the fish. Smaller indoor pools can produce the fry, and they are moved to outdoor ponds to grow.

The salmon farm has successfully used the water intake solution for two summers to reduce pond water temperature. And because wintertime brings a risk of the ponds freezing, the water is used also to prevent ice forming.

SPECIFICATIONS

Corrugated aluminium, 18mm profile, 2mm thickness

Welded aluminium flanges with stainless steel bolts

Seals between flanges

Pump on shoreline pumping colder water to ponds.

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