

Adamselv Hydropower Project

First Commercial Application of the HydroFoamer technique

In 2016, the revolutionary PU foam pipe laying technology, using patented IP, owned by HydroFoamer BV was installed by contractors working for Statkraft, the Norwegian state renewable energy giant.

The Adamselv project, situated in Finnmark in North Norway, concerned a 1.1km hydropower pipeline, used to pump water from a lower water source, to supplement flow at an existing hydropower installation. The pipe itself was mixed diameter (800 & 900mm / 25" & 31") GRP (Glass-Reinforced Polyester), buried at more than 800mm / 25".

The production pressure was rated to 4 bar / 60 psi, not including security factors, with a flow rate of 3m/s or 10ft/s. Two 15° bends were installed using PU foam instead of thrust blocks, with telemetry to measure displacement under operational conditions.

The pipe has been in operation since October 2016 and has displayed zero effective displacement in any axis (less than 0.1mm / 0.004"), despite continual cyclical loading and extreme Arctic weather conditions in saturated ground.

Professor Leif Lia, the head of the hydropower faculty of NTNU (Norway's top technical university in Trondheim), has stated at ICOLD, the world hydropower conference in Vienna, that *"the commissioning of the penstock at Adamselv proves that the method with PU-foam as backfill works on a full-scale project, both for construction and operation."*

Tor Oxhøvd, project engineer at Statkraft, and responsible for the Adamselv project, stated that, *"PU foam gives restrained joint characteristics, can be used to stabilise bends, and means that the shear strength of the surrounding soils must be used as a basis for geotechnical stability, and not friction of backfill masses against the pipe."*

The implications for pressure pipe installation are profound:

- Replacement of concrete thrust block anchors in almost all situations
- Massively increased installation speed
- Near impenetrable underground mechanical pipe protection
- Hugely reduced environmental impact: reduced operational area, shorter ground opening times, savings of 95% of heavy transport requirements



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