

## Laussane Geneva Pipelines

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### ABSTRACT

The Lausanne Intake and Outfall Project on Lake Geneva, Switzerland required the design and construction of the intake and outfall pipelines to connect to the onshore pumping station of an industrial supply system. In order, to provide water of the required quality and temperature the ideal abstraction location from the lake was determined at an 82m water depth. There has been an increased trend of inland lake abstractions in Switzerland having to be installed into deeper water to achieve the required water quality temperatures as the lakes are gradually warming due to global climate change and discharges. At this depth there is also less risk of marine growth to the pipeline and head from tiger muscles which are prevalent in the Lake at shallower depths.

The challenges that confronted designers Royal HaskoningDHV and specialist contractor TSM Perrottet AG (sub-contracted to Alpiq) on this project were as follows:

- Design and Install the intake head without the use of divers or ROV's in 82m water depth
- Design and Install the intake pipe without the use of divers and limited construction equipment.
- Restrictions on plant availability and therefore lifting, pull/tow capability on the Lake.
- No Lakeside berthing area available for pipeline string preparation.
- No supplier of long lengths of polyethylene pipes available locally.

Royal HaskoningDHV undertook the detailed design of the intake and outfall pipelines for TSM-Perroteet AG. The float and sink methodology for the intake pipeline was developed between the teams to prevent diver intervention at excessive water depths.

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This paper will discuss the challenges presented for the design and installation team to enable the implementation of the new intake and outfall.

