



## Big Silver Creek, Canada

|                     |  |
|---------------------|--|
| <b>Application:</b> | Hydropower station   |
| <b>Place:</b>       | Harrison Hot Springs, Canada   |
| <b>Date:</b>        | 2014-2015  |
| <b>Products:</b>    | 4 VAG RIKO® Plunger Valves DN 1000 PN 16<br>incl. VAG HYsec Hydraulic Brake and Lift Units |

## Project description

The Big Silver Creek run-of-river power station located on Canada's south-western coast generates 140 GWh of energy per year and supplies 20,000 households. As it leaves the course of the river unchanged and has virtually no impact on the fish population, the construction of a run-of-river power station was just the right decision for the recreational area around the picturesque Harrison Lake. Construction works began in 2014 and are expected to be completed in the winter of 2016. VAG supplied 4 VAG RIKO® Plunger Valves DN 1000 PN 16 used as a turbine bypass and equipped with a venting device and a hydraulic actuator. This actuator ensures that the plunger valve opens completely within two seconds as required. The bypass is designed to be operated about 5 times per year and for 12 hours each time.



Shipping preparations in the factory (Mannheim, Germany)

The challenge of this project was that the extremely high upstream pressure of 116 metres head of water had to be reduced to almost 0 – but there was hardly any space for the valves. The pipeline downstream of the plunger valves makes a 90° bend and the walls are not sturdy enough to absorb the forces. This is why VAG decided to reduce the water head in the bypass step by step:

1. Anti-cavitation cylinder in the plunger valve
2. Downstream venting equipment
3. An orifice plate DN 1000 PN 16 in the downstream pipeline prevents cavitation in the upper part of the pipeline and lets suspended solids pass

This design effectively prevents cavitation – irrespective of the flow rate, which can vary from 0 to 11 m<sup>3</sup> per second. The short slotted cylinder – 20% of its surface are slots – also filters suspended solids from the water which flows through the plant at a velocity of 14 metres per second. All seals are suitable for use with biodegradable oils. The customer was highly satisfied that VAG had been able to offer a practicable solution for this really special application.



Commissioning of the RIKO® Plunger Valves with venting devices