

Keeping a hydroelectric power plant ice-free

Hydroelectric power plant Oberilzmühle, Passau, Germany



Wasserkraftwerke Passau GmbH
<http://www.stadtwerke-passau.de>

Operation
1 hydroelectric power plant with
OLOID Type 400

Period
Test from January until March
2018

Success
Reliable ice-free keeping of the
dam shutter up to $-14\text{ }^{\circ}\text{C}$

The energy consumption is
relatively low compared to the
possible depth ventilation by
compressed air with only 0.25 kW

Plant description:

The regional energy provider Wasserkraftwerke Passau GmbH operates 5 run-of-river power plants. One of them is the run-of-river power plant in Oberilzmühle with a maximum water depth of 13 m.

The 4 dam shutters on the system are each 7 m long and 3 m high. Diffuser systems for ice-free keeping were installed on other plants, but an energy-efficient alternative was sought without costly installation with divers.

The dam shutters must be kept ice-free, such that no closed ice cover may form on the shutters even at very low temperatures, so that the shutter system is always ready for use.

OLOID-use and success:

In January 2018, an OLOID Type 400 was installed on floats in front of one of the 4 dam shutters for the test of keeping it ice-free and the development was monitored and documented by the operator.

In the test period, it was up to $-14\text{ }^{\circ}\text{C}$ outside temperature and the dam shutter with OLOID remained completely ice-free both at the dam shutter and in a semicircle behind the OLOID, so that the use of the dam shutter was guaranteed. The other 3 dam shutters showed significant ice formation in the same test period.

The OLOID Type 400 fulfilled the desired task with only 0.25 kW motor connection power due to the generated flow and the suction of the slightly warmer deep water layers. The installation was carried out by boat and could be easily realised without extensive diving.

More pictures from the test are shown on page 2.

Meteorological data:

The graph on the right shows the nightly low temperatures of the weather station Fürstenzell (near Passau) with up to -14 ° in the test period.

(Reference: www.wetteronline.ch)



Test development in pictures:



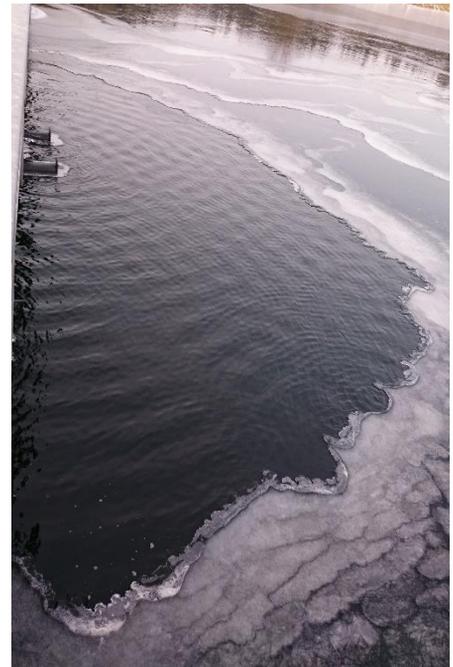
01/23/2018 OLOID Type 400 with flow direction to the dam shutter



02/15/2018 Dam shutter with OLOID ice-free



02/28/2018 Dam shutter without OLOID for comparison



02/27/2018 (-14 °C) Ice free also behind the OLOID



02/28/2018 All 4 dam shutters in the picture only **with** OLOID ice-free