

Experimental investigation of floating debris at fish guidance structures

Downstream fish passage through turbines or over spillways may increase fish mortality during migration periods. Therefore the implementation of protection systems stopping fish from entering turbine intakes has a high priority in regard to ecologically upgrading hydropower plants. For that reason VAW conducts research on louvers and angled bar racks, so-called 'fish guidance structures' (FGS), to adapt and advance them as to safe fish passage and a successful economical implementation.

Driftwood transported during floods may accumulate and block the FGS and its bypass system leading to an increase in backwater and excessive structural loading to the FGS. To mitigate this problem, systematic debris accumulation tests at the FGS with various configurations will be carried out in a 1.5 m wide, 1.2 m high and 30 m long laboratory flume (Fig.1). A hand-held flow meter (HFM) and Ultrasonic Distance Sensors will be used to measure flow velocities and water depths, respectively. Within the test program, the driftwood size, the discharge, and FGS configurations will be varied. The results of this thesis will contribute to design a hydraulically efficient, robust against driftwood loads and fish-friendly guidance structure.



Fig. 1: Fish guidance structure in a laboratory flume at VAW

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Notes:
Experimental work,
Communication in English,
Thesis can be written in German or English