

Master's <u>or</u> Project Thesis HS 2020



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Driftwood clogging at underflow sluice gates

Flood events are often accompanied by intense driftwood transport, which can significantly increase the damage potential. Recent investigations at VAW shed light on the clogging probability of driftwood at bridges and retention racks. However, the interaction and clogging probability at underflow structures remains largely unknown. Driftwood clogging at the bottom outlets of HPP Bremgarten-Zufikon during the flood in 2005 decreased the discharge capacity at these outlets, resulting in an increased backwater rise upstream. Model investigations indicated that the formation of vortex structures upstream of the sluice gate play a crucial role in the entrainment of driftwood transported near the free surface (Fig. 1).



Fig. 1: Driftwood at the 1:18 scale model of the bottom outlet at HPP Bremgarten-Zufikon. (VAW 4270).

Within this Master's thesis, the clogging probability at an underflow sluice gate will be investigated with systematic model tests. The aim of this study is to (i) identify the relevant processes leading to driftwood transport and clogging at sluice gates and (ii) determine the clogging probability based on hydraulic parameters and driftwood properties. Overall, the results will contribute to the improved understanding of driftwood clogging at underflow structures and thereby help to improve flood hazard mitigation.

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Project language: English or German
1 student for Master's thesis or up to 2
students for project works.