



Monitoring of sediment transport and deposition within a reservoir of a river run-off power plant

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The run-off river power station Bodendorf is the head storage of the upstream first series of power stations at the river Mur in Austria. The mean annual sedimentation rate for this reservoir is about 40.000 m³. To perform regular sediment flushings of the reservoir, a monitoring programme was initialized to optimise the flushing operation due to economical and ecological aspects of the reservoir. Because of the special situation of this hydro power plant, it is very important to improve the sediment transport capabilities in this reservoir. The effect on sediment transport in the downstream power stations depends on the operational conditions of the reservoir Bodendorf.

This monitoring programme provides documentation of the flushing, decision support for the operators for further flushings and finally gives the basic data for further measurements, e.g. numerical modelling of the sediment transport, optimizing hydraulic structures in the reservoir and model tests in the hydraulic laboratory.

The construction of groins and an initial channel should improve the sediment transport during flushing. Echo-soundings before and after flushing document the different bed elevations in the reservoir and the effect of the hydraulic structures on sediment transport. Suspended sediment measurements at different locations and bed load sampling give the basic data for a mass budget. Furthermore, water level measurements and discharge hydrographs provide the flushing performance in time. Grain size distributions of different samples provide basic data for obtaining the selective transport during the reservoir flushing.

The gained data are part of the documentation of the flushing and they serve as input data for the sediment management system for hydro power plants downstream

of Bodendorf. Based on the monitoring programme, the parameters such as discharge, increase and decrease of water level and operation of the weir, were varied for the new flushing operation. This monitoring programme is part of the EU Interreg IIIB Project ALPRESERV „Sustainable Sediment Management in alpine Reservoirs“ (www.alpreserv.org)