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Runner Development for the YBBS 2020 Rehabilitation Project at Ybbs – Persenbeug Power Plant in Austria

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Abstract

In order to refurbish and upgrade the VERBUND-hydropower plant Ybbs-Persenbeug, six large Kaplan turbines were subject to modernization. A metamodel-assisted evolutionary algorithm (MAEA) coupled with an inviscid flow solver (3D Euler) was applied to design-optimization and full 3D-Navier-Stokes simulations (CFD) were erformed. Finally, model test results that confirmed the performance of the new runners are presented including comparisons between experimental data and CFD-results.