Model-Based Controls Development and Implementation for a Hydroelectric Power System

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This paper describes the model-based control system development for a hydroelectric power plant to ensure water level control and mitigate spillage risk. The modeling of both the flume system and prototype controls is described. The integrated model is run over a suite of tests to verify the calibration of the control strategy. Results from the plant commissioning are compared with the virtual tests. The model proved capable of accurate predictions of the waterway dynamics, and the model-based calibration was successfully verified on the actual plant.