Project reference

Grid reserve capacity determination in a system dominated by hydro generation

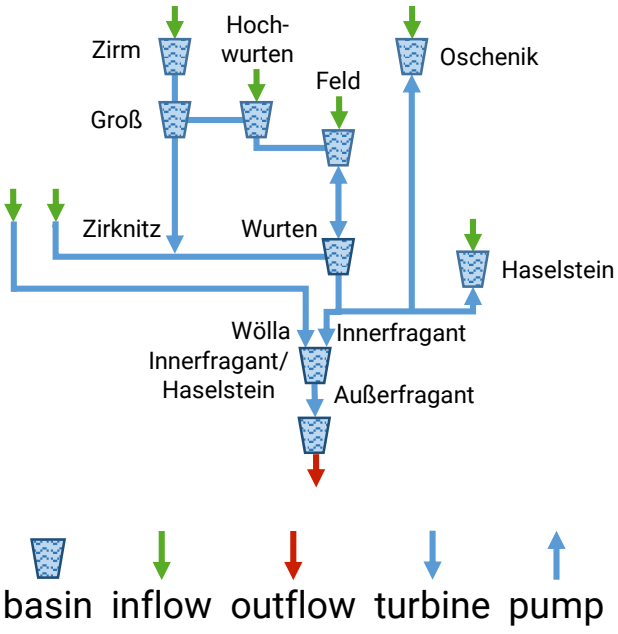
WHAT IS THE STARTING POINT?

Due to rising renewable energy sources the redispatch is used more often and the available redispatch potential shrinks. In order to fulfill a secure transmission grid operation a reserved redispatch capacity can be provided.

HOW WAS THE PROCEDURE?

The grid usage was forecasted for upcoming years via a market model. It took hydro networks and weather-dependent inflows through snowmelt or rain into account. The simulation covered hydro flows and basin filling levels for 8760 consecutive hours for a realistic unit commitment. Thereby, redispatch potentials of thermal power plants can be derived. Such forecasts were used in subsequent power-flow and redispatch calculations. The difference between necessary and possible redispatch was the grid reserve estimator.

EXAMPLARY HYDRO NETWORK



WHAT WERE THE RESULTS?

The market model provides a close-to-reality hydro power plant dispatch and enables accurate modeling of the remaining thermal power plants. Thereby, critical grid situations can be identified and the minimum grid-driven redispatch reserve determined.