Germany pumped hydro storage

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In this concept, the water collected via the Schwarzenbach Dam reaches the newly built cavern power plant, where the new Schwarzenbach power plant (with one pump turbine) and the new Murg plant as a run-of-river power plant (with two turbines) are located. Due to its new position in the mountain, the water flows almost vertically onto the turbine, increasing the output currently generated by 10 megawatts

The new cavern storage facility will increase the power plant"s storage volume by 200,000 cubic meters - the existing equalizing reservoir has a useful volume of 204,000 cubic meters. The new lower level - consisting of a cavern storage facility and an equalizing reservoir - will thus have enough storage capacity for seven hours" continuous turbine operation. For economic reasons and due to its status as a historic place, however, the venerable power plant building for the Murg and Schwarzenbach works cannot be integrated into the new concept.

Forbach hydropower plant is truly exceptional in many respects. In addition to its traditional history, it can be described as a run-of-river, storage and pumped storage power plant. This is due to the location of the Rudolf Fettweis plant (shortened in German to RFW), which is characterized by considerable differences in elevation, an optimal water supply and topographically ideal conditions for reservoirs.

At the heart of the RFW is the Schwarzenbach Dam, a storage reservoir popular with locals and tourists. The water flows along tunnels and a pressure pipe to reach the RFW, located 357 meters below, where it is used to generate electricity. The Schwarzenbach Dam"s storage reservoir has previously been completely emptied three times for repair and maintenance work: in 1935, 1952 and most recently in 1997. It takes two and a half months to completely empty the reservoir from the time the bottom outlet is opened.

Many pumped storage power plants are equipped with so-called pump turbines nowadays. This combination of turbine and pump is a kind of turbo machine through which water can flow in both directions. It works as a pump or turbine, depending on the direction of rotation.

If there is more electrical energy in the power grid than is needed by consumers (usually at night), the excess electricity is used to pump water through pipes into the higher-level storage reservoir.

The generator is driven by the turbines. If there is too much energy in the grid - during a period of strong wind, for example, or due to high feed-ins from photovoltaic systems - the generators "transform" into electric motors and drive the pumps. This enables the water from the lower reservoir to return to the upper storage reservoir..

The ability of pumped storage power plants to both absorb and release energy makes them highly valuable because they constantly balance fluctuating electricity production and consumption and keep the grid stable.

... construction teams working "on behalf of the state" embarked on the project"s first expansion stage - consisting of the Murg high-pressure hydropower plant and the Murg low-pressure plant. The low-pressure plant started operations in 1917, followed by the high-pressure plant in 1918.

... 60 hectares of forest were cleared. Three houses were demolished, the people were relocated and a dedicated railroad line was laid to the local stone quarry at Schneiderskopf for transporting materials.

Since 2010, conversion plans have been underway to create a modern pumped storage power plant. At the beginning of 2018 - in the power plant"s anniversary year - the approval application was submitted.