

Watertight AUMA actuators for underwater hydro turbine control

Sauerbrunn hydropower plant, Großsulz, Austria



ENERGY

APPLICATION

Hydropower

AUMA SOLUTION

> AUMA SARV-UW

CUSTOMER BENEFITS

> Underwater application

AUMA actuators for continuous underwater use possess a sophisticated sealing system that prevents any ingress of water.

Actuator manufacturer AUMA supplies electric actuation solutions to adjust the guide vanes of submersible hydro turbines. Such a solution is in operation at the Sauerbrunn hydropower plant near Graz, Austria, in combination with a fully-submersible RHT turbine from Natel Energy.

California-based turbine manufacturer Natel Energy required an actuator that could operate continuously underwater, provide accurate positioning to optimally control the water supply to the turbine, and send feedback signals to the higher-level PLC. Previously, their only option was a hydraulic actuator.

AUMA suggested an electric actuation solution that provides better control and feedback at a much lower total cost. The AUMA SARV-UW actuator for continuous underwater use proved to be ideal for this application. It provides high positioning accuracy ($\leq 0.2\%$) with continuous feedback to the higher-level PLC. The actuator is controlled by the PLC via Profibus. The ability to mount the actuator controls separately is an extra bonus that allows the end user to operate the actuator locally should the PLC fail. The low power consumption of the SARV also allows the end user to utilise an uninterruptible power supply (UPS) as a backup in case the main power is lost.

SOPHISTICATED SEALING SYSTEM

AUMA actuators for continuous underwater use possess a sophisticated sealing system combined with excellent corrosion protection. Double-sealed cable glands at the electrical connection, inner seals at all housing covers, and a solid shaft made of stainless steel ensure safety by preventing any ingress of water.

Project responsibility:
AUMA USA

www.auma.com



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The SARV-UW is equipped with ACV 01.2 intelligent actuator controls. In addition, AUMA supplied a GS part-turn gearbox and a custom lever arm assembly rated for continuous immersion that is used to adjust the guide vanes. The local AUMA team in California also provided training, commissioning, and testing support to Natel Energy.

The AUMA solution has been successfully in operation in Sauerbrunn since autumn 2022. The small hydropower plant was integrated into the Muehlgang, an existing bypass channel to the River Mur. With the 15 kW RHT turbine supplied by Natel Energy, the operator, Energie Steiermark, aims to generate environmentally friendly electricity for the municipality of Großsulf. Natel Energy is a specialist in innovative, fish-safe, fully submersible hydro turbines.

A fully submersible AUMA SARV-UW actuator with GS part-turn gearbox and custom lever arm assembly ensures optimum guide vane adjustment for an RHT turbine supplied by Natel Energy to Sauerbrunn hydropower plant, Graz, Austria



Well-camouflaged hydropower plant: During normal operation, the actuator and turbine are fully submerged. This photo shows the AUMA ACV 01.2 actuator controls (rear left) mounted above the shaft and separately from the actuator.