HYDROPOWER ON

Switzerland – ANDRITZ has received an order for the rehabilitation of four Kaplan turbines at the Ryburg-Schwörstadt hydropower plant on the Rhine River. Located about 21 km upstream of the city of Basel between the hydropower plants of Bad Säckingen and Rheinfelden, at 120 MW Ryburg-Schwörstadt is the most powerful hydropower plant on the "Hochrhein". When first commissioned in 1930 it was also one of the first hydropower plants on the Rhine to have all the features of a modern run-of-river power plant. Two of the original units were supplied by Escher Wyss – now ANDRITZ. Thus, ANDRITZ is not only the original OEM supplier but has also now received a contract from Kraftwerk Ryburg Schwörstadt AG for the rehabilitation of all four vertical, double-regulated Kaplan turbines and auxiliaries at the plant. The units will be renovated (one per year) between 2023 and 2027.

This rehabilitation project will increase annual energy production, as well as improve environmental performance through technical optimization and oil-free bearing systems on the wicket gates and oil-free hubs in the new runners.

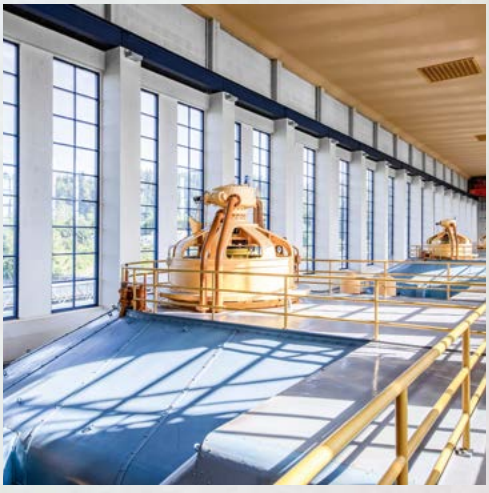
The ANDRITZ scope of supply and services for the hydro-mechanical overhaul includes the hydraulic turbine governors and comprises design, engineering, manufacture of new parts, factory overhaul, transport, erection, testing, and commissioning. Also worth highlighting are the homologous model testing and the delivery of four new Kaplan runners with oil-free hubs. These are the first oil-free runner hubs ever installed in Switzerland. As part of the refurbishment, the guide vane

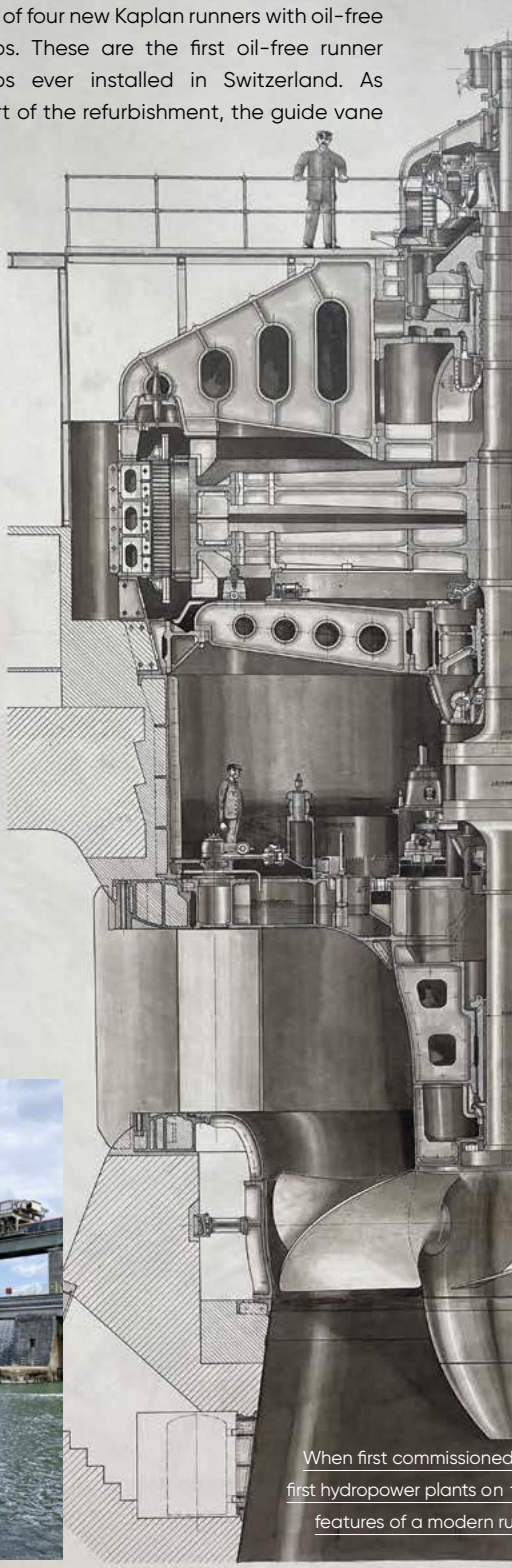
TO KNOW:

The 'Hochrhein' between Lake Constance and Basel has a drop of 150 m over its length of around 150 km. A total of eleven barrages take advantage of this favorable gradient to produce environmentally friendly hydroelectricity.

The Ryburg-Schwörstadt power plant is located on the Rhine between the two power plants in Säckingen and Rheinfelden and is the most powerful hydro station on the Hochrhein due to its sitting on the largest gradient.

Kraftwerk Ryburg Schwörstadt AG





When first commissioned
first hydropower plants on
features of a modern ru

N THE HOCHRHEIN

and air intake valve are to be converted to maintenance-free bearings and the couplings, runner servo motor, and shaft seals are all being rebuilt. In addition, on-site armoring of the draft tube cone and corrosion protection on all turbines will be renewed on installed components such as stay vanes, upper and lower support stay vane ring, and draft tube cone.

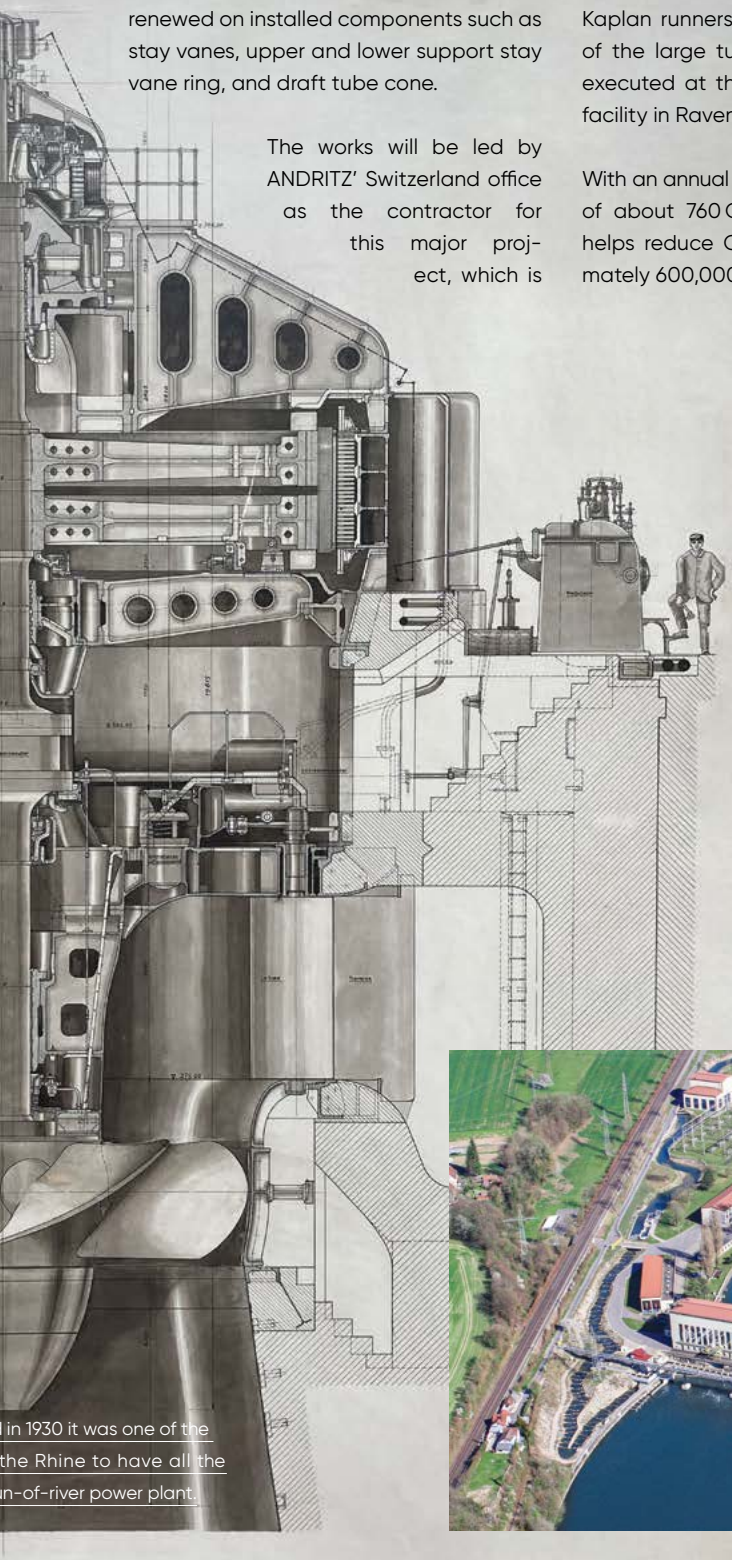
The works will be led by ANDRITZ' Switzerland office as the contractor for this major project, which is responsible for overall project management, logistics and transport, engineering, erection, and commissioning. Model testing and runner design will be carried out at the ANDRITZ location in Tampere, Finland, while the manufacture of the new Kaplan runners and the factory overhaul of the large turbine components will be executed at the ANDRITZ manufacturing facility in Ravensburg, Germany.

With an annual average energy production of about 760 GWh, Ryburg-Schwörstadt helps reduce CO_2 emissions by approximately 600,000 t per year.

We are pleased to be part of this rehabilitation project. Today, about 90% of the total installed turbines in Switzerland were originally installed or refurbished by ANDRITZ or its predecessor companies. ANDRITZ is committed to its customers serving the local Swiss hydropower market across the entire ANDRITZ product and service portfolio.

AUTHOR

Christoph Bütikofer
hydronews@andritz.com



l in 1930 it was one of the
the Rhine to have all the
n-of-river power plant.

TECHNICAL DETAILS

Ryburg-Schwörstadt

Total output: 120 MW
Scope: 4 × 30 MW vertical, double-regulated Kaplan
Head: 7.6–12 m
Voltage: 11 kV
Speed: 75 rpm
Runner diameter: 7,000 mm
Av. annual energy production: 760 GWh