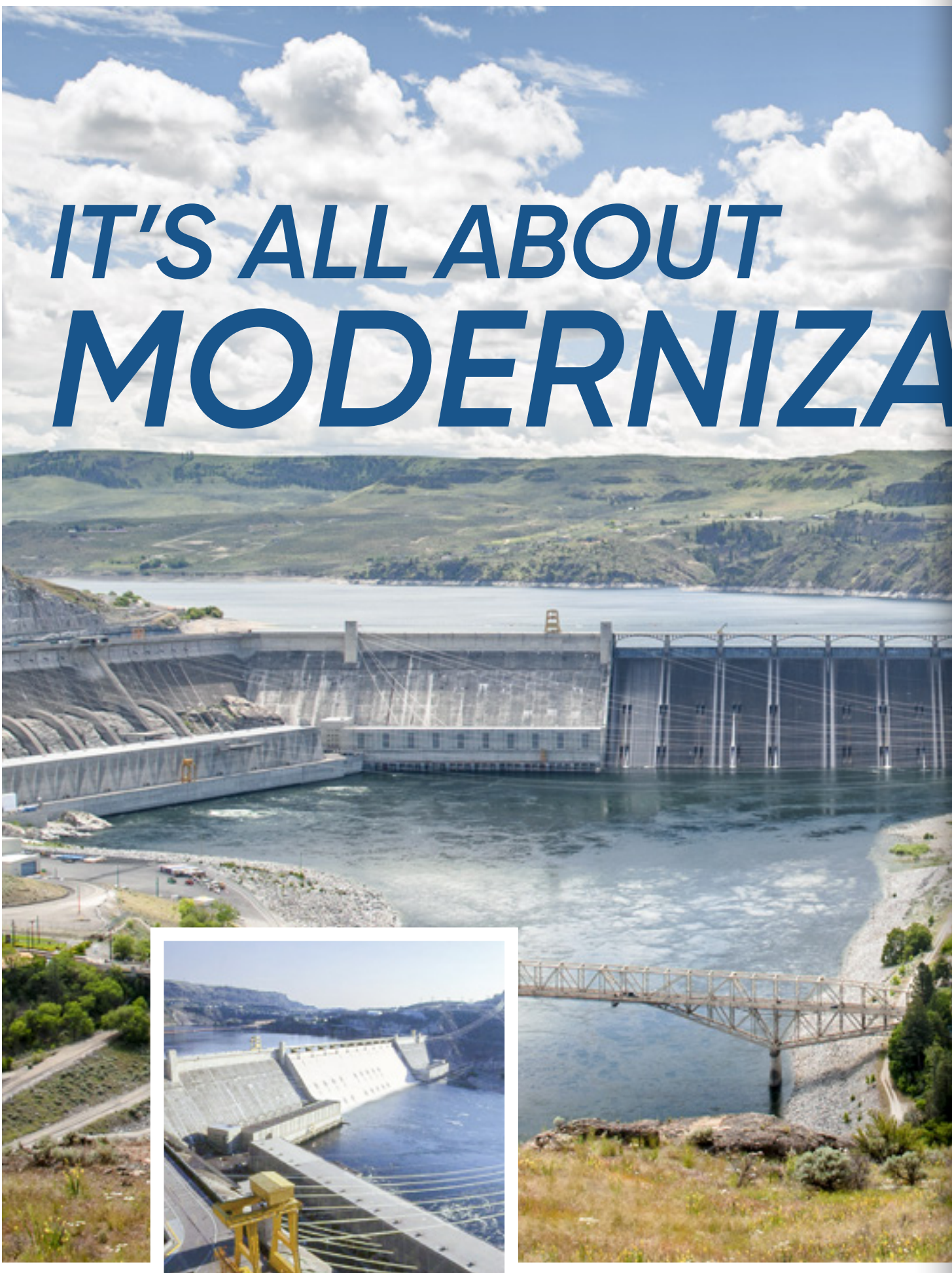
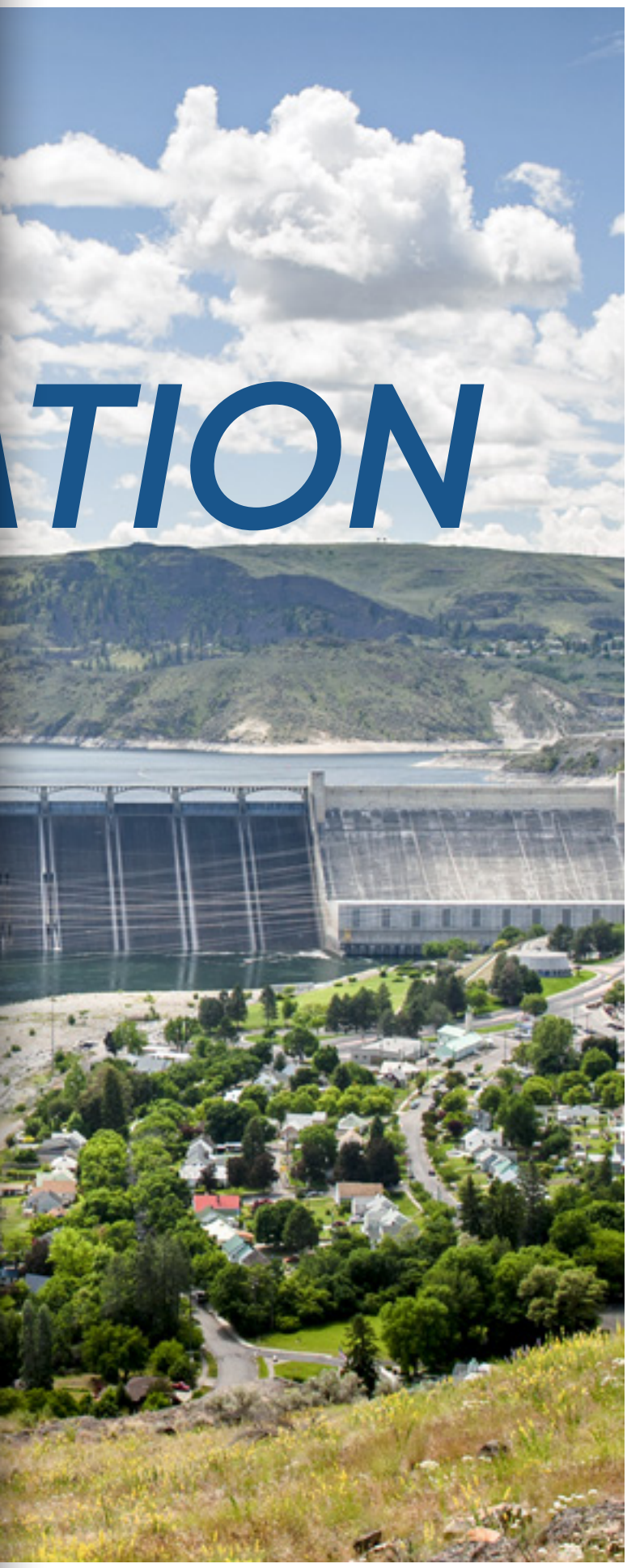
IT'S ALL ABOUT MODERNIZA





USA – On April 12, 2019, the United States Bureau of Reclamation awarded the Grand Coulee John W. Keys III major automation modernization contract to ANDRITZ. This award marks another milestone between the Bureau of Reclamation and ANDRITZ. We have been continuously working in various powerhouses at the Grand Coulee Dam for over 20 years with turbine and generator rehabilitations with great success.

Located on the Columbia River in Washington, and as the centerpiece of the Columbia Basin Project, Grand Coulee is the largest hydropower facility in the United States with a total of 36 units, including 24 conventional generating units, six reversible pump turbines and six pumps, in four powerhouses and a total capacity of 6,809 MW. The facility also supplies water for the irrigation to 2,700 km² (270,000 hectares) of farmland.

"John W. Keys III pump-generating plant is the largest automation order for ANDRITZ Hydro."

Under this new contract, ANDRITZ will modernize the entire automation systems at the John W. Keys III pump-generating plant with new digital excitation systems, protection

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TECHNICAL DETAILS

Grand Coulee:

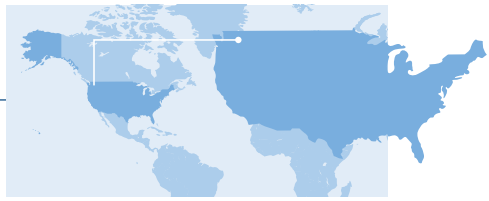
Total output: 6,809 MW

Output scope: 623 MW

Head: 90 m

Speed: 200 rpm

Voltage: 13.8 kV



relays, unit controls and turbine governor systems for all six pumping units and the six pump-generating units. The existing units were installed in the early 1950s (pumping units) and the late 1970s (pump-generating units) respectively with electro-mechanical or analogue controls. Spare parts for these old systems are no longer available and the maintenance is becoming more and more challenging.

The new systems will enable completely automated control and monitoring processes, taking advantage of the most advanced computerized data acquisition and control technologies. The contract also comprises the complete removal of the existing systems including the cable and cable tray/raceways, as well as the installation, commissioning and testing of the new systems. The first outage will start in November 2020 and the last two units will be completed in March 2026.

This order is the largest automation order for ANDRITZ Hydro in history and represents a significant award for ANDRITZ in the US market. It is the culmination of a great deal of work and cooperation between many areas within the company.

TO KNOW:

The Columbia Basin Project serves about 671,000 acres in east central Washington. The main facilities of the project include Grand Coulee Dam, Franklin D. Roosevelt Lake, three power plants, four switchyards, and a pump-generating plant. Primary irrigation facilities include the Feeder Canal, Banks Lake, the Main, West, East High, and East Low canals, O'Sullivan Dam, Potholes Reservoir, and Potholes Canal. There are over 300 miles of main canals, about 2,000 miles of laterals, and 3,500 miles of drains and wasteways on the project.

In addition to supplying water for irrigation, producing electricity, controlling floods, providing recreation, and regulating streamflow, the Columbia Basin Project also provides water for cities, industries, navigation, and endangered species.

Bureau of Reclamation

The scope for the upgrading contract comprises the complete dismantling of the turbine and the generator units, inspection of all components and refurbishment and reassembly of the units on-site.

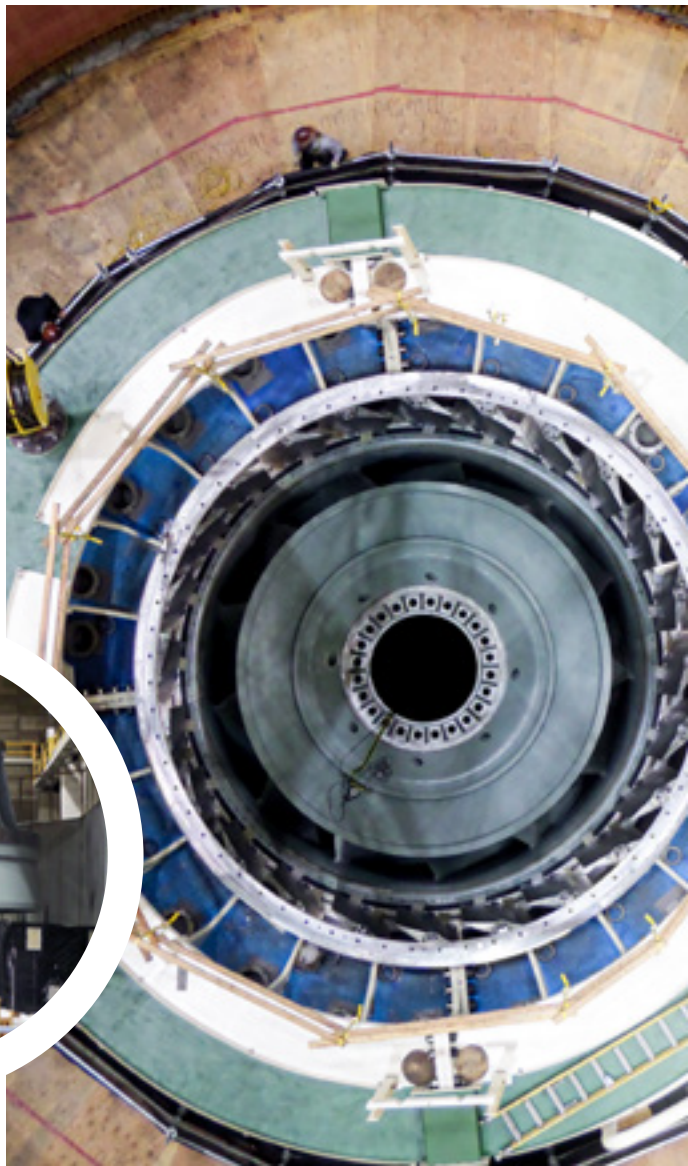
IMPORTANT TURBINE UPGRADE ORDER AT THIRD POWER PLANT

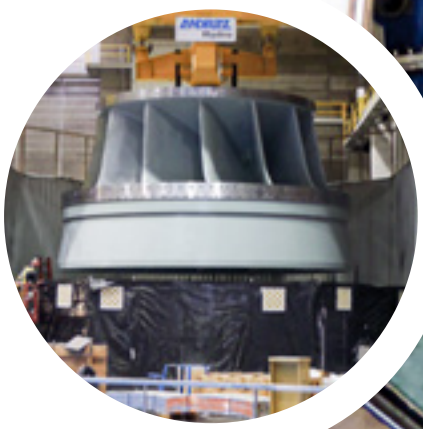
The US Bureau of Reclamation awarded a construction contract for the overhaul of three units, G22, G23, and G24 at the Grand Coulee third power plant to ANDRITZ Hydro in USA.

The scale of all of the components of the overhaul is enormous. The G22, G23 and G24 rotors are 61'6" in diameter and weigh 1,480 tons. The Francis runners are 32'6" in diameter, 18'4" in height and weigh 430 tons. The output of each unit is 805 MW.

We have completed the rehabilitation of two units (PAC) ahead of schedule, achieving early completion bonuses, and are in the process of disassembling the last unit for its rehabilitation.

With 6,809 MW and 36 units in four powerhouses, Grand Coulee is the largest hydropower complex in the United States.





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