John Day Lock and Dam

by Jack Heaton
jack.heaton@andritz.com

View of the dam

USA – In June 2016, the US Army Corps of Engineers, Portland District, awarded a contract to ANDRITZ HYDRO for the upgrade of the Kaplan turbine hubs of the John Day Lock and Dam hydropower station, in the northwest of the United States of America.

With a total installed capacity of 2,160 MW, HPP John Day Lock and Dam is the fifth largest hydropower facility in the United States. It is fed by Lake Umatilla, a reservoir running 123 km up to the foot of HPP McNary Dam.

Primary construction works of the run-of-river power plant began in 1958 and were completed in 1971, at the time making it the newest dam on the lower Columbia River with the highest lift (34 m) among all locks in the United States. The powerhouse is equipped with a total of 16 units, each with an output of 135 MW. All turbines and generators were originally provided by ANDRITZ HYDRO's predecessor companies.

After a half century of operation, some of the turbines have passed or are nearing the end of their design lives, especially the hub internals. This contract includes work on four units and a fifth unit as an option. ANDRITZ HYDRO will disassemble the entire turbine-generator unit, repair the Kaplan runner on-site, replace as-needed wearing components, install new runner hub internals, refurbish as-required mechanical components off-site, reassemble the unit, and perform testing and commissioning after the installation. Following the repair, all the runners under the contract will function as double-regulated Kaplan runners.

Prior to this award, ANDRITZ HYDRO successfully completed the Hills Creek turbine replacement and unit rehabilitation project for the same customer. Should the fifth unit option be exercised, the entire project is expected to be completed by 2021.

TECHNICAL DATA	
Output	16 × 135 MW
Voltage	13.8 kV
Head	30 m
Speed	90 rpm
Runner Diameter	7,925 mm
Av. annual production	8,418 GWh