

Hills Creek Powerhouse Turbine and Unit Rehabilitation

This project will replace the runners and windings for the two 17.5 MW units at the Hills Creek powerhouse. Hills Creek is a Willamette Valley Project that was constructed primarily to provide flood control. It was placed in service in 1962, and continues to operate with the two original units.

The turbines are vertical-shaft Francis-type manufactured by Baldwin Lima Hamilton Corporation. The generators were manufactured by Brown Boveri Corporation and are each capable of an output of 17.25 MW, with a total plant capacity of 34.5 MW.

The turbines are operated over a fairly extreme operating range. The pool is maintained at its minimum level (181.5 ft head) during the winter and its maximum level during the summer (320 ft. head). Environmental constraints, including maintaining temperature and oxygen content suitable for fish, require the project to discharge a minimum of 300 cfs throughout its entire operating head range.

The Francis runners at Hills Creek have suffered excessive cavitation damage, which over the life of the units has required continuous scheduled weld repair. Much of the more severe cavitation damage is almost inaccessible or is inaccessible. Full weld repairs would require a complete disassembly and reassembly of the units. The Corps has determined it is more cost effective to replace the runners with new. The runners each have marginal condition rating. The insulation in the generator windings has exceeded its design life of 35 years. Although the windings currently have a condition rating of fair to good, Corps' studies indicate it is cost effective to replace the windings now with the runner work.