

Hydropower Turbines

Walla Walla District uses three types of hydropower turbines to make electricity: Francis, Pelton and Kaplan.

Hydropower Turbines make electricity from falling water pushing on their blades or buckets. They are an old technology, with the first hydropower turbine dating back to the Greeks (~10 BC).

Most of the turbines used in the Walla Walla District were invented in the late 1800s and early 1900s

Francis



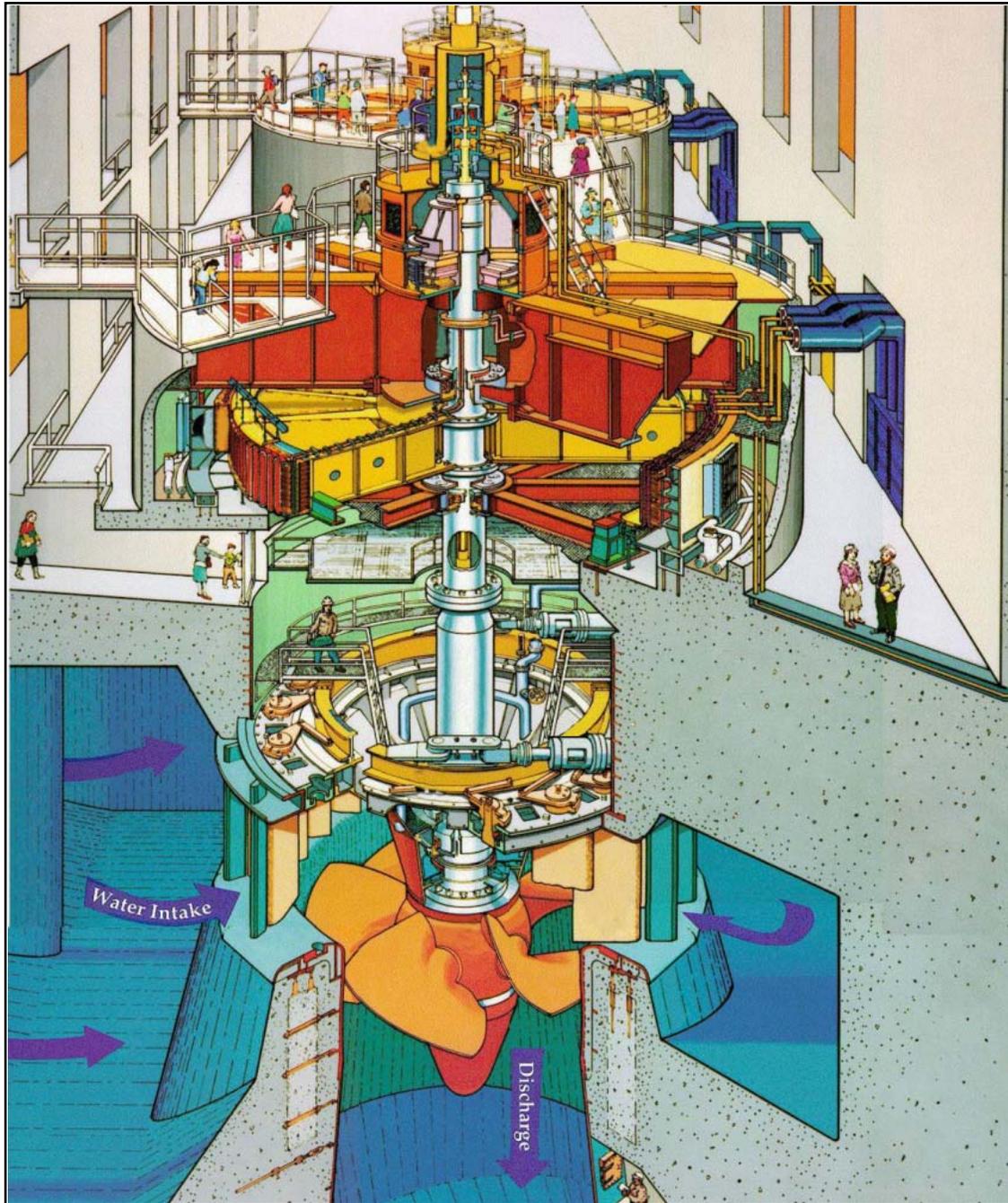
Used at dams where the water can fall a long distance (called head). At Dworshak Dam, on the Clearwater River near Ahsahka, Idaho, the water can fall about 632 feet. Francis turbines have few mechanical parts and are about 90% efficient.

Pelton



McNary Dam uses two 5-megawatt Pelton turbines to produce electricity that operates the powerhouse and to electrically start the main hydropower turbines. A jet of water from a fire-hose-like nozzle turns the Pelton turbine. They are about 85% to 90% efficient.

Kaplan



Kaplan Turbines are the main workhorse of the District. They are about 90% to 95% efficient and have adjustable blades allow operators to tilt them in response to changing water conditions. While they are a little more complex than other turbines, they turn at only 87.5 rpm and are designed to have a long service life. The Kaplan turbines at McNary are 50 years old.