

John Butters

Power Station

King Catchment

John Butters Power Station is located on the left bank of the King River above its junction with the Queen River on Tasmania's west coast. The power station was commissioned in 1992, and houses a machine nearly identical to the Gordon No. 3 machine built a few years before, featuring a single Fuji Francis turbine coupled to a Fuji generator.

Lake Burbury is the principal storage for the King River Scheme, storing water from the King River and its tributaries at the Crotty and Darwin dams. Water flow to the power station is via a long headrace tunnel from the Crotty Dam.

Both Crotty and Darwin dams are rock-filled concrete face structures. Water is supplied to the station via a 6.5 km headrace tunnel and a 500 metre steel lined power tunnel from the Crotty Dam.

Water flow through a half embedded spiral casing to the Fuji 144 MW Francis turbine, is controlled by a spherical rotary inlet valve in the station and a vertical lift, gravity closed intake gate designed to close against the rated flow through the station. A short shaft couples the runner to the three bearing umbrella-type Fuji 160 MVA generator.

A draft tube bulkhead gate, handled by an electrically operated monorail hoist, is located outside the station. A manually operated riparian valve is used to control water flow downstream when the power station is not operating.

The station output is fed to TasNetworks' transmission grid via a 13.8 kV/220 kV generator transformer and 220 kV outdoor switchgear.

Fast facts

Scheme:	King
Year commissioned:	1992
Power station structure:	<ul style="list-style-type: none"> • 43 m long x 20 m wide • Assembly bay and service block next to a deep set slip formed circular machine bay
Static head:	199 m
Generating set:	Vertical shaft generating set: <ul style="list-style-type: none"> • 143 MW Francis turbine • Directly coupled to a 3 phase, 50 Hz, 160 MVA synchronous generator • Provisions for synchronous compensator operation
Turbine manufacturer:	Fuji
Generator manufacturer:	Fuji
Rated head:	184 m
Rated output:	160 MVA
Rated discharge:	86 m ³ /s
Power factor:	0.9
Rated speed:	273 rev/min
Rated voltage:	13.8 kV

