

PHh: Planta Hidroeléctrica Monowai - 1925

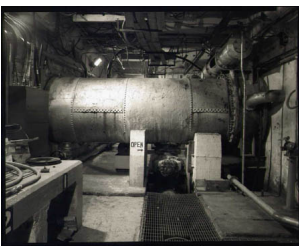
Escrito por Administrator

Lunes 14 de Enero de 2013 00:00



La Planta Hidroeléctrica Monowai fue inaugurada en 1925, fue la primera central hidroeléctrica de Southland (la región más meridional de Nueva Zelanda, situada en la Isla Sur) que produce cerca de 7.6 megawatts. Esta considerada entre las plantas más antiguas de Nueva Zelanda. Esta planta fue modernizada recientemente, aunque los edificios originales continúan en operación.

La hidroeléctrica inició sus operaciones comerciales el 1 de mayo de 1925 suministrando a la ciudad de Invercargill con energía hidroeléctrica, energía que lentamente fue sustituida por una termoeléctrica basada en carbón, la que actualmente es un almacén estacionario. El lago Monowai fue elevado en 2 metros para mejorar el flujo hacia la planta hidroeléctrica. La foto que es de "Pioneer Generation", nos muestra los generadores en el momento de la inauguración.



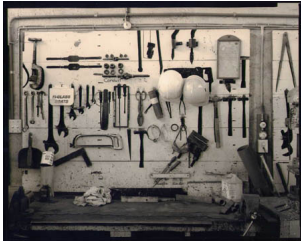
La planta es propiedad de "Pioneer Generation", que actualmente tiene un permiso de operación por 30 años más. Antes de su reacondicionamiento la hidroeléctrica producía 6.3

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MW y entre 35 y 40 GWh de energía eléctrica por año. Su potencia instalada actualmente se ha incrementado a 7.6 MW.



La construcción con un préstamo de 750,000 libras esterlinas a una tasa de interés de 6%, habiéndose comprado la mayor parte del equipo en Londres durante la visita personal del Presidente de "Southland Electric Power District. El equipo seleccionado fueron turbinas Francis Bowing (basadas en el diseño Sueco) y generadores de la compañía English Electric Company. Los generadores, originalmente excitados por excitadores operados por turbinas hidroeléctricas separadas, fueron dos con un factor de potencia de 0.85 y con una potencia nominal, cada uno, de 2 MW. La planta fue mas tarde incrementada a tres sistemas de generación.



Durante su vida útil se han hecho muchos mantenimientos preventivos, pero sólo en los años 2.000 las turbinas y generadores originales fueron reemplazados.

**Ficha Básica de la Planta hidroeléctrica Monowai (tomado de [IPE NZ](#)
- Engineers New Zealand)
Category**

Engineering Plant (eg railway, locomotive, car, plane)

Description

The Monowai hydro-electric scheme was first identified in 1914 when the Southland League investigated local natural resources. Starting in 1894 a number of private and local council coal powered power stations had met demand, but by the time that the Southland Electric Power Board was formed in 1918, and with increasing local reticulation, a more substantial supply was needed. Accordingly, work was started on constructing Monowai in 1921, and the station opened in May 1925.

A diversion dam on the outlet of Lake Monowai and a lake control dam on the Monowai River leads water into a ponding area, and thence via a 865 metre (m) long canal leading to a forebay from which three steel pipelines carry the water down to the powerhouse.

The plant initially consisted of two British built, double runner Francis type turbines using belt driven oil-pressure type governors. These turbines were based on a Swedish design still used today in some Swedish power stations. Each unit drove a 2 megawatt (MW) English Electric generator. Separate hydro driven exciters were used. In 1927 a third unit was installed with the same turbine, but using a British Thompson-Houston generator. The plant produced 35-40

gigawatt hours of electricity per year.

An unusual feature was that the powerhouse foundation was built as a tank so that the Waiau River into which the station discharges could rise over one metre above floor level before generation would have to stop

Over the years there were a number of major overhauls, including replacement of governing and excitation equipment, replacement of the original lignum vitae turbine bearings, and of the turbine runners.

Various plant upgrades were considered over the years. This was to reduce the increasing maintenance needed on very old equipment, and to better accommodate the characteristics of the river flow. However, as it was for the first installation, the access road and bridge weight and size limitations constrained choices of plant. Footage of the power station circa 1990 is available on [YouTube](http://www.youtube.com) . (www.youtube.com)

In 2004 it was decided to replace the units, and three 2.6MW vertical shaft turbine-generators using Francis turbines were installed one in each year 2005, 2006, and 2007, by Invercargill firm Alltec Engineering Limited. These units have Swedish TURAB turbines and Spanish Alconza generators. Also the old riveted pipelines were replaced by 1.6 m diameter welded steel pipelines.

Nevertheless, the whole scheme remains as a working testament to the foresight of the local people and the skill or the engineers who conceived and built it.

Of the replaced units, the second generator and the third turbine and generator were acquired by Clearwater Hydro of Tauranga, and one unit has since been put into service at a small hydro station near Waitomo in the Waikato. A further proof of both good design and manufacture and of operation and maintenance of these old generating units.

The images below show the station in its original state and during the progressive upgrade.

Attachments

No Attachments

Location

Monowai is located approximately 50 kilometers from Tuatapere. The town and power station are positioned along Turbine Drive, which can be reached from Blackmount-Redcliff Road via Lake Monowau Road.

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Region/s

Fiordland

Access Info

This is a working power station and is only accessible by the public by appointment.

Nature of Engineering

Electrical Power Generation and Distribution