

ABB helps Te Papa ensure safe power supply

The national museum is utilising ABB's Tmax T Molded Case Circuit-Breakers to ensure reliable power and protection.

In 2019, Te Papa, New Zealand's national museum located in Wellington, collaborated with Switchboard Solutions Limited, a Wellington NZ based electrical switchboard manufacturer, and BlackYARD Engineering, a NZ based specialist Electrical Consultancy, to safeguard its electricity supply by utilising ABB's expertise and technologically advanced Molded Case Circuit-Breakers (MCCBs).

Safety is paramount at the museum, which opened in 1998 and attracts more than 1.5 million visitors each year. Therefore, it is essential that power at the museum is distributed effectively, whilst also monitoring for and preventing any potential faults or overloads.



Photographer Michael Hall ©Te Papa.



Upon a BlackYARD Engineering maintenance review of the main switchboard, which distributes and supplies power to the whole museum, it was decided that the museum would benefit from an upgrade of circuit protection devices and energy metering on individual sub-circuits. The existing Main Switchboard sub-circuits were protected with fuse switches, which even though they still served a basic function, were difficult to reset once a fault had occurred, and spare parts for the fuse switches had become difficult to source. The museum decided to install circuit-breakers as they can simply be reset after they have tripped, making the process quicker, easier and safer. Furthermore, circuit-breakers on sensing a fault, disconnect a circuit in milliseconds from the power supply to avoid damage to property and people, as well as, ensuring smooth operations from the system.

Te Papa engaged BlackYARD Engineering for the design, documentation and tender process. During the tender phase, Switchboard Solutions and ABB were able to provide a cost saving solution to replace the 54 fuse switches in the main switchboard by utilising ABB's Tmax T MCCBs. Incorporating ABB's Tmax T5 and T6 MCCBs that range from 100A – 800A offer early fault detection and are easy to set up, whilst providing the best performance to size ratio on the market. Both the Tmax T5 and T6 circuit breakers have the same depth, making them easier to use in switchboards. In addition, they also have a complete, standardised and unified range of accessories, simplifying selection and making them more flexible.

ABB energy metering trip units were utilised for this project, which provide energy metering information on power circuits within the museum. These can be used for effective data analysis, an important parameter for a building as large as Te Papa.

ABB MCCBs supply the data to the building management system (BMS) and a human-machine interface (HMI) touch screen, designed by Switchboard Solutions, to display the energy metering results for each circuit breaker in the main switchboard. The screen ensures that the staff in the switchboard room at the museum can access real-time information on power and energy usage in an easy and safer manner.

Due to the need for power continuity at Te Papa, the project was completed over the course of more than two years. The circuit-breakers were installed at the museum in phases and several checks were done in terms of settings and cables. These



troubleshooting processes and checks ensure maximum safety when the circuit breakers are operated.

The opening of the museum's predecessor, the Colonial Museum dates to 1865. Over the years, the museum adopted a new vision and fresh goals, and was officially opened more than two decades ago. The museum represents New Zealand's culturally diverse society through several exhibitions and has attracted international attention.

Utilising ABB's high-performing products and technology, Te Papa can ensure that power supply is continuous and reliable, while also gathering cost effective energy usage data.

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