



Victoria University Wellington – Rankine Brown/Hub Building

B-Tune – Continual Building Tuning

The customer and the challenge

Victoria University of Wellington's proactive energy management team. Victoria University is targeting a reduction in campus wide building energy consumption of 600,000kWh over 3 years, starting from January 2016.

The journey

To achieve the target, Victoria engaged Beca to undertake a building tuning exercise on the Rankine Brown/HUB buildings. Building tuning targets improved operational energy efficiency. Typical reasons why building operations can be inefficient are because the building controls were originally not set up to optimise energy efficiency and/or controls are subsequently modified leading to inefficient operation. The HUB building was a new build, while Rankine Brown was partly retrofitted to add the connection between the two buildings. Construction on the Rankine Brown/HUB buildings was completed in 2013.

The solution

B-Tune is an automated continual building tuning service that continually assesses a building's operation and Building Management System settings, to determine ways of optimising them to be more energy efficient, while maintaining or improving user comfort. The benefits of B-Tune include lower energy overhead costs, improved energy efficiency, better quality internal environment and greater user satisfaction.

“Victoria aims to inspire leaders for a sustainable future. It has been great to work with the Victoria graduates in Beca, to deliver a project that demonstrates the improvements possible through smarter energy management.”

Andrew Wilks – Sustainability Manager, Victoria University of Wellington



The implementation

During the initial review, Beca identified measures to reduce energy consumption by approximately 20% annually. A collaborative “round table” workshop was used to agree on a set of energy saving measures to be implemented. Almost all measures were implemented and the B-Tune continuous monitoring system was put in place. The on-going monitoring assessed the building operations, energy performance and energy reductions.

The results

In the first year of operating, the building tuning reduced:

- Energy consumption by 697,700kWh. This surpasses the entire campus target of 600,000kWh in just one project
- Energy costs by \$38k
- GHG emissions by 147 tonnes
- Reduced EnPI by 41 kWh/m² per year (from 155 to 114 kWh/m² per year)
- After tuning the EnPI was 114kWh/m² per year.

Since the first year of operation, Beca’s in-house B-Tune (continuous monitoring and diagnostics online reporting) platform was used to continually monitor energy performance and detect inefficient operation. B-Tune has helped maintain and improve energy performance further. In 2018, the energy outcomes were:

- A further 130,000kWh or 8kWh/m² per year reduction in energy consumption compared to the first 12 months
- 30% reduction in whole building energy consumption compared to 2015
- \$40,000/year and 158 T CO₂-e/year reduction compared to 2015
- The continual B-Tune monitoring has also identified a number of other measures which may result in further energy reductions and improved thermal comfort.

The total project costs have been \$51k (assessment, implementation and continual B-Tune for 2.5yrs), supported by a grant from EECA business. With an average energy saving of \$38k per year, the project had a payback of 1.3 years.

1,549,104
kWh

Annual energy
cost savings

\$58k

Project cost

15

Months payback

“Through partnering with Beca and EECA Business we have managed to make a significant reduction in CO₂ and wasted energy.”

*Jonny Parker – Energy Analyst,
Victoria University of Wellington*



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