CASE STUDY OF IMPACT
March 2015

Reducing energy consumption in commercial buildings

Heating and cooling office buildings is one of the biggest costs for business. CSIRO has developed technology to significantly reduce energy consumption, through intelligent control of heating, ventilation and air-conditioning.

The challenge

Heating, ventilation and air-conditioning (HVAC) systems provide year-round indoor comfort in buildings regardless of the building type or temperature outside. HVAC systems account for between 40–50 per cent of a commercial buildings energy use and contributes 34.7 megatonnes of carbon dioxide emissions every year.

By improving the efficiency of HVAC systems we can decrease energy consumption; lowering operating costs, and reducing greenhouse gas emissions.

The response

CSIRO's experts in automatic control, artificial intelligence, and mathematical modelling have developed an advanced HVAC control system, OptiCOOL intelligent control technology that can be retrofitted to an existing HVAC system.

OptiCOOL uses multiple data inputs, including weather, energy pricing and feedback from occupants, to adjust a building's HVAC and reduce energy consumption.

Next generation HVAC and refrigeration control technology also integrates self-learning fault diagnosis, sub-optimal operation detection, and predictive control of commercial refrigeration facilities.

The engagement

OptiCOOL was commercialised in 2009 under an exclusive license to CSIRO start-up company BuildingIQ. Regular support and collaboration between BuildingIQ and CSIRO resulted in further development and improvements.

OptiCOOL technology reduces energy use by 10–30 per cent in commercial buildings.

BuildingIQ has since partnered with electricity utilities in the United States to explore uses of OptiCOOL in combination with smart grid technologies. Testament to the opportunities of the technology, several well-established competitors in the HVAC industry have offered venture capital support to partner with BuildingIQ.

The impact

Strategic collaboration between CSIRO and industry has led to OptiCOOL's successful commercialisation, improving the energy efficiency of commercial buildings around the globe.

OptiCOOL is now controlling HVAC systems across approximately 15 million square feet of floor space in Australia and the United States (August 2014), including the iconic Rockefeller Centre in the City of New York.

Independently tested, OptiCOOL technology results in energy savings of 10–30 per cent in commercial buildings.

A recent economic assessment has forecast that the benefits generated by BuildingIQ (using OptiCOOL technology) for Australia could reach $106.2 million[1] over the next decade. The technology could potentially save the United States building sector $2.6 billion a year in energy costs.

1 ACIL Allen Consulting, 2014. *CSIRO's Impact and Value – An Independent Assessment*.

CONTACT US
t 1300 363 400
+61 3 9545 2176
e enquiries@csiro.au
w www.csiro.au

AT CSIRO WE SHAPE THE FUTURE
We do this by using science to solve real issues. Our research makes a difference to industry, people and the planet.
WE ASK, WE SEEK, WE SOLVE

FOR FURTHER INFORMATION
Peter Mayfield
t +61 2 4960 6046
e peter.mayfield@csiro.au
w www.csiro.au/impacts

B&M | 14-666