



\$500,000 grant helps cut building's energy costs

A 13-storey Townsville building in tropical North Queensland has been revamped, with the help of a \$500,000 Australian Government grant – and the building's tenants say their energy bills have been cut by 32 per cent.

Lee Messenger from Initial Maintenance Management, who managed the project for Patella Properties, said the company applied for a grant under the Green Building Fund, because they wanted to reduce the building's energy costs.

"We believe this will possibly be the oldest building in Australia to achieve a five-star rating," Lee said. The building is 18 years old.

"We designed the upgrade to achieve a 4½-star rating, and we hope we'll easily make five stars.

Energy-saving initiatives

"It was a real team effort. We spent six months on the project, working after hours, and we now have a much more reliable system," Lee said.

"It's been a good experience. Our tenants are pleased that we're doing the right thing; that we're taking the initiative."

The work was completed in November 2009.

The Stanley Place Townsville upgrade was designed by a local mechanical engineer, Craig McClintock, and installed by Peak Air Conditioning and Refrigeration.

The team looked at numerous design solutions to see which energy-saving initiatives would provide the optimum return on investment.

The work included upgrading the heating, ventilation and air conditioning systems and upgrading the building control systems.

Lee said most existing buildings have older systems that do not identify occupancy, and do not adjust in line with the external temperature and humidity.

The project included fitting a number of control systems and engineered solutions.

As part of the upgrade works, the common lighting and power is metered separately.

All of the systems can be monitored and adjusted from a central panel – and even remotely from a computer off site.



Top – a heat exchanger in a plant room. Below – project manager Lee Messenger with one of two new Trane Chillers. Photocall Image Management.

"I'm all for reducing energy use and greenhouse gas emissions. The cost of energy is going up all the time.

"All we want to do is work with the building owners and managers to achieve a positive outcome within their budget."

The work has renewed the "building services" life of the building. Lee said the key features were:

- energy savings – predicted to be 26 per cent, but achieving 32 per cent, with the building saving about 1,007,000 kW hours a year
- greenhouse gas emission savings of at least 1027 tonnes CO² a year.

The Green Building Fund grant was used to support several projects.

- A control system that works with occupancy sensors to ensure that lighting only comes on when the floors are occupied.
- Ensuring that the time the air conditioning starts each morning is continuously upgraded by the computer, which looks at the previous day's start time. The control system ensures the tenancy floors are cooled to 24°C by 7:30am.
- Comparing four chiller manufacturers, analysing each against a climate model to determine which one was the most efficient. The chiller is the main energy-consuming component of the building and chills water to cool the building.
- Upgrading the existing cooling tower fans from fixed, two-speed to variable speed to provide energy savings and head-pressure control. If the fan's speed is halved, the power input can be reduced to an eighth.
- Modernising existing air-distribution systems with new variable-air volume boxes with pressure-independent control, variable-speed drives on the supply fan and a system duct clean.
- Pre-conditioning the outdoor air introduced into nine out of the 11 air-handling units using a heat exchange which recovers up to 70 per cent of the energy normally lost in the building.



Super sized – one of three cooling towers, fitted with a variable-speed drive to reduce power consumption. Photocall Image Management.

For more information about Patella Properties, visit www.patellagroup.com.au

Green Building Fund

Round 6 of the Green Building Fund closed in April 2010. At this stage, no further rounds of the program are anticipated.

The first four rounds of the Australian Government's Green Building Fund saw \$218 million invested in 156 building improvements throughout Australia.

These improvements are projected to reduce greenhouse gas emissions by more than 127,000 tonnes each year.

The Green Building Fund was set up to reduce Australia's greenhouse gas emissions, by reducing the energy used in commercial office buildings.

There has been a national uptake of the program.

Grants were awarded for a wide mix of buildings, and an increasing number of grants were awarded for small buildings and buildings outside of metropolitan areas.

The typical projects were to upgrade heating, ventilation and air conditioning systems, upgrade common-area lighting, and install building control and monitoring systems to better manage energy use.

Other projects included using co-generation or renewable energy technologies, and external shading and glazing to improve building energy efficiency.

A commercial building is defined as a building used for commercial purposes, where more than 70 per cent of the floor area of the building:

- has been occupied by commercial offices within the 12 months before the submission, and
- will be occupied by commercial offices within 12 months after the project is completed.

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