CitySwitch case studies

WT Sustainability beats their own energy record

Source: The Fifth Estate
WT Sustainability already had Australia's most energy-efficient office fitout, yet the company still found ways to reduce power use by a further 13 per cent.

Director, Steve Hennessy explained to *The Fifth Estate* that the savings were made through discernment in the initial fitout that reduced both fitout costs and energy use and a series of fine-tuning that further improved energy performance, without additional capital spending.

One of the main drivers for the decision to aim for and achieve such high levels of energy efficiency – beyond cost benefits and sustainability kudos – is the nature of the WTS business.

"My area of expertise is very much on the operational side of buildings. And if I am to go out and advise people, it is obvious we should have our own house in order," Mr Hennessy said.

The company was already at the top of the league table of NABERS ratings with a six star NABERS rating and the lowest audited energy use of any office fitout in the country. But Mr Hennessey said there were things that were "annoying" about the company's power use.

For example, having remote real-time monitoring capability for all energy use in the office, he was able to identify that there was more power being used at times like 2 am on a Sunday morning than could be accounted for by the few things which were always switched on – exit lights, the fridge and essential IT functions – all of which were the most efficient items of their kind in any case.

Through an intuitive approach, he discovered that one of the culprits was the microwave occupancy sensors used to control lighting. These were continuously using power by routinely scanning for movement in an otherwise empty office. The solution was a kill switch, placed right near the front door, which turns off all the lighting systems and their controls at the mains, and an education strategy with the company's 11 staff that the "last one out turns off the lighting".

Monitoring has proven to be a great ally, with the office energy use pattern so well understood that any deviation, such as failing to turn off the kill switch for the lights, shows up, and the staff member who was last to leave can be given a reminder.

"The company [Envirolight] who supplied our lighting controls helped us to fine tune the system at their own expense. They installed the switch at no charge because they have a degree of ownership in our [energy efficiency] solutions, and are keen we succeed in our goals," Mr Hennessy said. A second kill switch was also retrofitted for the technology equipment, again, near the front door where it is easy to remember.

What went in – or didn't – to create the energy-efficient office

The 204 square metre office has abundant natural daylight, so the T8 flourescent lighting with electronic ballast installed as part of the initial fitout was modified to incorporate daylight-linked electronic dimming. Mr Hennessey commented that at the time we were speaking by phone [10.30am on a sunny Sydney morning] he looked around the office and around one third of the lights were off.

"Lighting is a significant part of our energy use. [Our fitout] included very efficient E1 fittings, as the building's owner [Local Government Superannuation] was upgrading the whole building with E1 lighting," he said.

The fitout team did the calculations on using T5 lighting in the fittings (a more energy efficient light) or T8s, an older-style fluorescent. Mr Hennessey said the calculations showed that if team went to T5 it would need more lights to provide the required lux levels, and therefore consume more energy overall. It also chose not to install LEDs at this point.

"There is a myth that LEDs are more efficient, but when you look at the lumens per watt, LED and fluoro are comparable. LED is the future, and we will get to the stage where it will overtake fluorescents, however it is not an automatic choice, and it is not necessarily a more energy-efficient option.

"The Building Code of Australia sets a minimum energy performance of nine watts per square metre for lighting. Our lighting before [adding] controls had an energy performance of 5.9 watts per sq m, and our actual energy performance with the controls is down to 3.7 watts per sq m."

Six star NABERS without green power

This, he said, is part of how the company's office fitout achieved Six Star NABERS without taking into account points for using green power. This is, however, purchased for 100 per cent of the energy needs, making the team very close to carbon neutral as an office. The building owner has also committed to 100 per cent green power for all base building energy use, and encourages all tenants to adopt the carbon-neutral power option.

Away with the enclosed meeting room

Some of the other fitout innovations that contributed to the exceptionally efficient energy performance included simple things, like deciding against having an enclosed meeting room. This cut down on the need for extra airconditioning, and saved on partitioning, which reduced the overall fitout cost.

Away with the "zip" hot water

Instead of using the zip-type hot water unit in the office kitchen, which operates on a constant heating and warming cycle, it's been permanently unplugged, and since day one staff at WTP simply boil a kettle for hot water for tea or coffee.

Every workstation is equipped with dual power circuits. One has a 7.30 pm automatic shut off, as that then ensures any monitor or charger left plugged in is not drawing power overnight. The other is a 24-hour circuit, and if staff are working late, they transfer the plugs for their monitor and laptop across.

Away with the desk top

One of the more contentious decisions was to equip every staff member with a laptop rather than a desk computer. This saves considerably on energy, and gives an added degree of flexibility to where people work.

Only one desk top computer is used in the office, which hosts software specific to an aspect of the quantity surveying activities. Hennessy observed that it is switched off at main and not in use 99 per cent of the time, and so its power draw is minimal.

Away with your own server

A decision was also made to forego installing a server, which would have added to the capital cost of the fitout construction and to the ongoing energy use for added air conditioning for the temperature sensitive equipment. Security concerns precluded using a cloud-based solution through a US server.

Instead, after negotiations with WT Partnership head office which is located across the road, the WTS office uses redundant capacity on the head office server. This adds nothing to either office's energy bill as the server was already in use and its energy use footprint established.

"The former managing director of WT Partnership [when I approached him about our fitout] said he'd support our ideas, but if it inconvenienced any staff it would be out," Mr Hennessey said.

Lifecycle analysis and cost-benefit assessment has been a crucial part of the decision making process. For example, the microwave occupancy detector sensors cost more than the UV equivalent, however, it is also more accurate and able to detect the fine movements of people who are absorbed in their work.

This means there is less chance of lights switching off when they shouldn't because someone sat still too long, which reduces the inconvenience factor dramatically. WTS also has more of these installed than the average office, giving a more precise level of lighting management, and it has them set for three minute no movement switch-off.

"If we can do it, what's everyone else's excuse for not doing it?"

"The key thing about our fitout is if people walk into the office, it looks the same [as any average office]," Mr Hennessy.

"[So] if we can do it, why can't everybody? We have lower running costs, and it cost less to fitout, so why isn't every office saving 78 per cent [off the average three star level] energy use? There is an awful lots tenants can do and achieve without great inconvenience and spend.

"And while controls and lighting cost [us] dollars, we saved on the airconditioning [by not having a server or enclosed meeting room. Our fitout cost less than we originally budgeted for."

And what do the staff think?

Mr Hennessy did have some concerns about the level of staff acceptance of the energy-efficient fitout, especially given quantity surveyors are, as he put it, "a conservative industry". Instead, he found a high level of engagement.

"What we did try and do was take a lot of conscious decisions for energy efficiency and automate them, for example, the timing controls on the lights. So what is provided doesn't inconvenience people and they can keep on working. People are being efficient without thinking about it," he said.

"If a behaviour is not intuitive, how much effort do you spend trying to make it intuitive [to people]? [I say] make it automated, and accept that with the best will in the worlds some things are not intuitive to people, so we make things do-able in a non-complicated flow.

"At the same time, you can make it overcomplicated. Lighting is simple, it is there, it works, it requires no user intervention."

The curious case of the sandwich toaster and other benefits of monitoring

The daily monitoring of sub-metered energy usage turns up some unexpected information, such as the fact that the office kitchen's sandwich toaster uses more power when in operation than all other office systems combined. So when Hennessy was out of the office one day and noticed a spike in the power use while monitoring remotely, he was able to send an email enquiring about it and discover someone had inadvertently left the sandwich toaster going for an extra few minutes.

Quick action in response to these kinds of power spikes means they cannot have an impact of great magnitude on the next power bill, nor on the office's overall energy performance when the next NABERS rating is assessed. It's also useful feedback in terms of staff actions.

"We look to our metering to keep us on track," Hennessy said.

"In any organisation you need an energy champion. In WTP's head office [which has 68 staff], there are a team of three people who are energy champions around the office. [Those] people are in the thick of it, you want people on the ground who are questioning why [energy is being used]."

The post WT Sustainability on how to beat your own energy record (http://www.thefifthestate.com.au/archives/61021/) appeared first on The Fifth Estate (http://www.thefifthestate.com.au).

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