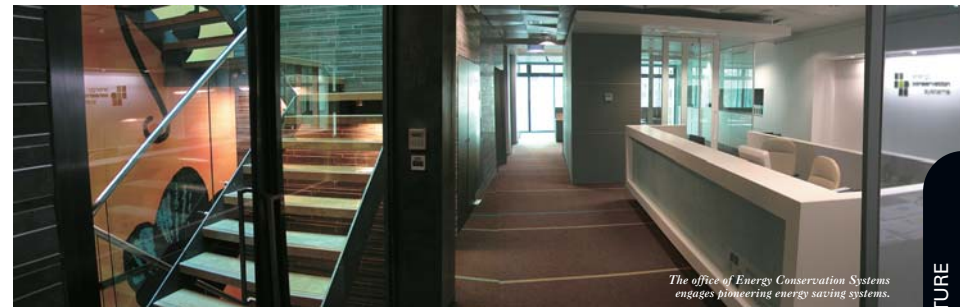


Turning tall buildings green

Nobody said saving the world was going to be easy, but it seems a lot more can be done to make our commercial buildings better for the environment, reports **Thomas Hunter**.



The office of Energy Conservation Systems engages pioneering energy saving systems.

While the issue of climate change stirs up heated debate among politicians, business people, shareholders, greenies and anyone else who cares about the future of the planet, there's one thing becoming more obvious by the day: now is the time to start getting things right.

The need to act was highlighted again last year when climate scientists announced 2005 was the warmest year in over a century, with five of the warmest years of the last century occurring in the last eight years (1998, 2002, 2003, 2004, 2005). Writing in *The Monthly*, Robert Manne revealed "10 of the warmest 11 years (in Australia) have occurred since 1990."

Just like our homes and cars are contributing to the problem, each year in Australia our offices and retail outlets spend around \$4 billion on energy, generating 46.4 million tonnes of carbon dioxide. That figure is growing by three to four per cent a year, with the commercial sector producing almost nine per cent of the nation's annual greenhouse emissions.

Despite the Howard Government's reluctance to join the rest of the developed world (bar the US) in signing the Kyoto Protocol (a global framework for reducing greenhouse emissions), there is a growing number of operators in the commercial building sector showing the federal government how it should be done.

Leading from the front are developments like the Szcencorp building in South Melbourne, an office building purchased, renovated and now inhabited by Szcencorp company Energy Conservation Systems (ECS), a company that helps other businesses lighten their environmental footprint. The Szcencorp building was the first in Australia to achieve the Six Green Star rating from the Green Building Council, making it a world leader in sustainable design and construction.

Sam Burke, an environmental engineer with ECS, says that the Szcencorp building has a few roles to play. It's the company's home base, an advertisement for the work ECS does, and also a showroom for the many technologies now helping to make office buildings greener, beginning with the lighting systems.

"Every square metre of floor area is covered by motion sensors so the lights are switched on only when there are people around. The sensors are also linked to the airconditioning, so that only

operates in the areas that are inhabited, and the sensors also double as part of the security system," Burke says.

"We've got natural ventilation, so instead of turning on the chillers, the system will open the windows and cool the building down without using the heating or cooling systems. Our airconditioners, when they're running, use gas instead of electricity, creating fewer CO₂ emissions. We've got about six kilowatts of solar panels on the roof, which generate about a quarter of the demand for the building. When the building is shut down on weekends, the solar panels are still generating energy, which we export to the grid."

And that's just for starters. While ECS have voluntarily constructed a building that places great importance on energy efficiency, regulators are starting to place greater weight on it too.

In May this year, the Building Code of Australia introduced new regulations aimed at reducing the greenhouse emissions from the commercial building sector by up to 25 per cent. The building industry, it said, "has an extremely important role in contributing to the abatement of Australia's greenhouse gas emissions and in delivering economic, as well as social and environmental benefits to the community."

"Without regulation," Victorian environment minister John Thwaites said in response, "greenhouse gas emissions from the operation of commercial buildings are projected to increase a staggering 94 per cent from 1990 to 2010. There's no doubt the commercial building sector energy measures will provide significant savings for the environment."

The new rules apply to all new commercial and public buildings and those being refurbished, and have been put into action by the City of Melbourne, Council House 2 (CH2), on the corner of Little Collins Street and Swanston Street in Melbourne's CBD, is another example of how to make a building that mother nature would smile at.

"CH2 has sustainable technologies incorporated into every conceivable part of its 10 storeys," says Councillor Catherine Ng. "Although most of the principles are not new – using thermal mass for cooling, using plants to filter light – they have never been used in such a comprehensive fashion. Just as it is impossible to assess



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the role of any part of this ecology without reference to the whole, CH2 comprises many parts that work together to heat, cool, power and water the building, creating a harmonious environment.

“For example, in nature, dark colours absorb heat and hot air rises. Accordingly, CH2’s north façade comprises 10 dark-coloured air extraction ducts that absorb heat from the sun, helping air inside rise up and out of the building. On the south façade, light-coloured ducts draw fresh air in from the roof and distribute it down through the building, and staff will be able to control the flow of this 100 per cent fresh air to their work spaces by floor vents.”

When compared to the original Council House, CH2 is expected to cut electricity consumption by 85 per cent, gas consumption by 87 per cent, thereby producing only 13 per cent of the emissions.

Unfortunately, that’s where the good news ends: the reality is that buildings like CH2 and the Szencorp building are rare specimens indeed.

“There are still people out there who haven’t addressed the argument of the survival of the species,” says David Oppenheim of Sustainable Built Environments, a company specialising in finding ecologically sustainable solutions for buildings of all kinds.

“There are recalcitrants in the industry who are fighting ecologically sustainable development every step of the way. Some see it as an impediment to their design, and then there are those who don’t know about it or are simply not interested in it, while others are only just becoming aware of it.”

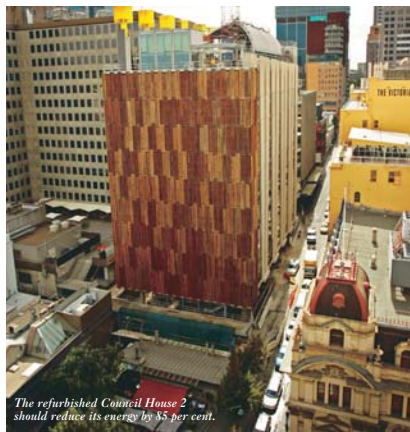
According to Oppenheim, one of the biggest stumbling blocks is the business case. Although many objections are made on the basis of money, there is a mounting body of evidence to suggest these technologies are good for the bottom line, despite their greater initial cost.

In the case of CH2, it’s estimated that in 10 years the sustainability features will have paid for themselves. Moreover, the improved airconditioning is expected to give the City of Melbourne a 4.9 per cent increase in staff effectiveness through decreased sick leave. Evidence is still being collected on the benefits to productivity of sitting your staff in a healthy building, and while a final judgement on that issue is still a way off, Oppenheim says not every building has to be as profoundly green as CH2 or the Szencorp building to improve its sustainability. There is a middle ground.

“Different parts of buildings have different life spans. The fitout might last five years, the structure 30 years, and the building services might last 15 years, which gives businesses a chance to use some of these technologies without having to start from scratch. Performing regular maintenance and logging energy-use trends helps firms to understand their buildings and when replacement of, say, a lighting system is required, there’s a chance to make an improvement.”

As a further reality check, Oppenheim says Australia’s greenhouse gas emission rates are “appalling” on a global scale, suggesting that if greenhouse gases were pink we’d have a harder time ignoring them.

“If you lived in Yallourn or Morwell, you wouldn’t be able to see there’d be so much pink in the air,” he says. “There are still a lot of hearts and minds to be won. I think it has to be politically led and there’s a saying that goes, where the people go the politicians will follow. In this case, I think that’s very true.”



FOR MORE INFORMATION:

- To see how you can help make your home more ecologically sustainable, visit www.greenhouse.gov.au/yourhome/
- To read more about CH2, visit www.melbourne.vic.gov.au/info
- To learn more about the Szencorp building, visit www.ourgreenoffice.com
- To learn more about the Australia Building Greenhouse Rating scheme, visit www.abgr.com.au