

Black box cooled down

The Russell Centre, in Adelaide Terrace, Perth, was a black glass box which, because of its uncomfortable working conditions, was unable to attract tenants, according to Mr Garry Baverstock, a specialist in solar efficient housing.

He was asked by the owners of the office building, the Australian Pensioners' League of WA, to redesign the building so it was not so dark and hot.

The air conditioning system, which should have been adequate for the building, could not keep up with the amount

of heat which was being absorbed.

"People were blaming the air conditioning and saying it should be replaced, but instead, we redesigned the building around the air conditioning system," Mr Baverstock said.

Cold in winter and extremely hot in summer, the building had inadequate noise control, with particularly bad acoustics between floors.

"It was also very dark.

"Some rooms, without the lights on, were virtually pitch black," he said.

"It was an economic disaster."

To make the building

more energy efficient Mr Baverstock employed some "fairly radical changes".

"We stripped the building back to its concrete shell and removed all the ceilings to expose the thermal mass.

"We plastered over the concrete so the thermal mass would have the effect of the night cool during the day, and the heat of daytime during the night," he said.

Services which had been hidden in the false ceilings were transferred under the carpet using a flat cable.

To reduce heat on the outside of the building, an awning panel was installed which could be adjusted to allow the winter sunshine, and act as a barrier during summer.

To further cut heat absorption, the majority of the building's facade was replaced with a spandrel panel for extra insulation.

"Reflective glass behind the awning panel further reduced external heat absorption," Mr Baverstock said.

The combination reduced building heat absorption by between 80 and 90 per cent.

"The building skin heat due to the sun represented 30 per cent of the total energy costs in air-conditioning."

To address the problem of bad lighting, Mr Baverstock turned a ventilation shaft into an atrium bringing natural light to all the passageways.

Northern facing skylights were also created.

"These measures brought a lot of natural light to the centre of the building where most offices are the darkest, and reduced the amount of artificial lighting.

The airconditioning system has been converted to act as a night

ventilation system for further energy savings.

"Like an exhaust, it will expel all the stale air and replace it with fresh air, an energy saving measure which will also have health benefits.

"This is the first time this method has been used in Australia on this scale," he said.