

Building energy



Insulation inspiration.

Building regulations across Australia are constantly being upgraded to increase the required energy efficiency rating of new homes and buildings – and a Queensland engineering consultancy is adding a power of intellect to solving those challenges.

Managing director of the privately-owned consultancy 'e3k', Duncan Gilmore, said energy is a precious and costly commodity in the modern world. Currently, it is often being associated with the production of greenhouse gases, making conservation of energy a topic which cannot be ignored.

There are many elements that will increase the 'energy rating' of a building, including the use of shading, energy efficient lighting and effective use of insulation.

But the primary objective is to efficiently use energy for heating and cooling. Energy may be used to make

a building more comfortable for its inhabitants, to store perishable goods, or to provide a desired internal atmosphere.

Carmen Keating, a principal engineer of e3k, said e3k had assisted Protherm Building Insulation to carry out calculations which identify the effectiveness of Protherm's reflective cellular insulation products in increasing the thermal resistance of floors, walls and roofs.

These calculations include the resistance to heat movement of the actual building materials (such as bricks and plasterboard) and also the added thermal resistance of the air spaces created by the use of Protherm's highly reflective cellular insulation materials. This type of reflective insulation improves energy efficiency by reducing the amount of heat transferred through the building structure from outside during the hot summer months, reducing the need for air conditioning or other cooling methods, and, in winter, it reduces the amount of heat which escapes from the building, lowering heating needs.

The effectiveness of reflective insulation depends on the arrangement of the insulation within the building structure. E3k engineers have carried out detailed mathematical and engineering calculations, in accordance with the Australian and New Zealand Standard, *AS/NZS 4859.1:2002*

Material for the thermal insulation of buildings, which looks at the total R-value (resistance to heat transfer) of a wide variety of building structures.

This 'total R-value' is a quantity which is published to enable an assessment of the comparative effectiveness of different products.

AUSSIE INGENUITY

Michael Stoopman, president of Protherm, said the company had been researching insulation products since 1996 and is wholly Australian owned.

He said Protherm insulation will be manufactured from four plants in Australia using the latest custom designed equipment and machinery.

In 2003 Protherm developed the 'Reflecta-cell' product (which has a patent pending) and this was a breakthrough in protecting the insulation surface from oxidization and corrosion. This protective coating provides for a sustainable long term R value. The company is committed to ongoing research aimed at providing the built environment with long lasting comfort, safety and energy savings.

Duncan Gilmore said e3k consulting engineers were commonly called upon to perform advanced analysis to support Australian industry. This was part of the e3k business's ability to help research, design, develop and commercialise new products. E3k is based at Brisbane Technology Park.

www.e3k.com ■