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Keep cool and carry on

Energy-efficiency depends on more than just thermal insulation, says **Peter Staelens.** The new generation of window films can make a huge difference to a building's performance

But while the UK government is supporting carbon reduction by introducing grants and green initiatives, these have done little more than skew people's perception of what represents an energy saving. With heavy focus applied to insulation and heating, cooling strategies have been left rather more... out in the cold.

The business and public sectors, which contribute 38 per cent of the country's carbon emissions, are required by the CRC Energy Efficiency Scheme to start lowering carbon emissions, so will naturally be enticed by the long-term energy grants offered by schemes such as the Renewable Heat Incentive.

But what incentives like these fail to acknowledge that when a commercial building is designed, the crowds of people and electrical appliances that then occupy it are not taken into account.

Generating heat

Human bodies and devices such as computers, printers, coffee makers, toasters and refrigerators generate an exceptional amount of heat and cause room temperatures to dramatically increase. So, instead of heating, most commercial buildings need to bring temperatures down in order to maintain a comfortable environment and maintain staff productivity.

Office cooling, namely air conditioning, represents a huge energy burden, and can increase a building's emissions by 100 per cent . So to use it on a daily basis yet take a grant to invest in heating and insulation is a notion most people would surely see as perverse.

Whether in the heights of summer or the depths of winter, sunshine causes heat to build up through unprotected glass windows. These windows then get thrown open to create a through draft, or in colder months, blinds will be snapped shut to block out the sun's glare, meaning that lights have to be switched on. Either way, this behaviour ends up negating the effect of air conditioning, causing wildly fluctuating internal temperatures and eating up a large, unnecessary supply of heat and energy.

Retrofitting window film can lead to up to 82 per cent of solar energy being rejected

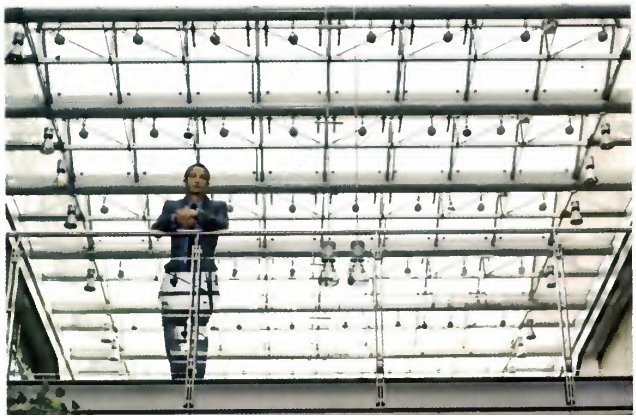
Such widespread and basic energy wastage should not be allowed to continue. Maintaining stable internal temperatures requires more than efficient heating and insulation. Businesses need a cooling solution that minimises air conditioning, allows natural light to enter the building and helps to block out heat, rather than trap it within the building. One of the most simple and most cost-effective solutions that can deliver all of these benefits is one you may not have heard of: solar-control window film.

Through an untreated window, solar energy can take one of three paths: it can be transmitted, absorbed or reflected. Some energy is transmitted through glass, some is absorbed into the window, and some light is reflected back to its original source. Practically invisible to the naked eye, window film offers a simple means for buildings to drastically cut the amount of solar heat and ultraviolet (UV) light that passes into the building.

As a retrofit solution applied to the inside of existing glass, it rejects up to 82 per cent of solar energy, has an SPF factor of 250, and can reduce internal temperatures by up to ten degrees.

This stops air conditioning units from being maxed out during sunny spells, meaning that internal temperatures are kept stable and extreme peaks in energy usage are reduced. Cooling systems can therefore be run more efficiently and inexpensively, reducing a building's cooling load by 30 per cent.

Air conditioning use can be reduced by the use of window film



The newest, state-of-the-art film is made from the highest quality materials, such as tough, high-tensile polyester and they feature ultra-strong mounting adhesives for durability. Typically, a range of clear, solar control versions are offered, ranging from 100 to 350 microns in thickness. This means that people are still able to enjoy the original view from existing windows in the knowledge that their windows contribute to the energy-efficiency of the building.

Greater savings

If window film were taken into consideration during the design stages of a new building, savings would be greater still as businesses would reduce cooling requirements from the outset; using smaller, cheaper air conditioning units that are easier to install and maintain. This could mean thousands of pounds in savings to many UK firms.

With budgets being squeezed and such significant carbon reductions to be made, the heat is on for UK businesses to find meaningful ways to lower emissions. It is the responsibility of our government to steer them in the right direction. Improved insulation and heating is, without doubt, an effective means of preventing energy waste, but without considering the likely effects of over-heating businesses are in danger of missing the bigger picture.

While most UK businesses will currently look to insulation as their first port of call for energy savings, more vocal support for solutions such as window film by government schemes and incentives, would show these companies that such measures are just the tip of the iceberg.

Solar Gard recently completed an Environmental Product Declaration (EPD) which calculated that the carbon payback period for the company's solar control window film is less than 12 months and that the products have a net positive environmental impact.

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