

2.2W/m²K.

Rooflights are Solar Panels

There is much interest in solar panels as an effective way to provide sustainable energy and reduce CO₂ emissions.

There are 3 main types of solar panel:

- Photovoltaic panels which convert sunlight into electricity
- Solar heat collectors which capture heat from the sun for use inside a building or process
- Rooflights which admit sunlight directly into a building reducing the need for artificial lighting and providing positive solar gain

ROOFLIGHTS ARE PROVEN TECHNOLOGY

Of the three types of solar panel rooflights are the longest serving and most proven technology. Available in many forms to suit every roof type and project budget they offer effective performance with very low maintenance requirements.

ROOFLIGHTS ARE ENERGY SAVERS

When used in conjunction with automatic lighting controls to turn the electric lights off, or down, when there is sufficient daylight available, rooflights can have a major impact on the overall energy consumption of a building. In fact because electric lighting is so expensive in terms of CO₂ emissions, including rooflights is one of the single most effective ways of improving the environment.

ROOFLIGHTS ARE PERFORMANCE ENHANCERS

Rooflights don't just improve the external environment. They improve the internal environment too. People prefer natural to electric light and there is a growing body of scientific evidence to suggest that it helps us perform better. Studies have shown that school children learn better, hospital patients recover faster, factory workers are more productive and shoppers linger longer, spending more.

ROOFLIGHTS ARE THE ONLY OPTION

Rooflights are often the only effective way to admit natural daylight into many large buildings.



Daylight Systems

THE COMPLETE RANGE



trilite **marloncs**
LONG LIFE
In Plane Site Assembled Rooflights
Site assembled rooflights, manufactured in both GRP and polycarbonate, are quick and easy to install. All sheets achieve the highest levels of profile accuracy and cover a range of options, including safety levels, U values and fire ratings. Single, double and triple skin rooflights are available for a huge variety of applications from canopies to warehouses and factories to retail and leisure facilities.



fair
FAIR
Factory Assembled Insulating Rooflights manufactured to suit a customer's exact specification. Delivered to site as a complete ready to install unit. A cost-effective rooflight option that can be incorporated into most new or refurbished roofs. Manufactured in both GRP and polycarbonate in formats to suit all of the commonly encountered sandwich panel roof coverings.



multivault
Modular Vault Rooflights
Comprehensive range of modular length, double skin vault rooflights available in GRP and polycarbonate. Suitable for either flat, pitched or curved roofs, Multivaults are a cost-effective range of vaulted rooflight options that are easily incorporated into new or refurbished roofs.



marvault hf **marvault rl**
Vault Rooflight Systems
Continuous run vault rooflights ideal for use on sports halls, assembly halls and over corridors. Marvault HF is a vault rooflight system with a maximum span of 9m and hidden fixings, which can achieve U values as low as 1.6W/m²K. Marvault RL barrel vaults provide long term reliability and high quality detailing, with different ventilation options available.



ritchlight
Skylights
Attractive glazing bar systems, with excellent weather resistance and durability, widely specified where reliability is paramount. With many ventilation and solar control options and double glazed in either glass or polycarbonate, this is the ideal system for large area glazing up to 5m span and any length.



mardome
Dome Rooflights
A range of modular pyramid and dome rooflights with unique security and water-proofing features. These are reliable, safe, secure and well insulated rooflights. Suits new build or refurbishment projects, replacing just the glazing or the whole unit.

Enquiries from England, Scotland and Wales:
Brett Martin Daylight Systems
SANDFORD CLOSE
ALDERMAN'S GREEN INDUSTRIAL ESTATE
COVENTRY
WEST MIDLANDS, CV2 2QU
TEL: 0845 6088 999
FAX: 024 7660 2745
Email: daylight@brettmartin.com

Enquiries from Ireland:
Brett Martin Limited
24 ROUGHFORT ROAD
MALLUSK
CO ANTRIM, BT36 4RB
N. IRELAND
TEL: 028 9084 9999
FAX: 028 9083 6666
Email: mail@brettmartin.com

www.daylightsystems.com

900RP08061

All rooflights are available with class B non fragility



xlokultra
xlokexpress
Panel Glazing Systems
Continuous run rooflights. These versatile interlocking panel glazing systems are ideal for the creation of covered play areas and walkways. Panels are fully factory assembled for fast and simple site installation, without the need for glazing experience. With up to 4 1/2m span between supports, top hung vents and a non-fragile option, this is a highly affordable system.



marlon fsx
LONG LIFE
Solid Polycarbonate Sheet
Solid polycarbonate sheet with shatter resistance up to 200 times that of glass, ideal for canopy glazing applications. Marlon FSX Longlife has co-extruded UV protection on both sides to cut out 98% of harmful UV radiation, and offers excellent resistance to weather and atmospheric conditions.



marlon st
LONG LIFE
Multi-wall Polycarbonate Sheet
Multi-wall polycarbonate sheet with a shatter resistance up to 200 times that of glass. Available in five structures and nine tints, to provide a range of thermal performance and light transmission options. Co-extruded UV protection cuts out 98% of harmful UV radiation.



rainwater
Industrial Rainwater Systems
An extensive range of rainwater management systems to suit every designer's needs.



ACCESSORIES
A comprehensive range of accessories including foam fillers, available in a wide range of options, tapes, sealants and adhesives, manufactured and sourced from the best in the industry.

All reasonable care has been taken in the compilation of the information contained within this literature. All recommendations on the use of our products are made without guarantee as conditions of use are beyond the control of Brett Martin. It is the customer's responsibility to ensure that the product is fit for its intended purpose and that the actual conditions of use are suitable. Brett Martin pursues a policy of continuous product development and reserves the right to amend specifications without prior notice.



Daylight Systems

Part L 2006

How rooflights save energy and help compliance



- 15%-20% Rooflight Area
- U value 2.2W/m²K or less

ROOFLIGHTS MUST HAVE A U VALUE OF 2.2W/m²K. ROOFLIGHTS SAVE ENERGY AND AID PART L2 2006 COMPLIANCE



Daylight Systems

Rooflights cut energy use reducing CO₂ emissions



ADVANTAGES OF A BUILDING WITH ROOFLIGHTS



DISADVANTAGES OF A BUILDING WITHOUT ROOFLIGHTS

- The amount of energy needed to light a building is often much greater than that needed to heat it.
- Including rooflights significantly reduces the need for artificial light, dramatically cutting energy consumption and running costs.
- Rooflights have very little effect on the energy required for heating because passive solar gain compensates for their poorer insulation compared to the rest of the roof.
- New Building Regulations recognise the potential of rooflights to cut CO₂ emissions basing its calculations on a rooflight area of 20%.
- Simplified Building Energy Model (SBEM) reflects this, showing CO₂ emissions increase when the rooflight area is reduced from 20%.
- Automated lighting controls are essential to realise the full benefits that rooflights can provide.



PART L 2006 - The Objective

REDUCE CO₂ EMISSIONS

The objective of these new regulations is to significantly reduce CO₂ emissions to the environment which result from the operation of both new and refurbished buildings. The reductions required compared to a notional building built under the 2002 regulations are substantial:

- 28% reduction for mechanically ventilated or air conditioned buildings
- 23.5% reduction for naturally ventilated buildings

ENERGY USED PROVIDING ARTIFICIAL LIGHT INCLUDED

In calculating this reduction the regulations take into account the energy use and the resulting CO₂ emissions for the whole building including its heating, lighting and other services comparing this to what would have been achieved had the building been built to the 2002 standard.*

SIMPLIFIED BUILDING ENERGY MODEL

Building designers and building control officers are now required to use the Simplified Building Energy Model (SBEM) or other approved software to perform this calculation for all new building work.

MINIMUM PERFORMANCE STANDARDS

In addition to this overall requirement the new regulations also set out minimum acceptable performance standards for specific building elements such as the roof, wall, floor and the rooflights. These minimum standards apply even if the building could achieve the required CO₂ emission reductions with lower standards in these elements.

**Assumptions are made about typical building services which were not specified in the 2002 regulations.*

PART L 2006 - The Implications for Rooflights

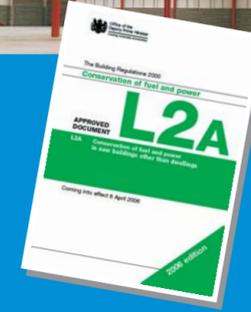
ROOFLIGHT INSULATION MUST BE 2.2W/m²K OR BETTER

ADL2A Paragraph 36 Table 4, sets a minimum performance standard for rooflights averaged over the whole roof at 2.2W/m²K*. In practice this is easily achieved by specifying triple skin rooflights throughout.

ROOFLIGHT AREA SHOULD BE BETWEEN 15% AND 20% OF THE ROOF

Rooflight area is not specified in the regulations but the building is compared to the 2002 notional building which has a 20% rooflight area. Rooflights provide a positive energy contribution to most buildings so any reduction from this level is likely to increase CO₂ emissions, making it harder to meet the reduction target.

**Although poorer rooflight performance, up to 3.3 W/m²K, is technically permissible in some areas, this must be offset by better performance in other areas to achieve an overall average thermal performance for the rooflights of 2.2W/m²K. The average figure may also be relaxed to 2.7W/m²K but only if it can be demonstrated that this would reduce overall CO₂ emissions which is highly unlikely in most cases.*



INDEPENDENT RESEARCH

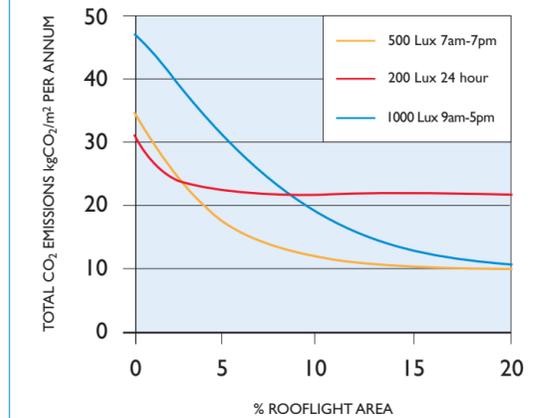
The De Montfort University's Institute of Energy and Sustainable Development is a leading authority on energy use and it has undertaken considerable research into the effect rooflights have on a building's energy consumption. This research demonstrates that a rooflight area of 15% - 20%, together with automatic control of electrical lighting, delivers considerable reductions in a building's energy requirement and hence reduces CO₂ emissions.

ROOFLIGHTS SAVE ENERGY

This graph, generated from De Montfort University research, shows how CO₂ emissions vary with rooflight area and with different lighting requirements and occupancy patterns.

In every case adding rooflights provide very significant savings. The size of the saving depends on how much light is required inside the building and how many hours per day the building is occupied. The savings are greatest for buildings needing a bright interior during daytime occupancy.

THE GRAPH PLOTS CO₂ EMISSIONS RESULTING FROM THE POWER USED TO PROVIDE ARTIFICIAL LIGHTING AND TO REPLACE HEAT LOSS THROUGH THE ROOF AGAINST % OF ROOFLIGHT AREA IN THE ROOF.



9am - 5pm requiring an illuminance level of 1000 lux bright interior; occupied when natural light is available

7am - 7pm requiring an illuminance level of 500 lux very common lighting level and occupation pattern.

24 hour requiring an illuminance level of 200 lux low light requirement and natural light not available for large periods of the building's occupation.

The notional building assumes a 20% rooflight area so putting in a smaller area of rooflights makes complying with Part L more difficult. Rooflight areas down to 15% still achieve most of the energy savings and related CO₂ reductions that rooflights can provide. In many buildings as the rooflight area falls below 15% the energy use and related CO₂ emissions start to increase dramatically.

INTERIOR LIGHTING LEVELS

A rooflight area of 15% - 20% will provide adequate natural light for most buildings. Light is measured in lux, the table below shows the light level required for different activities.

CHARACTERISTICS OF ACTIVITY / INTERIOR	LEVEL OF ILLUMINANCE REQUIRED (LUX)	TYPICAL BUILDING
Continuously occupied interiors, with visual tasks not requiring perception of detail	200	Some warehousing and stores Reception spaces
Moderately difficult visual tasks	500	General retail General manufacturing areas
Difficult visual tasks requiring accurate colour judgement or perception of movement	1000	Clothing and furniture retail Sports Halls
Precise detailed work requiring accurate perception of intricate detail	2000	Engineering Facilities Craft and design studios (Good background lighting plus specialist task lighting)

EXTERIOR LIGHTING LEVELS

Bright winters day 30,000
Sunny summers day 90,000

SOLAR OVERHEATING

De Montfort University research shows in a large volume building, with evenly distributed rooflights and moderate internal heat gains a rooflight area up to 20% will not cause solar overheating.