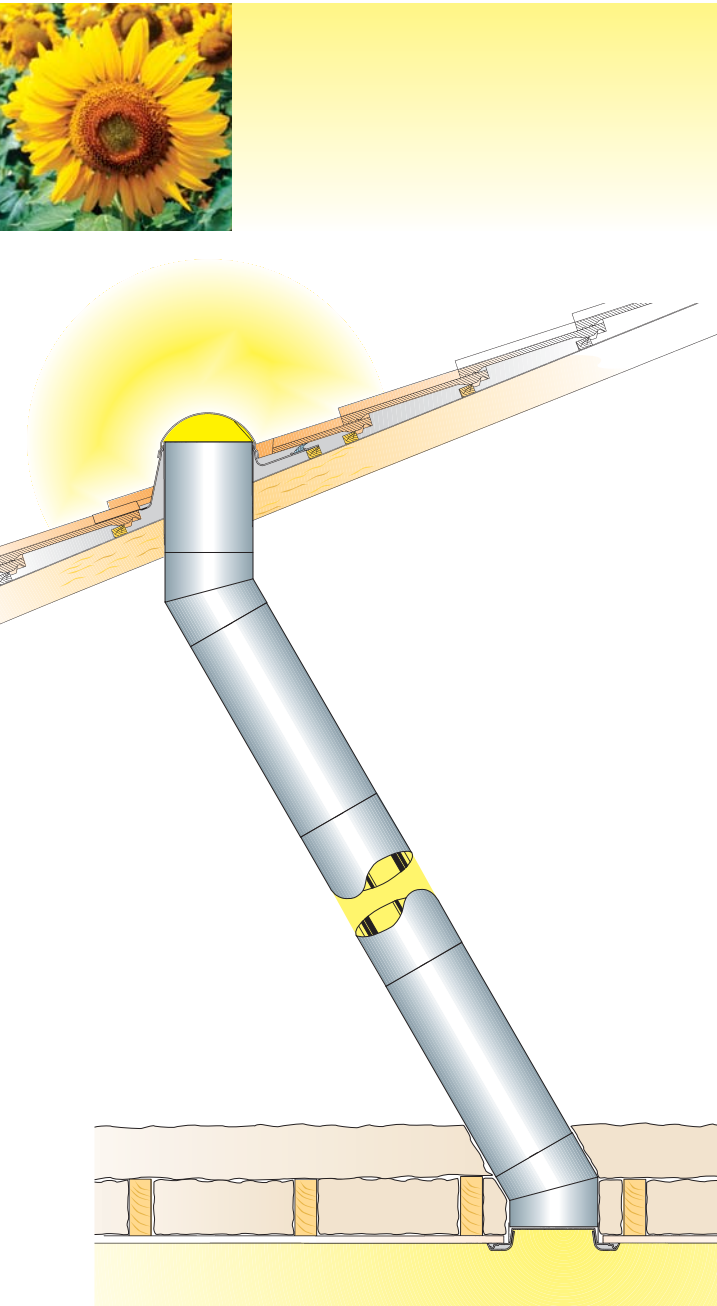




# Natural Daylighting with Tubular Rooflights

## Contributing to Sustainable Building Design





## Energy Use

With increasing concerns about global warming and its impact on the environment, the UK has committed to reducing its carbon emissions by 60% by 2050, with real progress by 2020. Buildings contribute almost half the UK's CO<sub>2</sub> emissions and the most cost-effective means of reducing this is in improved energy efficiency to reduce energy requirements in both new and refurbishment projects.

## Sustainable Lighting

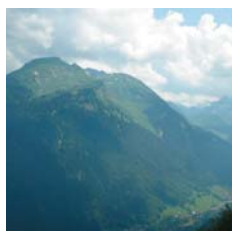
The SUN is a sustainable light source. Thus tubular rooflights can make a significant contribution to sustainable building design. They are an effective and efficient means of maximising natural daylight in dark areas, virtually eliminating the need for supplementary electric lighting during the day, especially in corridors. Used to complement artificial lighting, they can considerably reduce the annual energy consumption of any building, and thereby CO<sub>2</sub> emissions.

## Health and Well-Being

Scientific studies have shown that natural daylight has positive benefits over artificial lighting, promoting faster recovery of hospital patients and improving performance by factory workers and pupils in schools.

## BRE Environmental Assessment Method

The Building Research Establishment Environmental Assessment Method (BREEAM) recognises the benefits of tubular rooflights which help to meet the requirements under 'energy use' and 'health and well-being'. Buildings are assessed and awarded credits according to the level of performance within a range of nine environmental categories. The building is then rated on a scale of PASS, GOOD, VERY GOOD, or EXCELLENT. Each BREEAM module is designed to assess a particular type of building and covers **both new and existing buildings**.



## BREEAM MODULES

### BREEAM Schools

Assessment criteria are based on environmental performance levels. The government is keen to ensure that sustainability is at the top of the agenda in the construction of schools. DfES requires a rating of **at least** 'VERY GOOD' on all:

- ☀ Primary school projects costing £500 000 or more.
- ☀ Secondary school projects costing £2 million or more.
- ☀ Remodelling or refurbishment projects covering more than 10% of the floor area

Smaller-scale projects are also encouraged to use the methodology.

Tubular rooflights can contribute to credits available under the Health and Well-being Section HW01 and the Energy Section E01.



### EcoHomes

EcoHomes is the assessment model for self-contained dwellings, both new and refurbished. It balances environmental performance with the need for a high quality of life and a safe and healthy internal environment. Other types of accommodation such as sheltered homes or student flats can be assessed using a bespoke version of BREEAM.

Tubular rooflights can contribute to the credits available under the Daylighting Section HEA 1.

For Housing Associations in particular, EcoHomes is important in obtaining funding from the Housing Corporation who require a 'PASS' rating for 'Environmental Sustainability'. English Partnerships require all developments on their land to have a rating of **at least** 'VERY GOOD', and most of the major developers will incorporate environmental criteria into their schemes as part of the Government's Sustainable Communities Plan.

### Best Practice in Environmental Design and Management

BREEAM has been used to assess the environmental performance of both new and existing buildings for over a decade. It is regarded as the measure of best practice in environmental design and management.



### BREEAM Offices, Retail and Industrial

These three modules are used to carry out environmental assessments on the different types of development.

Tubular rooflights can contribute to credits available under the Health and Well-being Section HW01 and the Energy Section E01.

### NEAT - NHS Environmental Assessment Tool

NEAT was developed using BREEAM and allows health trusts and NHS Estates to manage the environmental impact of both the procurement and operation of their buildings.

Tubular rooflights can contribute to the credits available under the Internal Environment and Energy Sections.



## GLIDEVALE SUNSCOOP™ TUBULAR ROOFLIGHTS

The Glidevale Sunscope™ Tubular Rooflight system brings natural daylight into internal rooms and spaces that have no, or insufficient, windows. They are an effective and efficient way of maximising natural daylight in internal and badly lit areas, virtually eliminating the need for electric lighting during the day in a wide range of applications including houses, flats, schools, hospitals, commercial and industrial buildings. Used to complement artificial lighting they can considerably reduce the energy consumption of any building. The Sunscope™ system has a roof-mounted polycarbonate dome or skylight connected to a tube with an internal mirrored finish providing options of 95% or 98% reflectivity. Natural daylight enters the dome or skylight and is reflected down the tube and into the room through a ceiling-mounted diffuser.

### System performance

Sunscope™ performance has been firmly established by a unique and extensive programme of testing, unparalleled in the tubular rooflight industry, carried out by the SILSOE Research Institute. Extensive measurements were taken over prolonged periods during the summer/autumn months in all natural light conditions ranging from bright clear skies to overcast conditions. This comprehensive monitoring has for the first time provided accurate, realistic and reliable performance data for tubular rooflights systems.

### Calculation software

Based on the SILSOE research, a unique and sophisticated computer program has been developed which can accurately predict the light levels achievable with Sunscope™, compared to standard electric light bulbs for any given application.

This enables specifiers and end users to accurately

compare light levels for 95% reflective or 98% reflective systems, in 250mm, 350mm or 530mm diameter across the whole range of external light levels. The program accurately calculates the light levels achievable under various external light conditions, taking into account tube diameter, length and number of bends. This enables informed decisions to be made on optimum siting and the best possible configurations for maximum light benefit.

An investment in Glidevale Sunscope™ systems can help to conserve energy and reduce CO<sub>2</sub> emissions.

### Further information

The Sunscope™ calculator tool can be found under the Glidevale Sunscope™ section of the web site at [www.glidevale.com](http://www.glidevale.com)

Our technical services team would be pleased to answer any further questions.



External lux sensor with shade ring for measuring diffused light levels

Internal view of different diameter tubular rooflights under test

