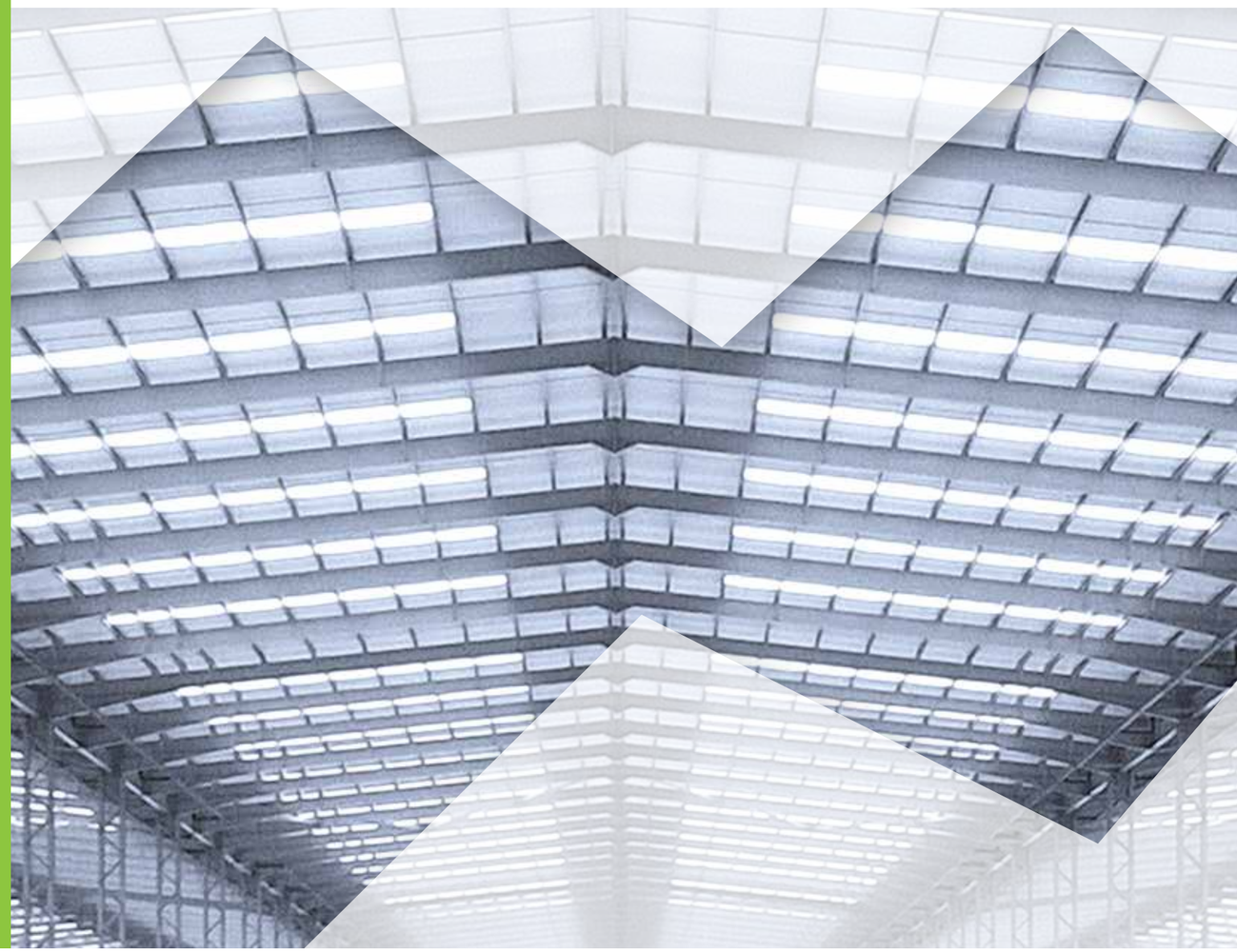
Hambleside Danelaw
Rooflights

Zenon, a comprehensive range of low carbon rooflights for the metal building envelope from Hambleside Danelaw



Hambleside Danelaw
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ZENON

LOW CARBON DAYLIGHT SOLUTIONS

This is naturally responsible® Printing
100% waterless 100% alcohol- and substitute free 100% carbon neutral 100% renewable energy 100% recycled FSC stock 100% vegetable oil based inks
Zero % waste to landfill
printed by seacourt: proud to be counted amongst the top three environmental printers in the world
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ZENON

Low carbon daylighting solutions for your metal building design

Hambleside Danelaw have been manufacturing rooflight solutions in the UK for 40 years. We are market leaders in developing environmentally conscious solutions to improve building energy performance and reduce the carbon footprint through the efficient and effective use of natural daylight. Our in-plane Glass Reinforced Polyester [GRP] rooflights for the metal building envelope have been installed on projects such as B&Q, Wickes, Tesco distribution warehouses and Rolls Royce factories to name just a few.

05 Zenon
06 Why include Natural Daylight in your design?
07 Key Specification Considerations
08 Non-Fragility
09 Product Guarantees
10 Zenon Pro vs Zenon Evolution
12 Zenon Pro
14 Zenon Evolution
14 Insulation Options
18 Site Assembled Rooflights
20 Factory Assembled Rooflights [FAIRS]
22 Barrel Vault Rooflights
23 References

ZENON

ZENON

Passing the Test

Our BBA certified range of Zenon rooflights are manufactured and CE marked in accordance with BS EN1013:2012 to match all typical metal, aluminium and fibre cement profiles. We take our responsibility as a manufacturer very seriously and therefore all our products are rigorously tested to ensure compliance with regulations and best practice, such as fire and non-fragility. Our UK GRP production facility is BS EN ISO 9001:2008 quality certified and operates using a renewable energy source.

Setting the Standard

We are committed to a continuous carbon reduction programme, achieving a 78% reduction in the last 5 years. We confidently quote light, thermal and solar transmission values to help our clients specify the most appropriate rooflight system for their building.

Leading the Way

We have developed some unique products within our range, designed specifically to overcome specification issues. The solutions include our unique Insulator core which delivers improved light transmission, along with a more natural and enhanced diffusion of daylight.

Lowering Carbon

The Zenon Evolution range provides a stronger rooflight whilst using less resin in production therefore making it the only low carbon in-plane rooflight option available on the market.

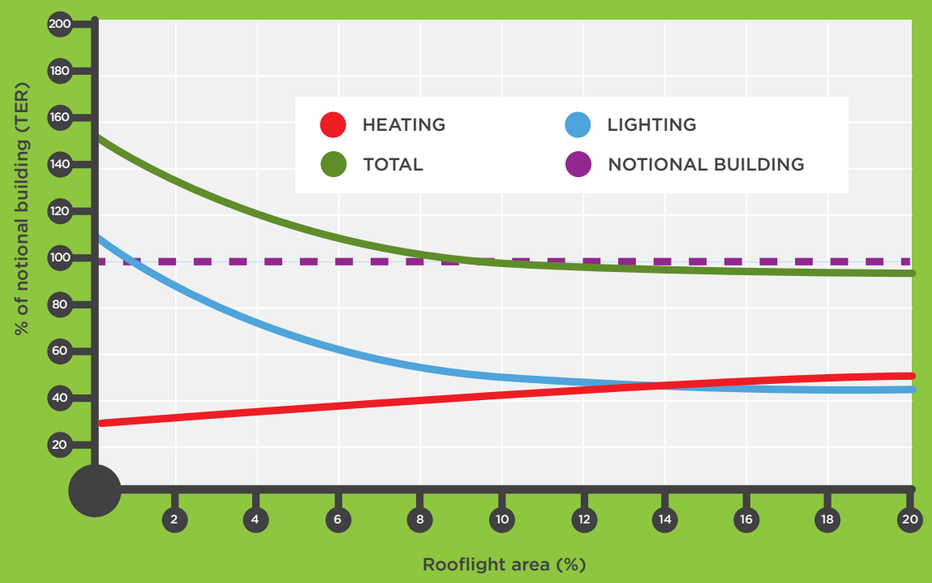
Lighting the Way

Hambleside Danelaw are long standing members of NARM, the National Association of Rooflight Manufacturers. Further details about compliance and the benefits of natural daylight are available on their website **www.narm.org.uk.**

Why include natural daylight in your design?

There are many well-known scientifically proven benefits. Buildings which provide high levels of natural light generally have more positive working environments than those which are dependent upon artificial light. It is known that people respond better to working in natural light conditions, as the eye and brain functions work better, resulting in improved concentration and overall performance. Plus, of course, less dependency on artificial light significantly reduces energy consumption and running costs as well as impacting positively on the buildings overall carbon footprint. Thermally efficient insulated rooflights can further reduce heat loss and energy costs. These benefits, and the effectiveness of rooflights as a contributor, are acknowledged in the Building Regulations Approved Document Part L. It recommends that industrial and commercial building structures should have a rooflight area of 10% to 20%.

This graph demonstrates the reduction in carbon emissions of a typical notional building as the rooflight area is increased to the optimum 18% and used in conjunction with a fully automated lighting control system.



Source: SBEM results - CO_2 emissions for the Notional Building at varying rooflight area; graph 1, NARM NTD06: Designing with Rooflights [2014]

Key specification considerations

B&Q Bedford

LIGHT TRANSMISSION [L - VALUE]

Light that has travelled through a medium without being absorbed or reflected.

SOLAR GAIN [g-VALUE]

Total solar heat gain includes directly transmitted solar heat and absorbed solar radiation, which is then reradiated, conducted, or convected into the space.

THERMAL PERFORMANCE [U-VALUE]

A measure of the flow of heat through an insulating or building material: the lower the U-value, the better the insulating ability.

EMBODIED CARBON

The carbon released during the resource extraction, manufacture and fabrication of a product, its use, maintenance and final disposal including transport and packaging at all stages.

Non-Fragility

The terms 'fragile' and 'non-fragile' describe the tested, proven ability of a finished roof assembly to resist the impact of a person falling onto it then to support their weight. The test is strictly prescribed in document ACR[M]001:2014 [Fifth Edition].

There is no margin for error or misunderstanding because someone's life may depend on it.

A correctly installed new roof structure which includes in-plane Hambleside Danelaw Zenon rooflights passes the non-fragility test. In fact, Zenon Evolution significantly outperformed it, resisting impact after impact.

The whole Zenon rooflight range has been subjected to this rigorous test programme and is classed as non-fragile in accordance with the National Association of Rooflight Manufacturers [NARM] Technical Document NTD03 [2014].

A number of factors will impact on the period of non-fragility which will be achieved by a roofing assembly. Manufacturers can only indicate the expected period of non-fragility.

Further guidance is available from NARM and MCRMA.

Why specify GRP rooflights?

- Thermo set material - doesn't sag, melt or lose its shape.
- Low expansion coefficient, making it the most compatible rooflight material for all cladding systems.
- Impervious to plasticiser migration damage from Plastisols. No barrier tape needed.
- Achieves fire ratings up to S.AA and Class 0 when tested in accordance with BS476.
- Long service life, almost double that of some other rooflight materials.
- Excellent resistance to most forms of chemical degradation and attack.
- Efficient use of daylight entering the building, diffusing it to give an even spread of light. This reduces light and shade contrast and internal glare.

Product Guarantees

Zenon Pro and Zenon Evolution carry a service life guarantee of 25 and 30 years depending on weight.

Service life is defined in BS 7543: 2003.

These guarantees cover durability, serviceability and structural integrity of the sheet material.

25 YEAR GUARANTEE

30 YEAR GUARANTEE

ZENON PRO

Ideal for typical industrial, commercial or agricultural buildings.

Network Rail

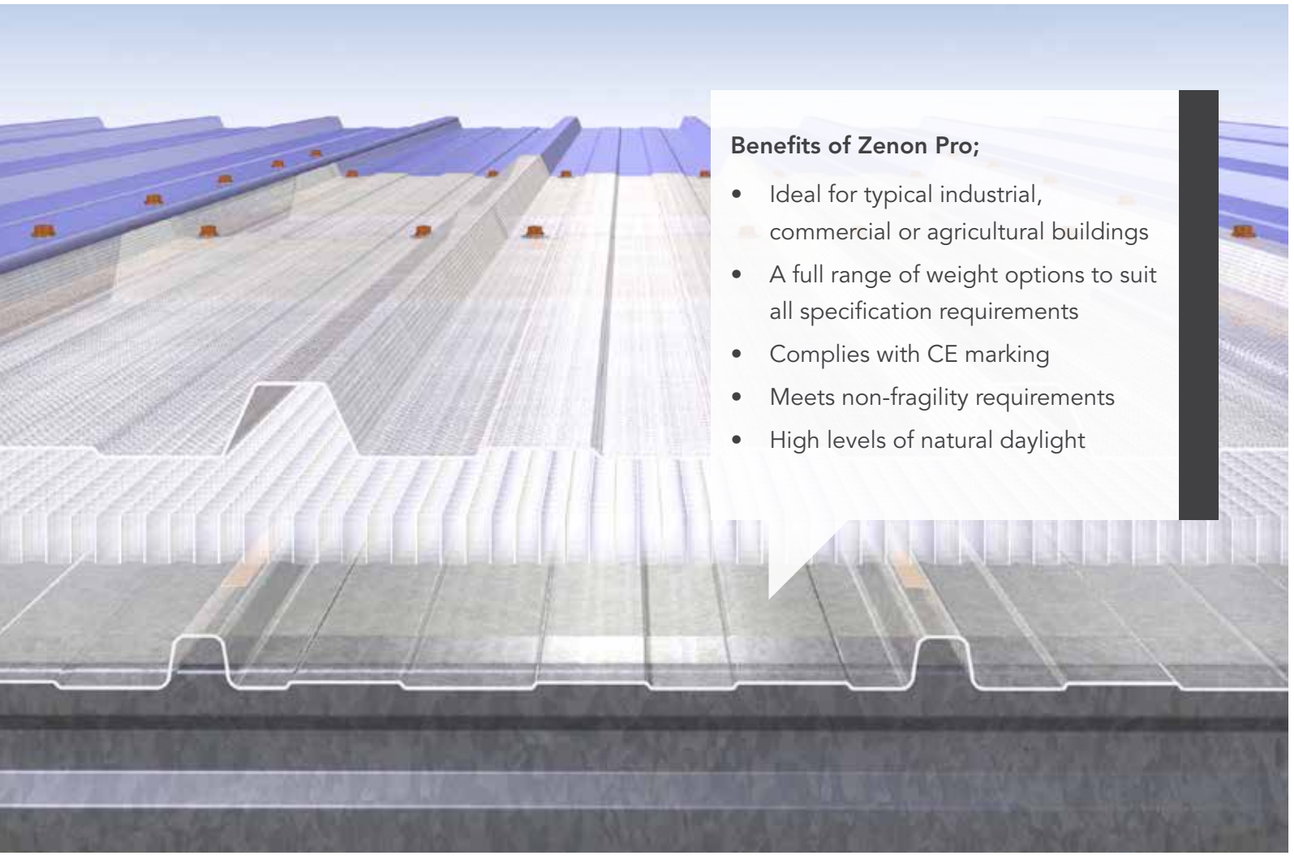
ZENON EVOLUTION

Ideal for environmentally conscious industrial and commercial buildings or where superior strength is demanded.

B&Q Bedford

ZENON PRO

Haverhill



Benefits of Zenon Pro;

- Ideal for typical industrial, commercial or agricultural buildings
- A full range of weight options to suit all specification requirements
- Complies with CE marking
- Meets non-fragility requirements
- High levels of natural daylight

PRO

IDEAL FOR TYPICAL INDUSTRIAL, COMMERCIAL OR AGRICULTURAL BUILDINGS

Zenon Pro is the new brand name for our tried and tested range of traditional GRP rooflight sheets. The natural translucent in-plane rooflights are profiled to match the building envelope cladding system and are available in over 1000 profiles to suit new build and refurbishment projects. They are suitable for installing in single skin and double skin assemblies and can be insulated with either polycarbonate or our unique Insulator core for triple skin applications. Zenon Pro rooflights are compatible with both site-assembled and composite panel cladding systems.

This range is CE marked and available in all sheet weights defined in the UK Annex to BS EN1013:2012.

EVOLUTION

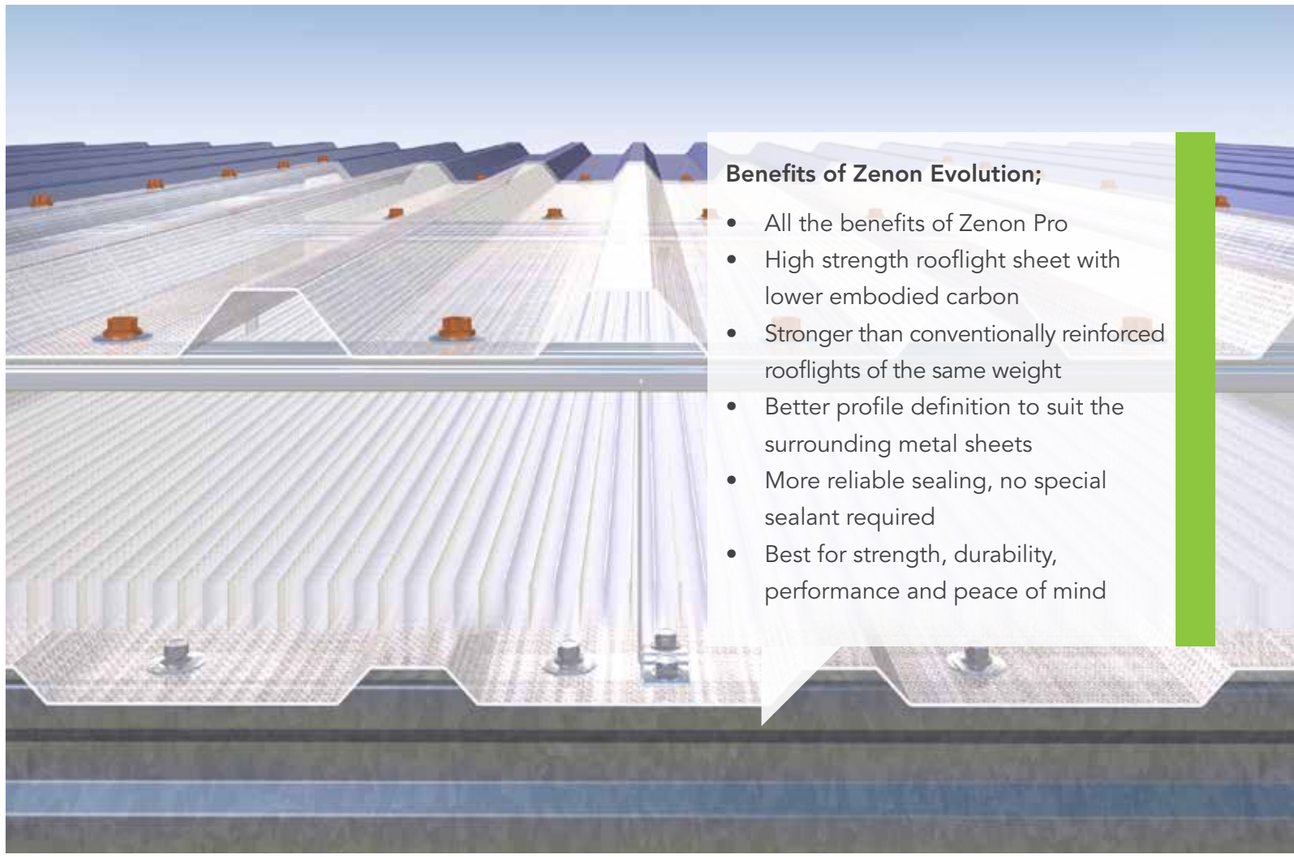
IDEAL FOR ENVIRONMENTALLY CONSCIOUS INDUSTRIAL AND COMMERCIAL BUILDINGS OR WHERE SUPERIOR STRENGTH IS DEMANDED

Zenon Evolution, the truly low carbon rooflight, offers the best solution for your environmentally conscious industrial or commercial building. Featuring innovative high performance glass reinforcement we are able to reduce the amount of resin required in the manufacturing process, yet produce a GRP rooflight sheet stronger than the traditional equivalent. Accordingly, Zenon Evolution is produced in two weights. Both weights deliver a non-fragility which equals or betters that of significantly heavier conventionally reinforced products. Both use less resin in manufacture and are thinner, lighter and with less embodied carbon.

Zenon Evolution sheets offer significant carbon reduction saving in comparison to their Zenon Pro equivalent. A slight trade-off in terms of light transmission is more than offset by the improvement in thermal performance using the Insulator core, which can deliver a reduction in U-value up to 40% with improved light transmission compared to polycarbonate insulation layers.

B&Q West Sussex

ZENON EVOLUTION



Benefits of Zenon Evolution;

- All the benefits of Zenon Pro
- High strength rooflight sheet with lower embodied carbon
- Stronger than conventionally reinforced rooflights of the same weight
- Better profile definition to suit the surrounding metal sheets
- More reliable sealing, no special sealant required
- Best for strength, durability, performance and peace of mind

Insulation Options

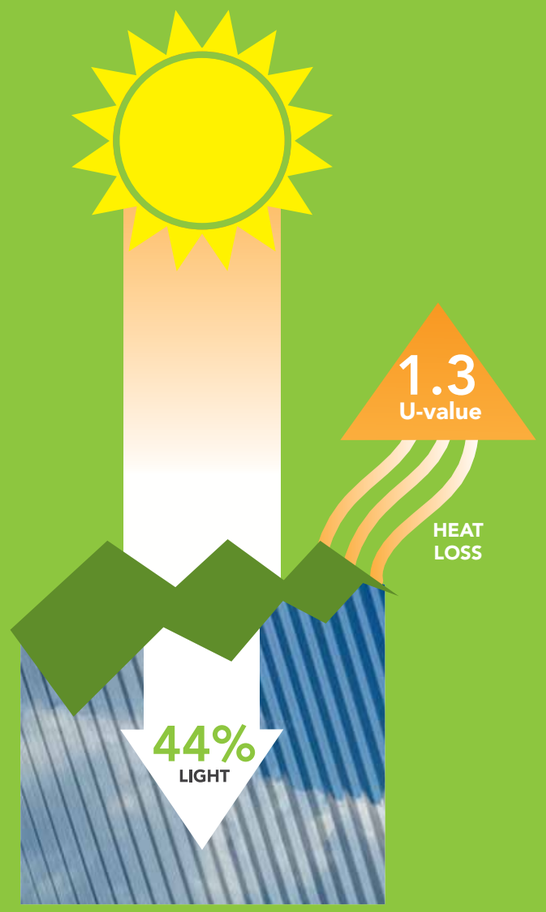
The most common insulant for rooflights is currently polycarbonate. We supply both 4mm and 10mm polycarbonate sheets which meet Building Regulations and improve the thermal performance of a double skin rooflight assembly.

However, we have developed a unique honeycomb type structure, Insulator, which delivers;

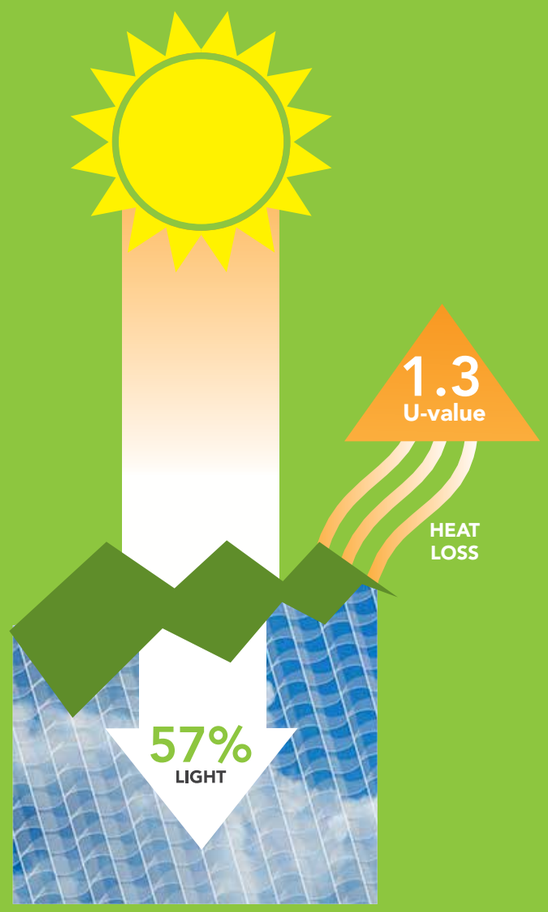
- excellent light transmission
- improved thermal performance
- low carbon footprint for your building due to excellent U-value performance
- sustainable materials - compostable at the end of service life

Polycarbonate **vs** Insulator

Insulator, in comparison to polycarbonate insulation, offers better light transmission. The example below looks at a typical 1.8kg/m^2 over 2.4kg/m^2 Zenon Pro assembly and shows 30% improvement in light transmission for the same U-value.



10MM POLYCARBONATE



20MM INSULATOR

Site Assembled Rooflights

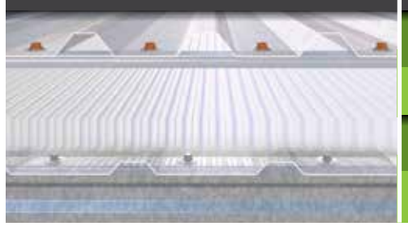
Zenon site assembled rooflights can combine Zenon Pro and Zenon Evolution weather sheet and liner panel configurations to suit the building requirements. Manufactured to match all commonly available metal cladding profiles for both new build and refurbishment projects, the various sheet weights can be mixed and matched to meet the best performance criteria for your building design. Where insulated assemblies are required to meet Building Regulations and to improve building energy performance, our unique Insulator core or polycarbonate options can be selected. All our insulated rooflight assemblies achieve U-values below the Building Regulations Part L notional building value of 1.8W/m²K. All our assembly combinations meet, or more often exceed, the required non-fragility classification as defined in NARM Technical Document NTD03 [2014] in conjunction with ACR(M)001:2014 [Fifth edition]. Each sheet can be manufactured to the required fire grade. Uninsulated rooflight assemblies are available for agricultural building applications where Building Regulation requirements may not be applicable.

Configurations

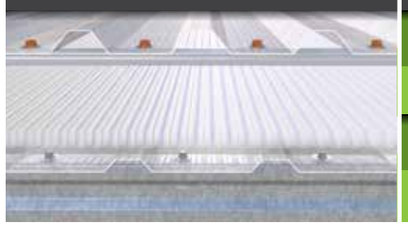
The options shown [right] demonstrate the effect that our different insulation options have on building performance for the average Zenon Pro and Zenon Evolution assemblies. For more specific performance data based on your building design requirements, please contact our Technical Department by email on **techelp@hambleside-danelaw.co.uk** or call **01327 701920.**

ZENON

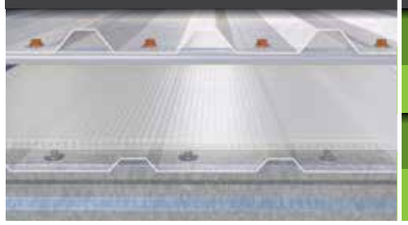
PERFORMANCE IMPROVEMENT



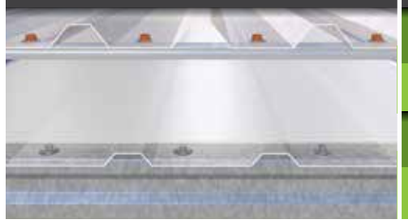
40MM INSULATOR	%	W/m²K	%	kg Co_2e/m^2
Zenon Pro	56	1.2	56	18.4
Zenon Evolution	46	1.2	47	15.3



20MM INSULATOR	%	W/m²k	%	kg Co_2e/m^2
Zenon Pro	56	1.3	56	18.3
Zenon Evolution	46	1.3	47	15.2



10MM POLYCARBONATE	%	W/m²k	%	kg Co_2e/m^2
Zenon Pro	43	1.3	44	23.4
Zenon Evolution	35	1.3	36	20.3



4MM POLYCARBONATE	%	W/m²k	%	kg Co_2e/m^2
Zenon Pro	53	1.7	52	21.0
Zenon Evolution	45	1.7	43	17.9

Typical figures for comparison purposes only, based on physical testing by NPL. See Technical manual for more details.

KEY: LIGHT TRANSMISSION · THERMAL PERFORMANCE · SOLAR GAIN · EMBODIED CARBON

Factory Assembled Rooflights [FAIRS]

Zenon factory assembled insulated rooflights, to suit composite panel cladding systems, can comprise of Zenon Pro and Zenon Evolution weather sheet and liner panel configurations to suit the building requirements. Where insulated assemblies are required to meet Building Regulations and to improve building performance, the unique Insulator core or polycarbonate options can be selected.

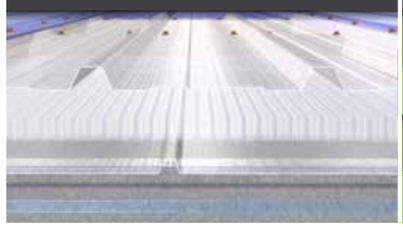
All our triple skin FAIRS achieve U-values which out-perform the Building Regulations Part L notional building value of 1.8W/m²K.

Configurations

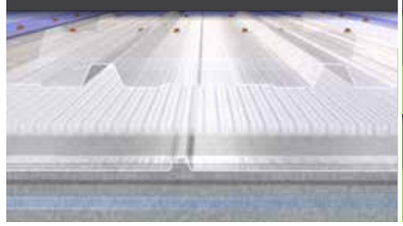
The options shown [right] demonstrate the effect that our different insulation options have on building performance for the average Zenon Pro and Zenon Evolution FAIRS assemblies. For more specific performance data based on your building design requirements, please contact our Technical Department by email on **techelp@hambleside-danelaw.co.uk** or call **01327 701920.**

ZENON

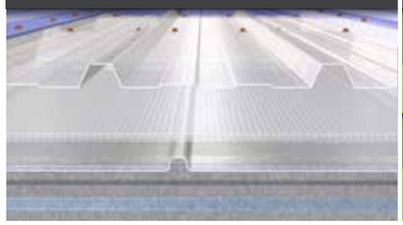
PERFORMANCE IMPROVEMENT



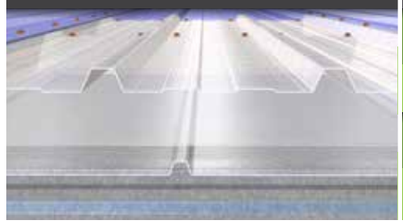
40MM INSULATOR	%	W/m²K	%	kg Co_2e/m^2
Zenon Pro	61	1.1	61	17.1
Zenon Evolution	50	1.1	50	14



20MM INSULATOR	%	W/m²k	%	kg Co_2e/m^2
Zenon Pro	61	1.2	61	17.0
Zenon Evolution	50	1.2	50	13.9



10MM POLYCARBONATE	%	W/m²k	%	kg Co_2e/m^2
Zenon Pro	44	1.2	44	22.1
Zenon Evolution	36	1.2	36	19.0



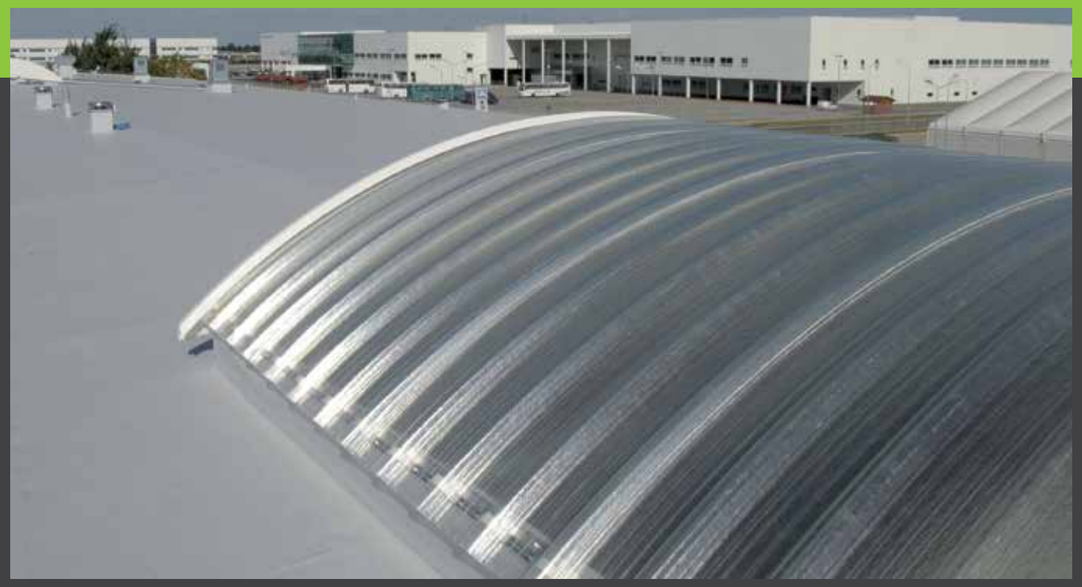
4MM POLYCARBONATE	%	W/m²k	%	kg Co_2e/m^2
Zenon Pro	53	1.5	53	19.7
Zenon Evolution	44	1.5	43	16.6

Typical figures for comparison purposes only, based on physical testing by NPL. See Technical manual for more details.

KEY: LIGHT TRANSMISSION · THERMAL PERFORMANCE · SOLAR GAIN · EMBODIED CARBON

Barrel Vault Rooflights

- Arched kerb mounted rooflight system suitable for new build or refurbishment projects.
- Manufactured in GRP, delivering all the benefits of diffused light, high strength, good longevity and fire resistance.
- Our barrel vault rooflights are self-supporting and available in single, double or triple skin site assembled format to suit spans up to 4m.
- Barrel vaults along the ridge can provide an aesthetically pleasing design and a relatively uniform distribution of light if the roof slope is short.
- Ideal for low pitch standing seam system roofs and flat roof applications.
- Placed on an upstand that curves to the roof, barrel vault rooflights can be applied to run over the crown of the roof, stopping either mid slope or at the eaves.



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BS OHSAS 18001: 2007	Occupational health and safety management system.
BS EN ISO 9001: 2008	Quality management.
BS EN ISO 14001: 2004	Environmental management system. Requirements with guidance for use.
BS 476-3: 2004	Fire tests on building materials and structures. Classification and method of test for external fire exposure to roofs .
BS 476-6:1989+A1:2009	Fire tests on building materials and structures. Method of test for fire propagation for products .
BS 476-7:1997	Fire tests on building materials and structures. Method of test to determine the classification of the surface spread of flame of products.
BS EN 1013:2012	Light transmitting single skin profiled plastics sheets for internal and external roofs, walls and ceilings. Requirements and test methods.
UK National Annex to BS EN 1013	Classification method for GRP profiled sheets in accordance with BS EN 1013.
BS 7543: 2003	Guide to durability of buildings and building elements, products and components.
www.nfrc.co.uk	National Federation of Roofing Contractors.
www.mcrma.co.uk	Metal Cladding and Roofing Manufacturers Association website.
www.narm.org.uk	National Association of Rooflight Manufacturers website.
NARM NTD01	Natural Daylight Design Through Rooflighting.
NARM NTD03	Application of ACR[M]001 'Test for Non-Fragility of Profiled Sheeting Roofing. Assemblies' to GRP Profiled Rooflight Sheeting.
NARM NTD06	Designing with Rooflights.
ACR[M]001: 2014	Test For non-fragility of large element roofing assemblies. Fifth edition.