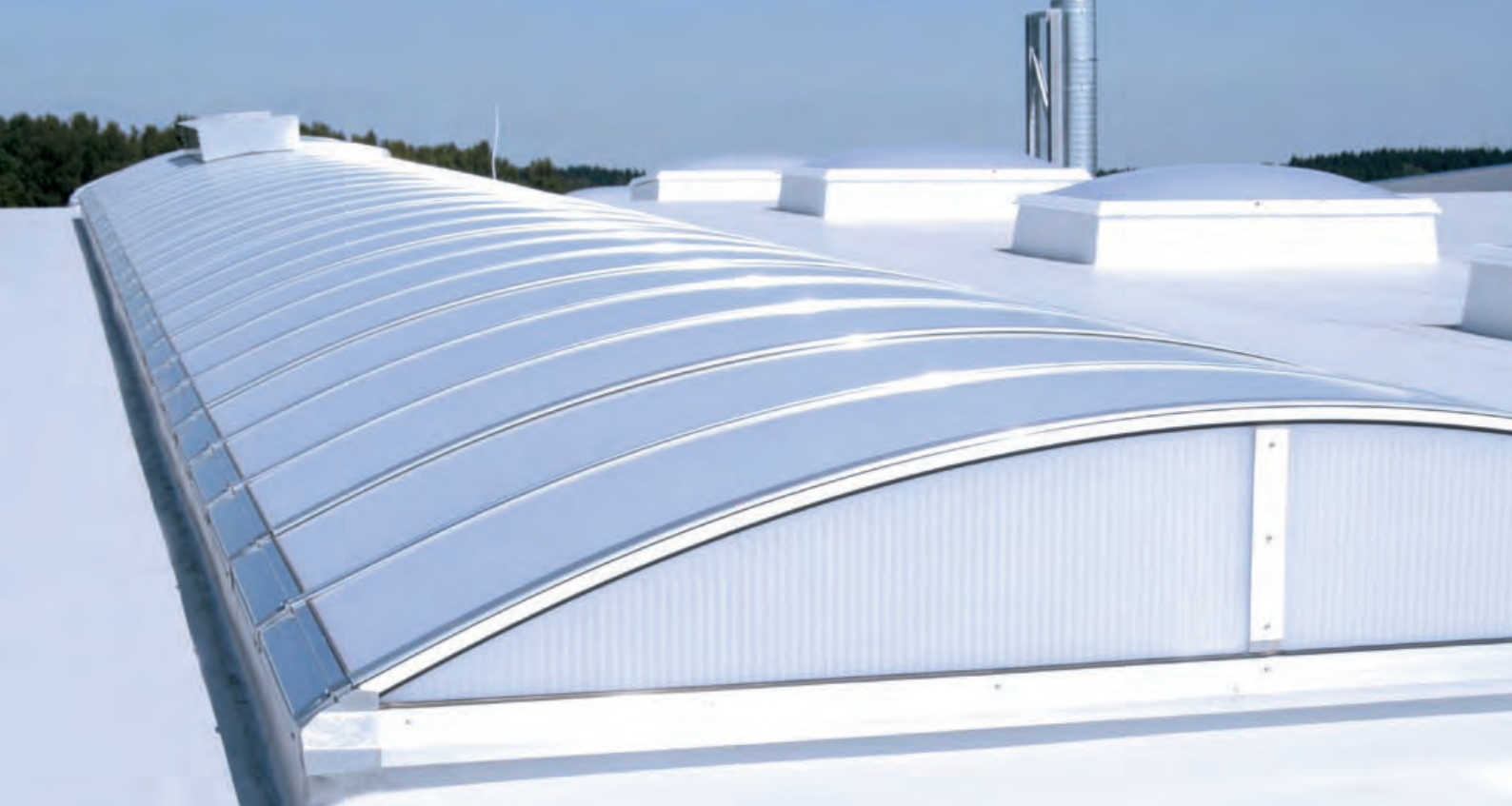


The first continuous rooflight with Europe-wide approval for use

CI System Continuous Rooflight B

Energy-efficient and superior statics





LAMILUX CI System Continuous Rooflight B

The first continuous rooflight without thermal bridges and with Europe-wide approval – for an optimised energy balance



Dipl. Ing. Joachim Hessemer
Technical Director

*„With the CI System Continuous Rooflight, we have developed a daylight system for intelligent building management which is breaking ground in terms of energy efficiency and statics. With regard to intelligence, we attach particular importance to detail, which means to the ingenious individual components that make up an extremely economic and stable overall system with comprehensive and unimpaired heat insulation. We call this a **TIP: Total Insulated Product***



Perfect heat insulation with European approval

The LAMILUX CI System Continuous Rooflight B is the first continuous rooflight system with heat insulation values that have been tested and certified for use throughout the entire European Union area. These values are achieved due to the perfect harmonization of all the components with regard to energy efficiency.

A document for your assurance - our quality certificate

The LAMILUX quality certificate testifies to the successful use of the tested components in practice. It gives our customers confirmation that the certified values apply to every continuous rooflight that we manufacture. We keep to our promise.



The LAMILUX CI Philosophy

Customer value is the reason for our existence and is the focus of our activities. This requires unity, identity and harmonisation of customer value and our company's mission.

We at LAMILUX describe this main impulse behind our business activities and our daily dealings with our customers in our company philosophy:

Customised intelligence - serving the customer is our mission:

This means top performance and leadership in all relevant areas for customers, in particular as:

- Quality leader – the most benefit for the customer
- Innovation leader – ahead by a nose with technology
- Service leader - fast, uncomplicated, reliable and friendly
- Competence leader - the best technical and business consultation
- Problem solving leader - individual, tailored solutions

Superior quality made even better

We are the first manufacturer to achieve the best U_w values for a continuous rooflight system with European certification.

What is the U_w value?

To cut a long story short: it is the overall heat transmission coefficient, and is of particular significance for the energy balance of a building. Put simply, the U_w value is made up of the heat transmission coefficients of all the components of the continuous rooflight: the U_g value of the glazing and the U_f and Ψ values of the base profiles, cross-bar profiles, frame profiles of the flaps, and the frame profiles of the gables. By applying these values to the relevant surfaces, the U_w value necessary for assessing the thermal properties of the building can be determined.

$$U_w = U_{g/p} \times A_{g/p} + \sum U_{fi} \times A_{fi} / (A_{g/p} + \sum A_{fi})$$

$U_{g/p}$ = heat transmission coefficients for glazing/panels

$\sum U_{fi}$ = sum of the heat transmission coefficients of the base profiles, cross-bar profiles, frame profiles of the flaps, and frame profiles of the gables

A = respective surface areas

- **Save and conserve energy** - by using patented components.
Our technology: **The Isothermal Load Converter (ITL)**
- **Safety** – ensured by the excellent stability of the entire construction under snow and wind loads.
Our technology: **The Active Expansion Absorber (AEA) and Dynamic Torque Control (DTC)**
- **Preventive fire protection**
Our technology: **Linear Burn-Through Protection (LBP)**
- **International standards** – tested: The CI System Continuous Rooflight B as a smoke and heat ventilation system in line with EN 12101-2.

The new continuous rooflight generation has improved

Type of approval	and gained General building authority approval for Germany and European technical approval
Snow load bearing capacity (acc. to approval)	up to 64%
Wind suction load bearing capacity (acc. to approval)	up to 59%
U_w value for continuous rooflight	up to 6% *
U_f value for base profiles	up to 48% *

* with heat insulation verified by approval for the whole system

- An advantage in thermal insulation throughout the structure (U_w value) and the base profiles (U_f value)
- An advantage in wind load bearing capacity
- An advantage in permitted snow load
- An advantage in approval type – certified thermal insulation: first continuous rooflight from a manufacturer with an European technical approval

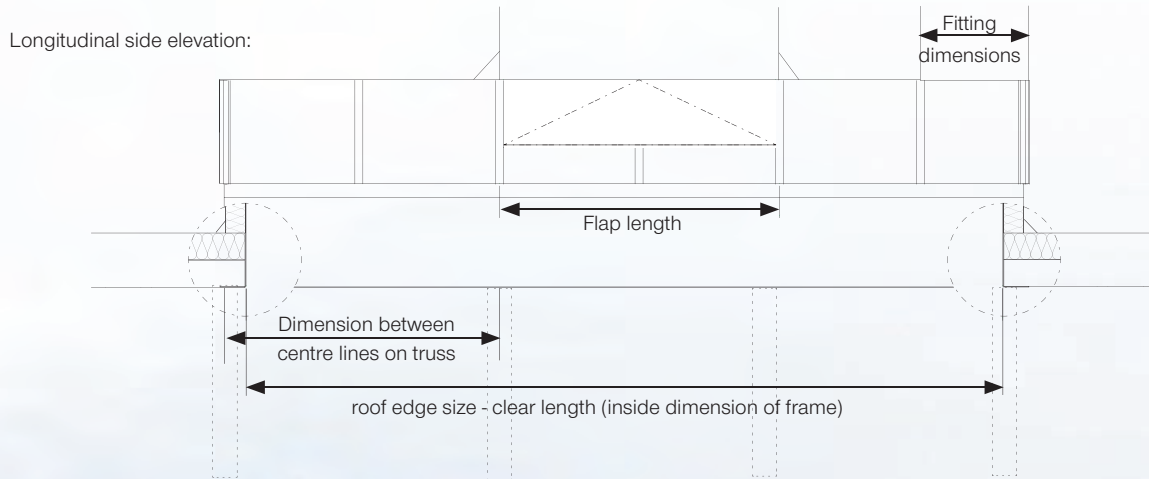
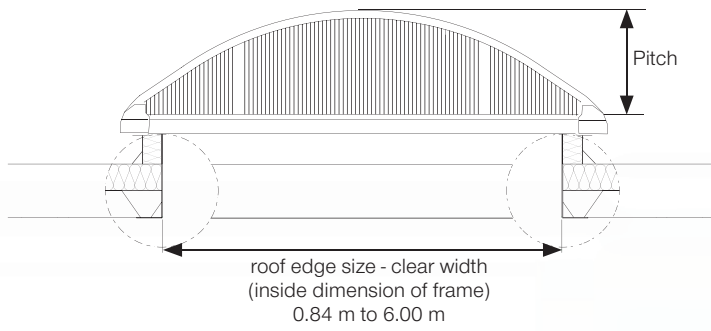
LAMILUX CI System Continuous Rooflight B

Energetic and static intelligence in detail

The new CI System Continuous Rooflight B combines a high daylight intake, excellent thermal insulation and maximum safety in the event of heavy loads on the construction caused by wind and snow. These characteristics are ensured by an integrated, modular system which consists of many perfectly matched and innovative individual components.



LBP - Linear Burn-Through Protection
Page 10



You can find more detailed technical information on our website at <http://www.lamilux.com>

DTC - Dynamic Torque Control
Page 14



AEA - Active Expansion Absorber
Page 7



ILC - Isothermal Load Converter
Page 6



1

LAMILUX
CL-ENERGY

The Isothermal Load Converter - ILC

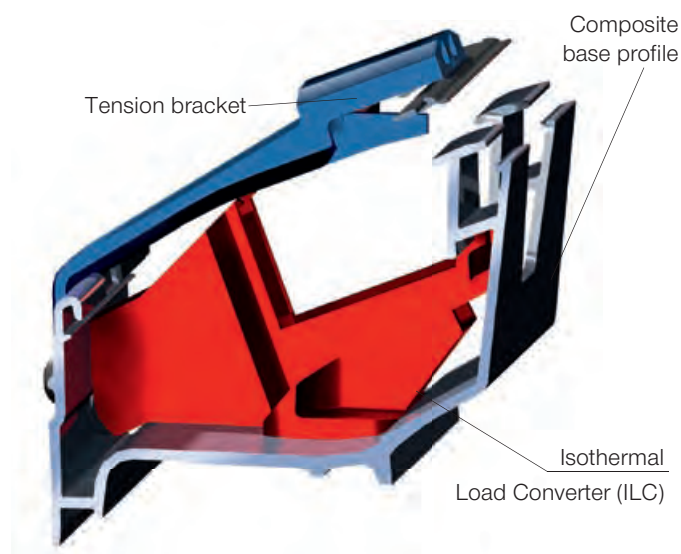
Innovation eliminates thermal bridges

Thermal technology calculations are a key instrument in continuous product optimisation. Maximum customer benefits from our products means elimination of thermal bridges, thus ensuring that none of our composite elements “sweats” due to condensation. The result of our work: an intelligent system at the base of the continuous rooflight structure.

One of our key structural components that has assured us outstanding results in the optimisation of isothermal characteristics is the Isothermal Load Converter (ILC). This component guarantees a supporting structure which is free of thermal bridges.

The design concept:

The Isothermal Load Converter (ILC) channels the bearing load into the continuous rooflight supporting structure. This ensures the base profile is free of loads and torsion, thus enabling the use of materials with excellent heat insulation properties.



The positive effect:

ILC technology means that we can guarantee optimised temperature characteristics and thus a low incidence of condensation on the continuous rooflight’s base profile.

1



ILC – Benefit from optimum energy efficiency

- Excellent Uf values in the base profile and further enhanced thermal insulation
- Improved load bearing capacity in the base profile
- Significantly reduced risk of condensation
- Smooth interior with few edges, which ensure less dirt



The Active Expansion Absorber - AEA

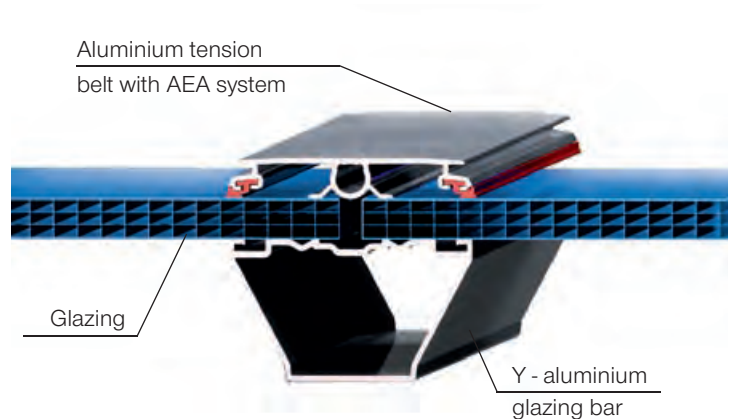
Stability thanks to intelligent components

A new technology, the Active Expansion Absorber (AEA), guarantees extra protection in extreme weather conditions. The glazing seal can no longer slip in the glazing bar section.

The AEA compensates for differences in expansion between tension belts and seals in the continuous rooflight. This prevents seals from slipping out even when the rooflight construction is subjected to heavy loads.

The design concept:

The seals are connected shear-resistantly with the tension belt.

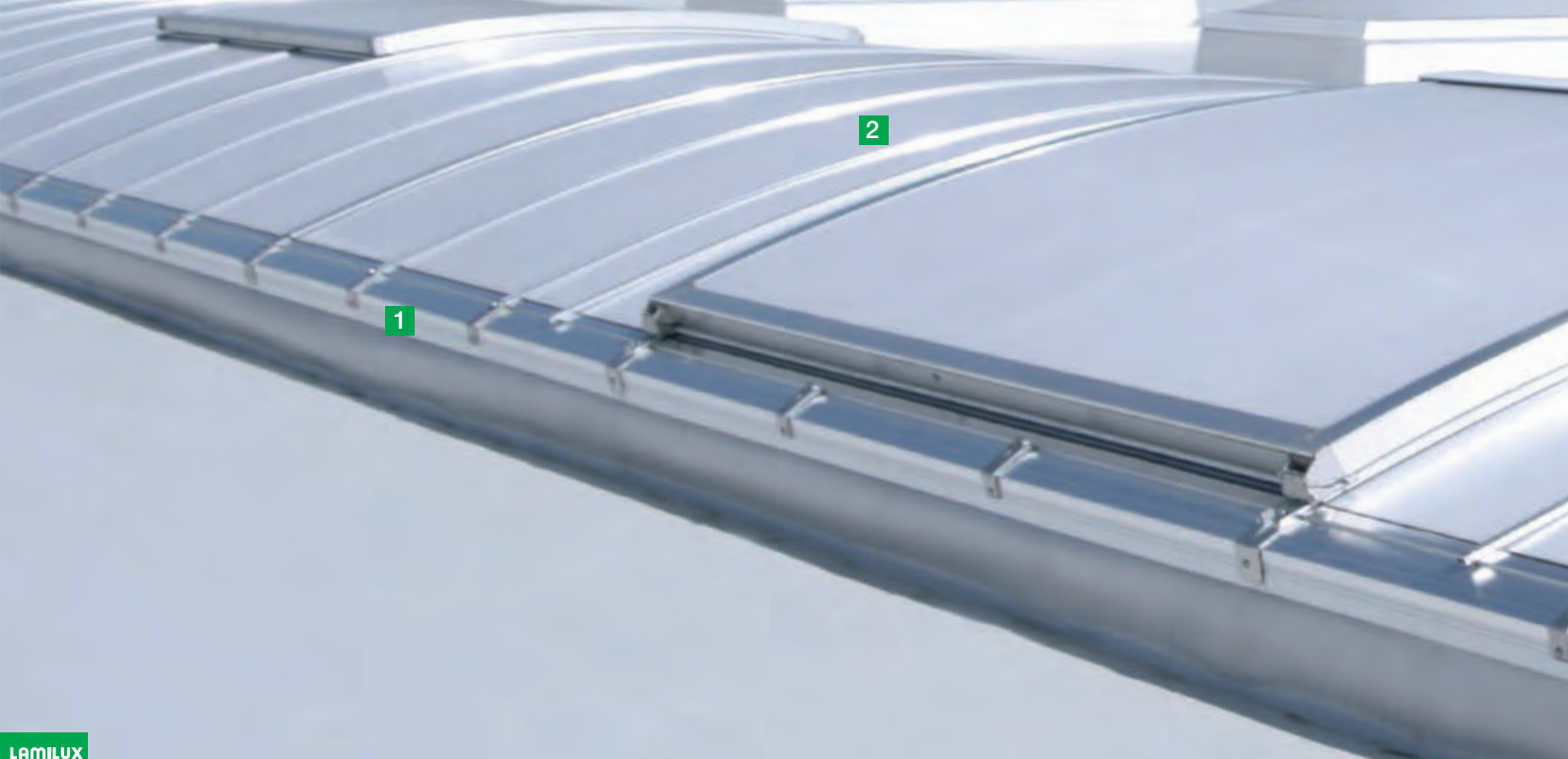


The AEA absorbs differences in expansion between tension belts and seals in continuous rooflights.

AEA – Safety aspects in detail

- Optimum protection in the case of snow, ice, wind or heat
- Seal components are form-fitted and force-fitted
- Tension belts feature integrated guide rails to hold fittings, shade systems, flaps and maintenance devices





Sustainability redefined – **TIP Total Insulated Product**

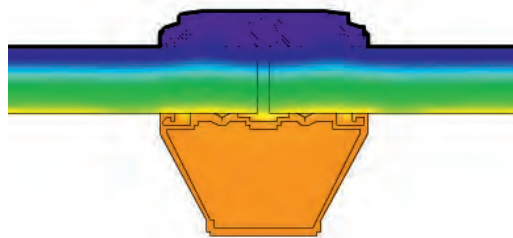


The new CI System Continuous Rooflight B constitutes a complete heat-insulating system, in which each component contributes to the high level of energy efficiency. The temperature characteristics are also optimised in the base profile and the glazing

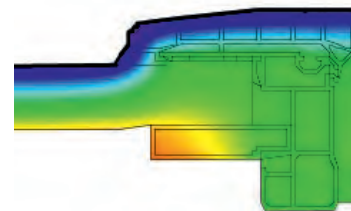
bar profile, thus ensuring outstanding thermal insulation. The U_w value describes the heat transmittance of the continuous rooflight as a whole, including all its components.



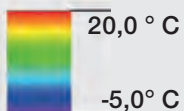
1 Base profile in the longitudinal direction



2 Glazing bar profile



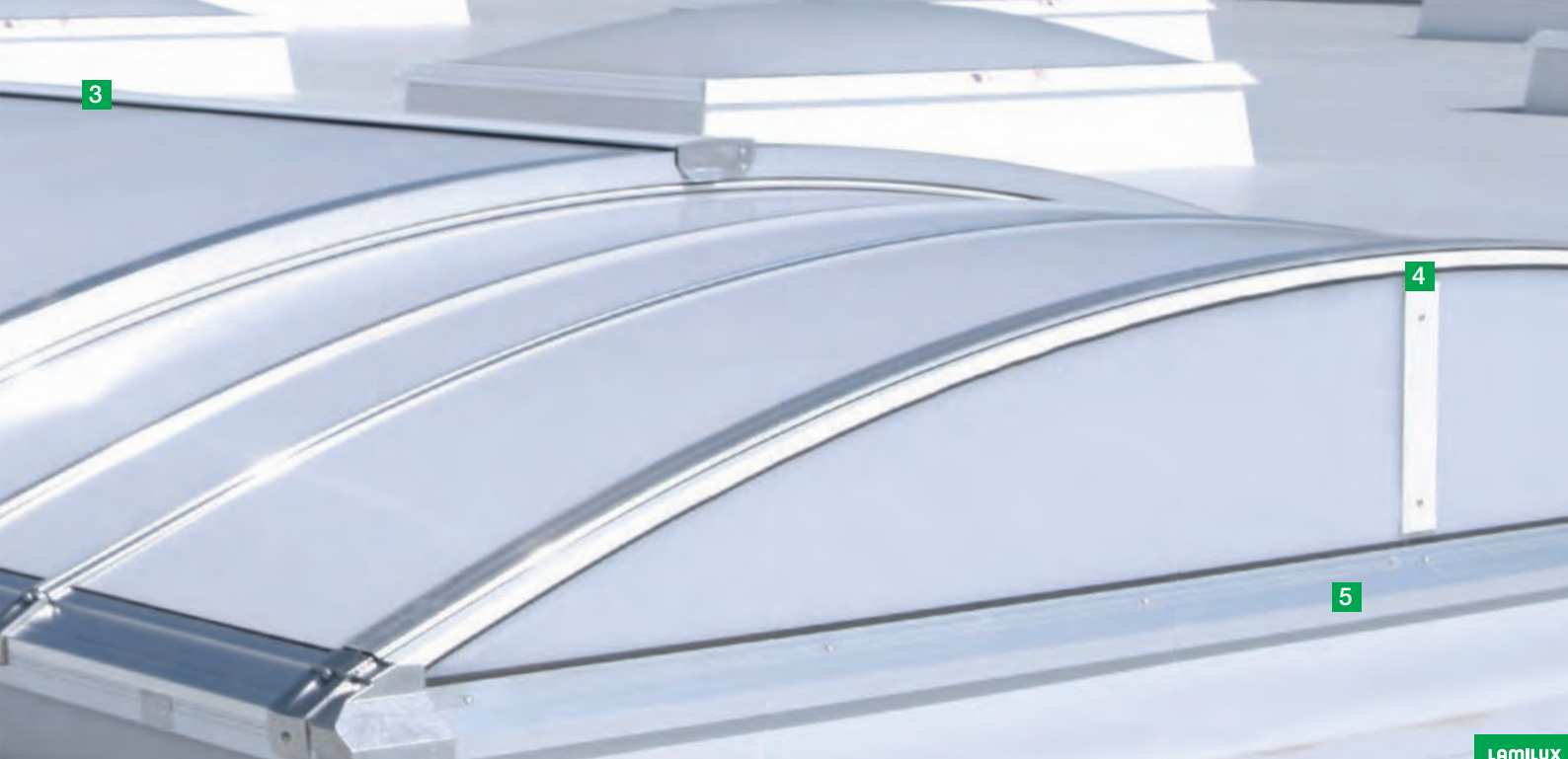
3 Ridge profile of the



Optimised isothermal and temperature characteristics ensure continuous thermal insulation zones with no weak points and thus provide perfect thermal protection throughout all parts of the structure.

The benefit: The inner surface of the structure does not cool down even when the temperature outside is low.

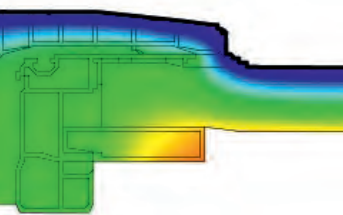
The positive result: The risk of condensation forming on the structure is significantly reduced.



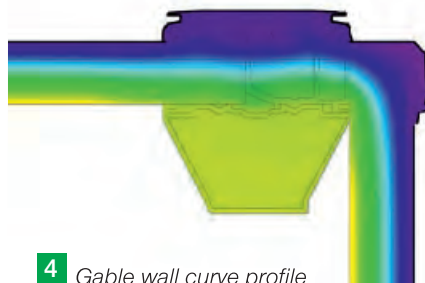
Optimised isothermal characteristics - for comprehensive thermal insulation with no weak spots

The structural layout of the energy-efficient components in the corners and flat sections – and verifiably in the critical gable sections – results in even and flawless isothermal characteristics. This

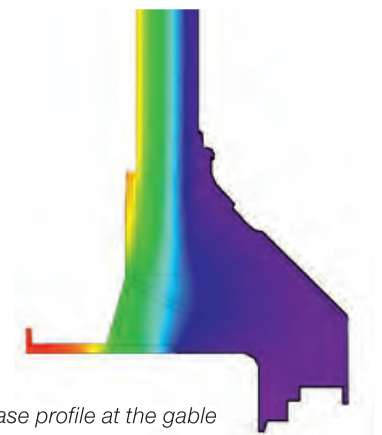
not only ensures excellent heat insulation, but prevents thermal expansion too. This means that the continuous rooflight always forms an integrated, airtight system.



flap opening system



4 Gable wall curve profile



5 Base profile at the gable

The comprehensive thermal protection technology throughout the structure ensures the best U_w values in our European-approved continuous rooflight. The energy efficiency properties have been tested and verified in accordance with ETAG 010. This documents the uniform insulating properties of the profiles in the rooflight system. The U_w values are calculated at no extra cost when an order is placed and are confirmed by the quality certificate.



Dynamic Torque Control - DTC

Safety thanks to new technology

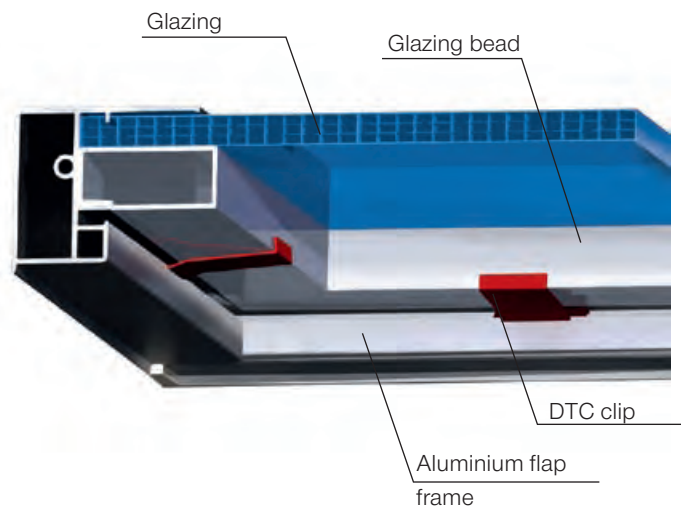
As a result of another structural element, our new Dynamic Torque Control (DTC) technology, the CI System Continuous Rooflight B offers even greater safety and protection in the case of storms and heavy snow loads.

The design concept:

The DTC clip ensures the glazing is perfectly tensioned into position, meaning it is also secured in place with a specific holding force when subject to load.

The positive result:

When the continuous rooflight structure is subjected to a heavy load, the polycarbonate sheets remain perfectly tensioned and secured as loads are optimally absorbed and dampened.



1



DTC - Protection in the event of heavy wind loads

- High stability even when the flaps are open
- Even better anchorage for polycarbonate glazing
- Greater protection in the flap system as a result of spring-mounted, multiple joint traverses

Linear Burn-Through Protection - LBP

The design concept:

CI System Continuous Rooflight B has a thermoplastic base profile that is mounted on a supporting structure, such as a frame. The roofing is typically pulled up till the upstand beam and thus put under the continuous rooflight base profile.

If a major fire breaks out in the building, the interior opening side of the roofing membrane will ignite. As the roofing membrane has a tendency to burn in the direction of the roof exterior like a fuse, the thermoplastic base profile is melted directly onto the upstand beam due to the extreme temperatures and spreads over the burning edge of the roof sheeting. The bond that is formed between the plastic and the supporting construction automatically seals the burning joints, stifles the supply of oxygen and extinguishes the flames.

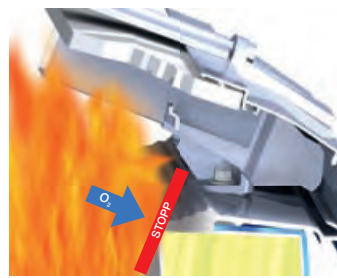
The positive result:

Linear Burn-Through Protection (LBP) neutralises the fuse effect and prevents flames from spreading. The base profile remains stable throughout the duration of the fire, since the uppermost metal section cools it down and stiffens it.



Stage 1

The roofing membrane burns like a fuse towards the roof exterior.



Stage 2

LBP has spread over the burning roof membrane and smothered the flames. This has prevented burn-through to the roof exterior.

LBP – Well-engineered fire safety technology

- Prevents fire from spreading onto the roof
- Patented technology
- Means there is no need to place a lot of gravel around the continuous rooflight

Glazing made of glass fibre-reinforced composite

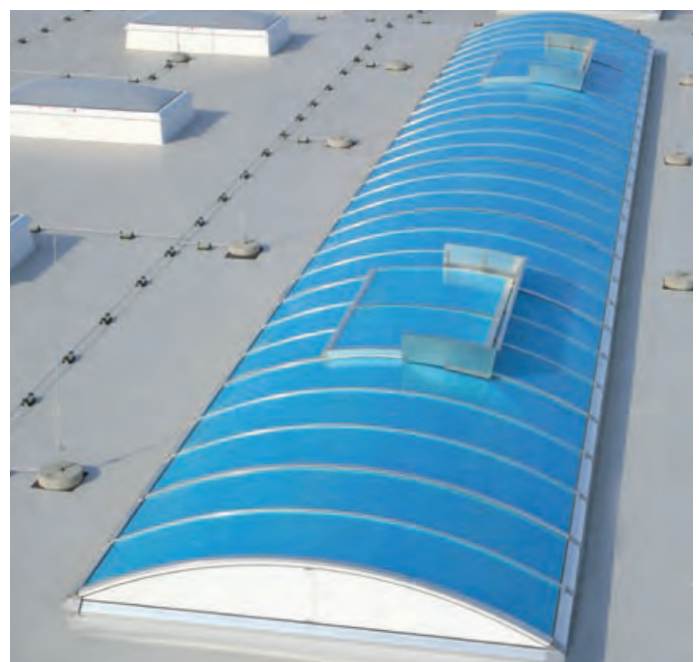
Long-lasting thanks to new materials

Optimum resistance to weathering and UV light

Glazing made of glass fibre-reinforced polyester is highly resistant to weathering and UV radiation due to its special material characteristics.

This continuous rooflight was developed especially for manufacturing environments containing highly aggressive chemicals below the roof (for example, evaporating cooling lubricants in machining). Brittleness or cracks which chemically aggressive materials could cause in polycarbonates also do not occur in the material.

The blue translucency of the gel coat guarantees a translucency of around 66 percent.



Smoke and heat exhaust systems in accordance with EN 12101-2 and ISO 21927

Safety in the event of a fire – Air to breathe assured

80 percent of all fire victims die of smoke poisoning. This is why it is imperative to include smoke and heat exhaust systems as part of an integrated fire protection concept. SHEV systems keep escape routes clear for a longer time and also ensure fire services gain access to the origin of the fire.

If needed, CI System Continuous Rooflight B can be equipped with smoke and heat ventilation devices which fulfil all EN 12101-2 requirements.

Overview of single-flap SHEV models

Model / dimensions in cm	Geometrical inlet surface AG/ m ²	Aerodynamically effective opening surface AE/m ²	EN classes for snow load
120/100	1.20	0.78	SL 500
120/200	2.46	1.60	SL 500

SHEVS are integrated as double and single flaps that open by means of thermo triggering, thermo and CO₂ remote actuation, or electric remote triggering if needed. SHEV flaps can be activated for ventilation (electrically/pneumatically) and for fair weather ventilation (pneumatically).

Overview of single-flap SHEV models

Model / dimensions in cm	Geometrical inlet surface AG/ m ²	Aerodynamically effective opening surface AE/m ²	EN classes for snow load
150/100	1.39	1.11	SL 800
200/100	1.89	1.51	SL 800
250/100	2.38	1.67	SL 800
300/100	2.88	2.02	SL 500
150/200	2.86	2.01	SL 800
200/200	3.89	2.72	SL 800
250/200	4.91	3.44	SL 800
300/200	5.93	4.15	SL 500



LAMILUX CI System Smoke Lift B - Single Flap

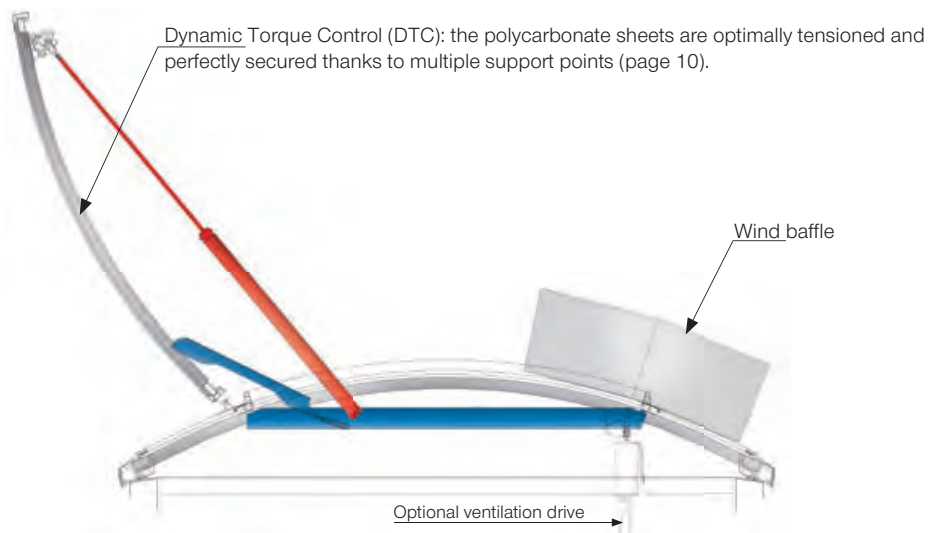


LAMILUX CI System Smoke Lift B - Double Flap

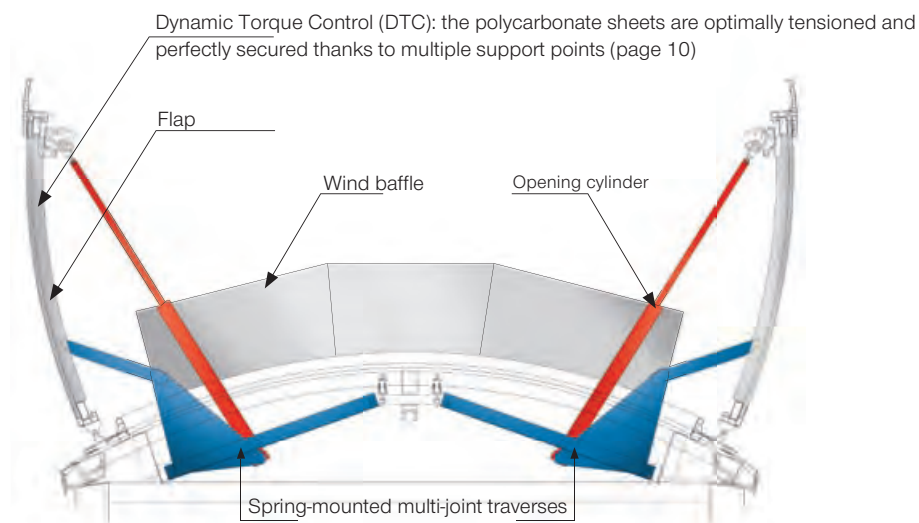
Stable even when the flaps are open

Even in the case of larger sized flaps such as 2 by 2 metres per double flap, for instance, flaps offer optimum safety when open in the event of strong gusts of wind. This is guaranteed by spring-loaded multiple joint traverses connected directly to the flap construction.

CI System Smoke Lift B - Single Flap



CI System Smoke Lift B - Double Flap



CI System ventilation flap B

Overview of model

Type/Dimensions cm

120/100

120/200

150/100

150/200



Different ventilation flap drives:

- electric, with spindle drive
- pneumatic, with pneumatic cylinders

Lifting height of ventilation flap	Elektric		Pneumatic
	24V electric motor	230V electric motor	
300 mm	x	x	x
500 mm	x	x	x
750 mm	x		x for rooflight widths of 2 m or more

Optimum quality with European approval for use – We supply and install what we promise you: For this we warrant with our certificate of quality



LAMILUX
Heinrich Strunz GmbH
Zehstraße 2
95111 Rehau

Zusammenfassendes Qualitäts-Zertifikat

Auftragsnummer: 123456
Bauvorhaben: Mustermann GmbH
Musterstraße 1
11111 Musterstadt

Produktbezeichnung:	2 Stück	CI-System Lichtband B
Ausführung nach: Herstellungsjahr:	europäische technische Zulassung ETA-09/0347 2010	
Ausführungsvariante:	Abmessungen: Verglasung: Bogenradius: Tragsystem:	Breite 3,30 x Länge 28,0m Typ_PC10 + PC10 + GFUP* 3,59m 2-Feld (Abstand Profile 1,054m)
Technische Daten:	Zulässige Schneelast: Zulässige Windsoglast: U-Wert Verglasung: U-Wert Lichtband:	s = 1,50kN/m ² w = 0,80kN/m ² UP = 1,6W/(m ² K) UW = 1,6W/(m ² K)
Einbau und Verwendung gemäß allgemeiner bauaufsichtlicher Zulassung Z-10.1-..... CE		
Rauch- und Wärmeabzug:	3 Stück	NRWGs gemäß EN 12101-2
Eingebaute RWA-Gerätetypen:	2 x Rauchlift BE 120/200 1 x Rauchlift BD 300/200	CE
Aerodynamisch wirksame Fläche: Leistungsklassen nach EN 12101-2:	7,15m ² Gesamtfläche Re 50 ; SL 500 ; WL 1500; T (00) ; B300	
Anschlagrichtung:	10 Stück	CI-System Lichtband AP gemäß EN 795
Leistungsklasse nach EN 795:	Klasse A für 2 Personen, Bruchkraft 11kN CE	

Hiermit bestätigen wir Ihnen die Übereinstimmung der Bauausführung mit den oben aufgeführten internationalen Leistungsklassen.

Rehau, den 26.02.2010 Dipl. Ing. Joachim Hessemer (Technischer Leiter)







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Internet: www.dibt.de

Authorised and notified according to Article 10 of the Council Directive of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products (89/105/EEC)

Mitglied der EGTA
Member of EGTA

European Technical Approval ETA-09/0347

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung <i>Trade name</i>	CI-System Lichtband B
Zulassungsinhaber <i>Holder of approval</i>	LAMILUX Heinrich Strunz GmbH Zehstraße 2 95111 Rehau DEUTSCHLAND
Zulassungsgegenstand und Verwendungszweck <i>Generic type and use of construction product</i>	Selbsttragendes lichtdurchlässiges Dachbausystem <i>Self-supporting translucent roof kit</i>
Gültigkeitsdauer: <i>Validity:</i>	vom 1 February 2010 bis 1 February 2015
Herstellwerk <i>Manufacturing plant</i>	LAMILUX Heinrich Strunz GmbH Zehstraße 2 95111 Rehau DEUTSCHLAND

Diese Zulassung umfasst 52 Seiten einschließlich 37 Anhänge
This approval consists 52 pages including 37 annexes

ETA Europäische Organisation für Technische Zulassungen
European Organisation for Technical Approvals

The LAMILUX certificate of quality – a document regarding your safety

This document enables us to provide proof to our customers of the excellent quality of the supplied product each time we deliver a system. We thus submit evidence which confirms that our daylight systems are consistently manufactured and implemented in accordance with product approvals and the technical standards specified in the approvals.

European Technical Approval - ETA

An ETA is a recognised certificate valid in EU member states which attests the technical usability of a building product. The test assessment for the CI System Continuous Rooflight is based on the approval guidelines drawn up by European Organisation for Technical Approval (ETAGs). The approval issued to LAMILUX takes into account all key product features to ensure they comply with the building regulation requirements in individual EU countries.



Sustainable building – Energy efficiency, structural stability, preventive fire protection

CI System Continuous Rooflight B has proven its outstanding qualities as a highly stable, energy-efficient system in numerous tests which are valid across Europe and which are documented in numerous certificates and European approvals.

- Anchorage point for personal protective equipment (PPE) tested in accordance with EN 795
- Certified fall-through safety 1200 Joule (SOCOTEC)

The tests:

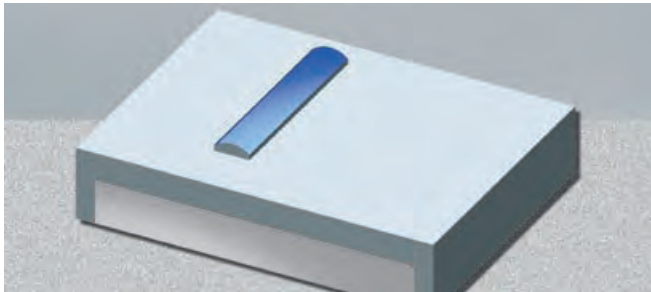
- Complies with European standards regarding snow and wind loads
- Thermal protection properties tested in accordance with ETAG 010
- Water-tightness tested in accordance with ETAG 010
- Burn-through safety verified in accordance with DIN 18234-3
- Resistance in glazing against hail tested in accordance with VKF Bern guidelines
- Fire behaviour in glazing classified according to DIN EN 4102-2 and EN 13501-1
- Melt-out verified in accordance with DIN 18230-1
- Glazing tested as a 'hard roof covering' in accordance with DIN 4102, Part 7
- Smoke and heat exhaust systems tested and classified in accordance with EN 12101-2 and ISO 21927
- Certified fall-through grille in line with GS Bau 18 as a permanent fall-through safety system



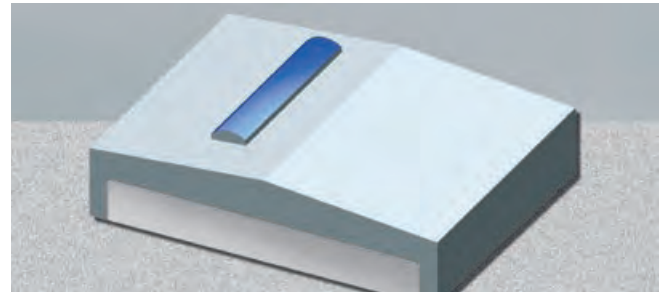
Wide scope for architectural creativity

The CI System Continuous Rooflight B stands out due to its extensive range of roof installation and roof attachment types. Thanks to its modular design, the CI System Continuous Rooflight B can be perfectly matched to individual requirements – the epitome of architectural scope.

Installation types



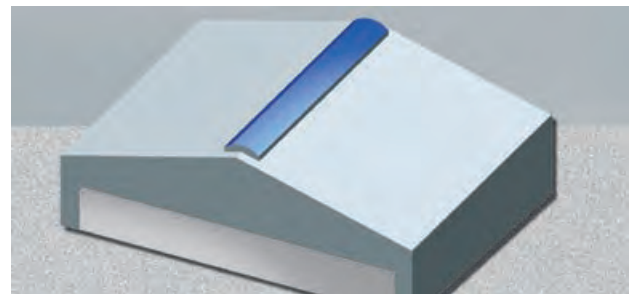
Installation type: flat roof



Installation type: slightly pitched roof



Installation type: eave - ridge - eave



Installation type: on ridge

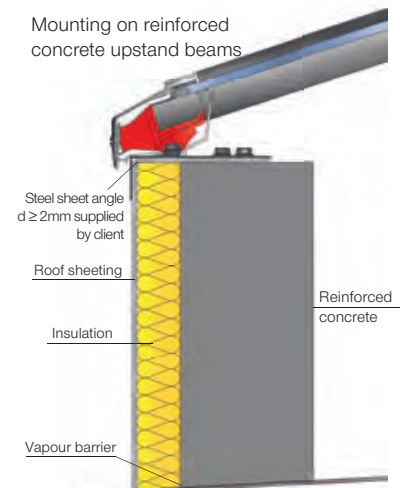
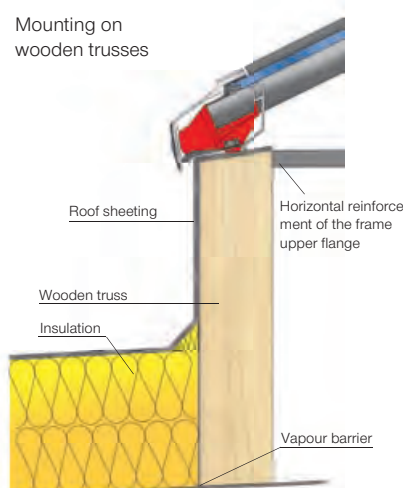
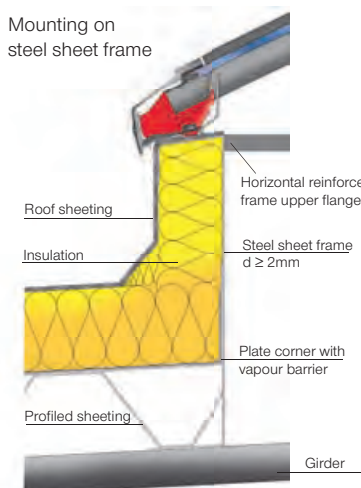
Different installation types are shown below: continuous rooflights can be fitted to flat roofs and slightly pitched roofs as well as on ridges and from one eave, over the ridge to the other eave.

Proven stability

Possible roof connections include for example installation on steel sheet frames, wooden trusses or reinforced concrete upstands. Verifiable bearing capacity is of primary concern in the case of LAMILUX's own steel sheet upstands. Since there are no European standards for cold-formed sheet structural components, certification is provided in accordance with DAST guideline 016. Suitable plates with a minimum bearing capacity as specified in EN 10147 must be used to guarantee bearing capacity in structures. All steel sheet frames supplied by LAMILUX are made using S 280 GD steel according to EN 10147 with a yield strength of

280 N/ mm². With a high proportion of recycled steel scrap and often used for non-structural components, steel grade DX 51 D has no specified yield strength (0 N/mm²) and therefore must not be used for load-bearing structural components. Incorrectly dimensioned upstands or inferior steel grades can cause the whole rooflight to fail due to the loads exerted by snow and wind. Suitable high-grade steel quality and the certification according to DAST 016 which we provide, is the only way of guaranteeing genuine safety.

Roof connection types



Glazing types

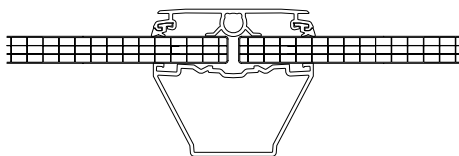
Functional variety

CI System Continuous Rooflight B has various glazing types to match different requirements with respect to noise and heat insulation, translucency and fire class.

LAMILUX offers multi-layer, opal polycarbonate panels (dazzle-free) as standard. Translucent panels are available at no extra charge. Glazing options

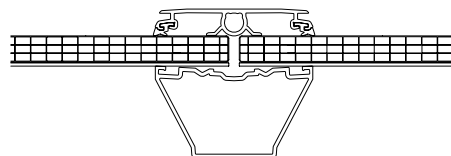
range from Ug values of 2.8 to 1.5 W/(m²K). Some panels with permanent UV protection can be fitted with Heatstop.

So-called „hard roofing“, which is also classified as a melt-out surface, is also available.



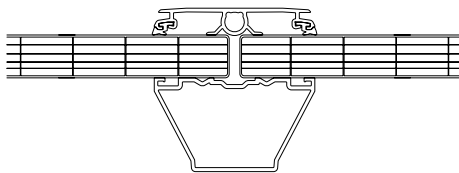
Type: 10-4 ply PC

Ug value: 2.5 W/(m²K)
 Noise insulation level: 17 dB
 Building material class: B1 melt and drip without burning
 Translucency: about 61%
 Fire class acc. to EN 13501: B-s1, dO
 g value: about 61%



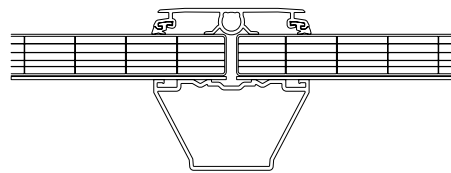
Type: 10-4 ply PC + GRP

Ug value: 2.4 W/(m²K)
 Noise insulation level: 20 dB
 Building material class: B2 melt and drip without burning
 Translucency: about 51%
 Fire class acc. to EN 13501: E(dO)
 g value: about 49%



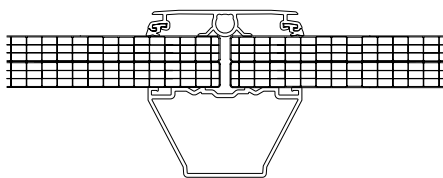
Type: 16-6 ply PC

Ug value: 1.8 W/(m²K)
 Noise insulation level: 20 dB
 Building material class: B2 melt and drip without burning
 Translucency: about 49%
 Fire class acc. to EN 13501: B-s1, dO
 g value: about 50%



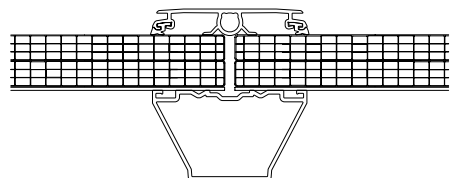
Type: 16-6 ply PC + GRP

Ug value: 1.8 W/(m²K)
 Noise insulation level: 21 dB
 Building material class: B2 melt and drip without burning
 Translucency: about 41%
 Fire class acc. to EN 13501: E(dO)
 g value: about 38%



Type: 10-4 ply PC + 10-4 ply PC

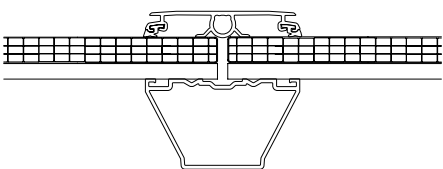
Ug value: 1.6 W/(m²K)
 Noise insulation level: 19 dB
 Building material class: B2 melt and drip without burning
 Translucency: about 37%
 Fire class acc. to EN 13501: B-s1, dO
 g value: about 39%



Type: 10-4 ply PC + 10-4 ply PC + GRP

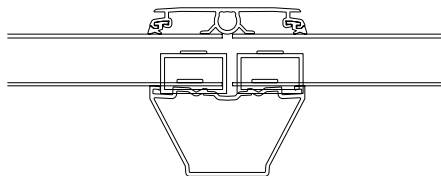
Ug value: 1.6 W/(m²K)
 Noise insulation level: 20 dB
 Building material class: B2 melt and drip without burning
 Translucency: about 31%
 Fire class acc. to EN 13501: E(dO)
 g value: about 31%

Customised glazing: dimensions and delivery period on request



Type: 10-4 ply PC + PETG

Ug value: 2.3 W/(m²K)
 Noise insulation level: 27 dB
 Building material class: B2 melt and drip without burning
 Translucency: about 54%



Type: GRP + GRP

Ug value: 2.7 W/(m²K)
 Noise insulation level: 20 dB
 Building material class: B2 melt and drip without burning
 Translucency: about 66%

***Caution: The data used for the Ug value is in accordance with DIN EN 673 (vertical installation). The thermal properties of the continuous rooflight (Uw) are calculated using the actual thermal transmittance values of the glazing when installed horizontally and the thermal transmission values of the profile structure, including the base profiles, gable wall profiles and flap profiles.**

LAMILUX CI-SYSTEMS



DOMELIGHT F80



CONTINUOUS ROOFLIGHT B



LIGHT PANEL



GLASS ARCHITECTURE KWS 60 / M



SHEV CONTROL TECHNOLOGY



SUPPLY AIR DEVICES



GLASS ARCHITECTURE F



CONTINUOUS ROOFLIGHT S



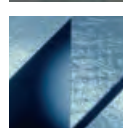
BUILDING UPGRADES



SMOKE AND HEAT
VENTILATION SYSTEMS



PHOTOVOLTAICS



FIBRE-REINFORCED
COMPOSITES

The technical data specified in this brochure was accurate at the time this brochure went to press and is subject to change without notice. Our technical specifications are based on calculations, specifications by suppliers, or have been determined by independent testing authorities within the scope of applicable standards.

Thermal transmission coefficients for our plastic glazing were calculated according to the „finite elements method“ with reference values for insulated glass in accordance with DIN EN 673. A temperature difference of 15 K was defined between the outer surfaces of materials, based on empirical values and specific characteristics of the plastics. Functional values only refer to test specimens with the dimensions used in the test. No further guarantees for technical values are accepted. This particularly applies to modified installation locations, or if dimensions are re-measured on site.



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QM-System
zertifiziert nach
DIN EN ISO 9001

