



CI SYSTEM CONTINUOUS ROOFLIGHT B

ENERGY-EFFICIENT AND SUPERIOR STATICS



LAMILUX CI System Continuous Rooflight B

The first continuous rooflight with complete thermal separation with approval for use in Germany and throughout Europe – for an optimised energy balance

Perfect heat insulation with European approval for use

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 EU. This is something we guarantee with the perfect, energy-efficient combination of all components.

A document for your own safety - our certificate of quality

We verify the use of the tested components in practice with the LAMILUX certificate of quality. This confirms to our customers that the tested values apply to every continuous rooflight produced. We keep our promises.

With the CI System Continuous Rooflight B, we have developed a daylight system for intelligent building management that breaks new ground in terms of energy efficiency and structural design.

In doing so, we have closely focused on intelligence – on well-engineered individual components in a completely heat-insulated, very economical and sturdy overall system. We call it TIP: Total Insulated Product. **K**

Joachim Hessemer, Technical Director LAMILUX daylight elements



The LAMILUX CI Philosophy

Customer value is the reason for our existence and is the focus of our activities. This requires harmony, identity and a balance between customer value and company strategy.

These guiding ideas for our company's actions and our day-to-day relationship with our customers are described in LAMILUX's company philosophy:

Customized Intelligence - Serving the customer is our first priority: This requires outstanding performance and leadership in all areas relevant to customers, particularly in the role of:

- Leader in quality for the highest customer benefit
- · Leader in innovation for always being ahead in technology
- · Leader in service for fast, straightforward, reliable and friendly communication
- Leader in expertise for the best technical and commercial advice on the market
- Leader in problem solving for custom made solutions





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LAMILUX CI System Continuous Rooflight B

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.





The LAMILUX CI System Continuous Rooflight B is a Total Insulated Product (TIP):

- The internal and external metal components, both in the load-bearing structure and in the flap systems, are completely thermally separated from one another
- Use of the isothermal load converter (ITL) a component for the use of material with excellent heat insulation properties at the anchor poin
- Composite glazing with extremely low thermal transmittance coefficients

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



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For secure mounting of the glazing in the flap systems Dynamic torque control - DTC Page 14

New flap technology with optimised U_f values, exceptional thermal separation and a perfected adjustment system for adjusting the flaps



So that sealings do not slip even under high loads

The active expansion absorber – AEA Page 7

The perfect thermal decoupling The isothermal load converter - ITL Page 6





Effectively prevent the spread of fire on the roof in accordance with DIN 18234 The linear burn-through protection - LBP Page 10







The isothermal load converter - ITL

The isothermal load converter (ITL) is the essential component in the base profile of the continuous rooflight, which enables thermally-conductive, metal components to be dispensed with.



The principle

The isothermal load converter (ITL) channels the load on the continuous rooflight into the framing construction of the continuous rooflight. Since this frees the base profile from loads and tensions, there is no need to use metal material and high-quality composite material with very good heat-insulating values can be used for the base profile.

The Positive Effect

The isothermal load converter (ITL) achieves optimised isothermal lines running continuously through the structure and prevents thermal bridges.

ITL - Benefit from optimum energy efficiency

- Excellent U_r values in the base profile and even better Heat insulation
- + Improved load-bearing capacity of the base profile
- + Significantly reduced risk of condensation
- + Optimised rebate ventilation
- + Smooth interior with fewer edges, ensuring less dirt and grime



The active expansion absorber - AEA

The active expansion absorber (AEA) ensures a long-lasting tight seal to the connection between the cover plates and the glazing. It prevents the sealings in the area of the glazing bars from slipping, even in the event of high wind-drag loads and heavy snow loads.

The principle

The active expansion absorber (AEA) compensates the tensions and expansions that occur when subjected to loads. To this end, the sealings are connected to the cover plates with a continuous, shear-resistant bond.

The Positive Effect

Optimal protection of the structure in the event of snow, ice, wind and strong heat build-up.

AEA - Safety aspects in detail

- + The glazing is connected to the cover plates and the glazing bars with a tight, form-fitting seal
- The Cover plates have integrated safety rails, for mounting fittings, solar protection installations and maintenance equipment
- The clamping security is increased due to an extended adhesion region





A thermally-separated continuous rooflight without weak points

Our claim to make a major contribution towards the optimised energy performance of the external skin of a building with our daylight systems is one which is met to the highest level by the LAMILUX CI System Continuous Rooflight B.

Optimised isothermal lines

Isothermal lines describe lines of equal temperature. In the LAMI-LUX CI System Continuous Rooflight B, they run continuously through the structure. Our guarantee: a considerably minimised risk of condensation on the inside of the structure.

The isothermal lines are determined and defined as follows

- In order to be able to determine the condensation risk, standard conditions have been specified. According to DIN 4108-2 "Wärmeschutz und Energieeinsparung in Gebäuden" (Thermal insulation and energy economy in buildings), these are: 20°C inside temperature, -5°C outside temperature, 50% relative atmospheric humidity.
- If we adopt the standard conditions, condensation water (condensate) always forms on the inner face of the continuous rooflight if its temperature falls below 10°C.
- The better the design of the continuous rooflight, the less cold is let into the building and the warmer the surface on the inside of the continuous rooflight will be.

- If this surface becomes colder than 10°C in any place, condensate will precipitate in precisely that place. Condensate brings with it a risk of mould and hoar frost and thus potential damage to the structure.
- The temperatures inside the structure can be illustrated using so-called isotherms.
- The course of the 10°C isotherm (red line in the diagram) provides information about where on the inside of the continuous rooflight condensate can be expected: that is to say, always where the 10°C isotherm leaves the structure.
- The course of the 10°C isotherm, in the LAMILUX CI System Continuous Rooflight B with appropriate glazing, is always within the structure.







Ridge profile, double-flap system

Eave profile, flap



Base profile, gable



Gable wall arc profile



The comprehensive thermal protection technology throughout the structure ensures the best Uw values in our European-approved continuous rooflight. The energy efficiency properties have been tested and verified in accordance with ETAG 010. This ensures the consistent insulation properties in the continuous rooflight profile are documented. When an order is placed, the Uw values are calculated on a cost-neutral basis, and this calculation is confirmed with the certificate of quality.





Linear burn-through protection – LBP

Perfectly-coordinated material components in the base profile of the continuous rooflight stop the fire from spreading on the roof in the event of a fire inside the building – tested in accordance with DIN 18234. The linear burn-through protection (LBP) prevents the dreaded "fuse effect" around the skylight opening, thus preventing the flames from inside the building spreading to the roofage – without the need to spend time and money on gravel fills.



The principle

Fastened to a framing construction such as an upstand, the roofage is typically pulled up to the upstand beam and fed under the continuous rooflight base profile. In the event of a fire inside the building, the roofage on the inside of the upstand beam will often catch fire and tends to burn like a "fuse" to the outside of the roof.

The linear burn-through protection (LBP) can be understood as an intelligent system for limiting the spread of fire in the region of roof penetrations. The continuous rooflight profile plays an essential role in this: it is composed of a thermoplastic composite material which melts at extreme temperatures on the upstand beam and spreads directly over the burning edge of the roof sheeting. As a result, the burning joins are sealed, the oxygen supply is interrupted and the flames at this point are extinguished.

The Positive Effect

The LBP prevents the flames from spreading to the roof. Despite being melted by the extreme temperatures, the base profile remains stable during the fire because it is cooled and stiffened by the metal profile of the glazing bar.

Customized Intelligence



LBP – Well-engineered fire safety technology

- Prevents fire from spreading onto the roof through roof penetrations in accordance with specifications in DIN 18232, Part 4
- + Patented technology
- + Negates the need to place gravel around the continuous rooflight

Phase 1



The roofage burns like a fuse towards the roof exterior.

Phase 2



The LBP has now spread over the burning roof membrane and smothered the flames. This prevents burn-through to the exterior of the roof.





Due to their effective ventilating action, they enable escaperoutes to be kept clear for a long time and allow the fire brigade to access the interior of the building. In its function as a smoke and heat exhaust system, the CI System Smoke Lift B satisfies all the requirements of DIN EN 12101-2.

A large number of flap combinations for market-leading smoke and heat ventilation values

Due to new technology, it is now possible to achieve unprecedented SHEV dimensions. The CI System Smoke Lift B can be integrated in the continuous rooflight design as a double or single flap in numerous different combinations in order to create the optimum building-specific smoke extraction surfaces. In case of fire, they are quickly opened by means of thermal release, thermal and CO2 remote release or electric remote release. The SHEV flap systems, too, can be used for the ventilation function and electrically/pneumatically actuated.

Extremely stable when open

Even when the dimensions used are large, the SHEV flaps prove to be an extremely stable overall system in the case of heavy wind loads when open.

This is guaranteed by spring-loaded multiple joint traverses connected directly to the flap construction.

All smoke and heat exhaust systems can also be combined with ventilation systems.

CI-System Smoke Lift B single flap

Type Dimensi upper e	ions dge of roof	Geometrical inlet surface Ageo	Aerodynamical- ly effective opening surface
Smoke	Lift BE single flap		
100	100	0.93	0.59
	200	1.96	1.27
TS	420	4.01	2.53
125	100	1.17	0.74
.20	200	2.46	1.60
TS	420	5.04	3.18
150	100	1.43	0.90
	200	3.01	1.96
TS	420	6.17	3.83
	120		
Smoke	Lift BA asymmetric of	double flap	
175	100	1.67	1.04
110	200	3.51	2.28
TS	420	7.20	4.68
200	100	1.91	1.18
200	200	4.01	2.61
TS	420	8.22	5.43
10	120		
Smoke	Lift BD symmetric de	ouble flap	
250	100	2.39	1.48
	200	5.02	3.26
TS	420	10.28	6.37
300	100	2.87	1.78
	200	6.02	3.91
TS	420	12.34	7.40
-	-		
TS = tar	ndem-serial SHEV		





CI System Smoke Lift B as symmetrical double flap

CI System Ventilation Flap B

The Cl System Ventilation Flap B can be integrated as an individual flap or as flap on flap system. Electric motors (24 volt/230 volt) with a spindle drive or pneumatic drive assemblies with pneumatic cylinders ensure manually-triggered or control-automated opening and closing.

4	-7	T
-		

Туре		Aerodynamically effective opening surface
Ventila	ation flap BE :	single flap
100	100	0.93
	200	1.96
125	100	1.17
	200	2.46
150	100	1.43
	200	3.01

Optimum tightness against driving rain due to welded sealing frame

A multiple sealing system that is welded all the way around and has an anti-splash lip and an integrated balloon gasket is situated in the installation frame of the flap systems.





Dynamic torque control – DTC

Another innovative component in the design of the LAMILUX CI System Continuous Rooflight B – the dynamic torque control (DTC) – means that the glazing in the flap systems is perfectly tensioned and securely mounted. This means: a high level of stability and safety, even in extreme weather conditions such as heavy wind and snow loads.

The principle

Suspension integrated beneath the glazing bar in the installation frame (DTC spring) ensures that the glazing is perfectly tensioned. It is therefore secured in position by a specific holding force even when subjected to load.

The Positive Effect

The glazing remains perfectly tensioned in all situations and is optimally secured, since the acting loads are optimally cushioned and absorbed by the mounting frame.

DTC - Protection in the event of heavy wind loads

- + High stability of the flaps, even when open
- + Improved anchoring of the polycarbonate glazing
- + Greater protection of the casement systems due to spring-mounted multiple-joint traverses





We supply and install what we promise you

General Technical Approval (GTA): German General Technical Approvals (GTA) are issued for all German Federal States by the German Institute of Building Technology (Deutsche Institut für Bautechnik DIBt). This certificate verifies that a construction product meets the technical requirements for its use.

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 B is based on the approval guidelines drawn up by the European Organisation for Technical Approval (ETAG). The approval issued to LAMILUX takes into account all key product features needed to comply with the building regulation requirements in individual EU countries.

Declaration of performance (DoP) for construction products: The declaration of performance serves to deliver the information about the essential characteristics of the product in accordance with the relevant harmonised technical specifications.

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.

Environmental Product Declarations (EPDs) for all systems: The Environmental Product Declarations are defined according to the European standard DIN EN 15804 and are classified as internationally accepted product eco label. EPDs give conclusion about the environmental impacts on a product – from manufacturing and the use of resources to the product life cycle up to the deconstruction and disposal.

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.

- NEW: certified water tightness under heavy rain and storm (DRI 3.0 m²/s)
- Complies with European standards regarding snow and wind loads
- Thermal protection properties tested in accordance with ETAG 010
- Watertightness likewise tested in accordance with ETAG 010
- Burn-through safety verified in accordance with DIN 18234-3
- Resistance against hail tested in accordance with

VKF Bern guidelines

- Fire behaviour in glazing classified according to DIN 4102-2 and EN 13501-1
- Melt-out of glazing verified in accordance with DIN 18230-1
- Glazing tested as a "hard roofing" in accordance with DIN 4102-7
- Smoke and heat exhaust systems tested and classified as singleand double-flap systems in accordance with EN 12101-2
- Certified antifall grid in line with GS Bau 18 as a permanent fall-through protection
- Anchorage point for personal protective equipment (PPE) tested in accordance with EN 795





Glazing in a large number of variants

PC10-4 + PC 6-4 + PC10-4 2	2x thermal composite 5	
	U value	1,0 W/(m ² K)
	Sound-proofing value	18 dB
	Building material class	E, d0
	Translucency	ca. 20 - 38 %*
PC 10-4 ply		
	U _g value	2,5 W/(m²K)
	Sound-proofing value	17 dB
	Building material class	B-s1/ d0
	Translucency	ca. 61 %
PC 10-4 Aerogel		
	U value	1,8 W/(m²K)
	Sound-proofing value	17 dB
$\nabla = Z$	Building material class	B-s1/ d0
	Translucency	ca. 72 %
PC10-4 ply + PC6-4 ply		
<u> </u>	U _g value	1,8 W/(m²K)
	Sound-proofing value	17 dB
\setminus /	Building material class	B2 / E, d0
made by	Translucency	ca. 42 %
Acoustic insulation glazing	16 mm 27dB	
5 5	U value	2.3 W/(m ² K)
	Sound-proofing value	27 dB
	Building material class	B2/E d0
	Translucency	52/ L, UU
	Tansideency	ca. 54 /0
PC16 Aerogel		
	U _g value	1,3 W/(m²K)
	Sound-proofing value	21 dB
57	Building material class	B-s1/ d0
	Translucency	ca. 62 %
PC10-4 + PC10-4		
	U value	1,6 W/(m²K)
	Sound-proofing value	19 dB
\searrow	Building material class	B2 / E, d0
	Translucency	ca. 39 %
made by IIII		
32 mm thermal composite I	B1	1 1 11//~~21/)
		1,4 W/(M*K)
	Sound-proofing value	
	Building material class	B-S1/ CU
made by	Iranslucency	ca. 50 %
PC10 + PC10 thermal comp	posite 16	
	U _g value	1,2 W/(m²K)
	Sound-proofing value	18 dB
	Building material class	B2 / C-s3, d2
	Translucency	ca. 39 %
Acoustic insulation glazing	36 mm 24dB	
	U value	1,3 W/(m²K)
	Sound-proofing value	24 dB
	Building material class	B2 / E, d0
\searrow	Translucencv	ca. 37 %
		-



PC 10-4 Aerogel		
	U _a value	1,8 W/(m²K)
	Sound-proofing value	20 dB
	Building material class	B2 / E, d0
made by	Translucency	ca. 35 %

PC10-4 + PC10-4 + GRP Hard	Roofing	
	U _g value Sound-proofing value Building material class Translucency	1,6 W/(m²K) 20 dB B2 / E, d0 ca. 33 %

Thermal Composite 32mm is a LAMILUX in-house development! This glazing has a high resistance to flammability and simultaneously outstanding insulation characteristics.

PC10-4 + PC10-4 + GRP Thermal Composite 16 Hard Roofing			
	U _g value	1,2 W/(m²K)	
	Sound-proofing value	21 dB	
	Building material class	B2 / E, d0	
made by	Translucency	ca. 33 %	
Composite 10 mm GRP cavity-resist Hard Roofing			
	U _a value	3,1 W/(m²K)	
muniter million	Sound-proofing value	22 dB	
	· · · · · · · · · · · · · · · · · · ·		
	Building material class	B2 / E, d0	
made by	Building material class Translucency	B2 / E, d0 ca. 40 %	



Product: CI SYSTEM CONTINUOUS ROOFLIGHT B WITH GRP GLAZING

Glazing made of glass fibre reinforced plastics

Composite 10 mm GRP cavity-resist

With its CI System Continuous Rooflight B, LAMILUX is once more the market leader when it comes to providing a product which combines a lack of thermal bridges with durability. A new kind of glazing made of polyester elements supports troublefree integration in the continuous rooflight system.

Highly resistant

to weather conditions and UV

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



Structure of LAMILUX GFUP glazing

This continuous rooflight was developed especially for manufacturing environments with a high level of chemical aggressivity 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 in the long term.

The blue translucent gelcoat guarantees an overall energy transmittance of 38 percent.





Solutions for an optimum structural mount





Installation on steel sheet upstand

Mounting on wooden trusses

NOTE: The mounting systems shown in the diagrams are concept drawings for guidance purposes only. The roofing specialist must comply with technical standards for sealing materials, such as flat roof guidelines, when roof sealing work is being planned and carried out by the roofing company.

Proven stability

Roof mounting variants include mounting on steel sheeting upstands, on wooden trusses or reinforced concrete upstand beams. Stability is of primary concern with LAMILUX's own steel sheet upstands. LAMILUX complies with the requirements of the German Institute for Building Technology (Deutsches Institut für Bautechnik), according to which sheet steel upstands must be manufactured using high steel grades S 280 GD + Z 275 or S 320 GD + Z 275.



More than just standard

A continuous rooflight with many facets





Fall-through proof grating

Fall-through proof gratings are permanently fall-through proof in compliance with BG verification certification for clear upturn widths between 1.00 meter to 6.00 meters. Gratings can be mounted onto curved plates made of stainless steel, for instance. The plates are bolted onto the frame.

Solar protection

A metal screen coated in the RAL colour you require and featuring a deciduous tree effect for natural shade. Deciduous tree effect screens fulfil GS Building 18 requirements with regard to permanent fall-through protection. The perforated steel sheet also provides protection against hail and incidental UV light.



Insect protection grating

This protection grating is integrated into the upstand. It ensures that no insects can enter the building interior when the flaps are open.



LSS – LAMILUX Safety Stripe

The LAMILUX Safety Stripes (LSS) are mounted parallel to the length of the continuous rooflight and secure the travel ways on the roof. The permanent fall-through protection, according to GS-Bau 18, is even guaranteed before the installation of the glazing and over the complete period of use. All tests were performed without glazing to make sure that the influence of weather and age on the glazing does not influence the security.



Personal Protective Equipment - PPE

Roof anchors for personal fall protection on roofs comply with class A1 requirements according to DIN EN 795 and feature the BG certification mark – certified by the Safety Technology Centre of the Berufsgenossenschaft (employers' liability insurance association) Rhineland and Westphalia. The attachment points for fastening to sheet steel upstands $t \ge 2$ mm are designed to hold the weight of two persons.



Additional equipment "blower door"

With the additional equipment "blower door", an additional sealing level is reached. The sealing package consists of additional permanently elastic sealing profiles and sealing compounds, ensuring the suitability of the continuous rooflight for building inspection with 50 Pa.



"Hard roofing"

CI System Continuous Rooflight B glazing can simultaneously fulfil the conditions for "hard roofing" and "melt-out area" – or comply with these two characteristics separately. It thus fulfils the DIN 4102-7 requirements for flying sparks and radiated heat - as confirmed by MFPA Leipzig GmbH (Approval no. PZ III/B-05-028).



Colouring

LAMILUX steel sheet upstands and all visible aluminium profiles can be custom-coated in RAL colours on request.

Further available equipment: smoke compartment, installation opening, roof access, ventilators, blind connection





Maintenance of SHEV systems

In case of fire, smoke and heat exhaust systems must function with 100 percent reliability. Regular checks and expert maintenance are stipulated in numerous industrial standards and regulations.

These must be observed! As the building owner or building operator, you have a duty of care to ensure that the guidelines and conditions relating to SHEV maintenance are observed. What would you be threatened with if the SHEVS fail in an emergency? Fines, shutdown of the plant by the authorities and loss of any warranty claims.

Even if a building is used entirely in accordance with its intended purpose, the functionality of the smoke and heat exhaust systems can be impaired after just two to three years. This happens as a result of various environmental and usage-related influences:

- Dust and dirt
- Humidity and wind
- Steam and dust from production processes
- Oil mist and lubricants

Let us do the maintenance work for you:

- SEHVS such as rooflight domes and single- and double-flap systems in continuous rooflights and glass roof structures
- Fresh air flaps
- The complete electrical or pneumatic SHEV control systems
- The electric or pneumatic drives
- The electric or pneumatic lines
- All other safety-related installations for Personal Protective Equipment (PPE), such as fall protection



Renovation of continuous rooflight systems

LAMILUX handles the whole "renovation" package deal for you. This means: in the first stage, we make a thorough inventory and produce a detailed renovation plan and the schedule. The second stage includes demolition and disposal of the of daylight systems and installation of the new continuous rooflights. If electrical or pneumatic control systems need to be installed for SHEVS, this is also handled by LAMILUX – by the LAMILUX safety technology department.

OLD



NEW



The benefits of using LAMILUX: You...

- will receive a tailor-made, cost-effective solution.
- can count on the shortest possible reconstruction period.
- can expect production to carry on without interruptions, as far as humanly possible.
- will save time and spare yourself unnecessary headaches by minimising your organisational overheads and having just one contact who is responsible for your assignment.





Scan this to discover more about LAMILUX daylight systems!



The technical data printed in this brochure was accurate when this brochure went to press and is subject to change without notice. Our technical specifications are based on calculations and supplier specifications, or have been determined by independent testing authorities within the scope of applicable standards. Thermal transmission coefficients for our composite glazing were calculated using the finite element method with reference values in accordance with DIN EN 673 for insulated glass. Based on empirical values and specific characteristics of the plastics, a temperature vector of 15 K was defined as the vector between the outer surfaces of the material. Functional values refer to test specimes and the dimensions used in testing only. We cannot provide any further guarantees of technical values. This particularly applies to changes in installation locations, or if dimensions are re-measured on site.



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