



LAMILUX
GLASSYSTEME

CI System Glass Element FE_{energysave}

Active energy management for passive houses

LAMILUX CI System Glass Element FEnergysave



» Since the German government committed itself to a transition towards renewable energy sources and an even greater focus has been placed on energy efficiency, the energy-efficiency qualities of structural components have become an all-important factor in contemporary construction and passive house design is now a hot topic. Constructing buildings in compliance with the Passive House standard offers the best approach to creating the required carbon-neutral housing stock over the new few decades.

Once again, we are able help architects and planners by supplying a newly developed, innovative, Passive House-certified product. The **LAMILUX CI System Glass Element FEnergysave** has been certified by the renowned Passive House Institute in Darmstadt, Germany, as the first skylight suitable for passive buildings. This highly energy-efficient daylight element for flat roofs has achieved the top efficiency class, the Advanced Component phA category.

With **LAMILUX CI System Glass Element FEnergysave**, we are setting new benchmarks for energy efficiency properties in roof-top windows while maintaining our high standard in energy efficiency. With such new technologies, we are leading the way into a sustainable construction future. «

Joachim Hessemer, engineer,
 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 mission:

Dies bedeutet für uns Spitzenleistungen und Leistungsführerschaft in allen für den Kunden relevanten Bereichen, insbesondere als:

- Quality leader - optimum benefit for customers
- Leader in innovation - at the cutting edge of technology
- Leader in service - fast, uncomplicated, reliable and friendly
- Leader in expertise - optimum sales and technical advisory services
- Leader in solving problems - individual, tailor-made solutions

LAMILUX CI SYSTEM GLASS ELEMENT FE_{energysave}

LAMILUX activeENERGY –

Active energy management with daylight systems

You save energy – by using more daylight

You conserve energy – by installing optimum thermal insulation

You control energy – by using easy-to-operate and automated flap systems for natural ventilation and roller blinds for solar protection and shade.

Available sizes & options

Roof opening size	Glare shield	Insect protection screen	Range of RAL colours	Concealed cable	Concealed chain-driven opener	Solar protection
Dimensions in cm						
80 / 80	○	○	○	●	●	●
90 / 90	○	○	○	●	●	●
90 / 120	○	○	○	●	●	●
100 / 100	○	○	○	●	●	●
100 / 150	○	○	○	●	●	●
100 / 200	○	○	○	●	●	●
120 / 120	○	○	○	●	●	●
150 / 150	○	○	○	●	●	●
180 / 180	○	-	○	●	●	●

○ Option ● Standard - Not available

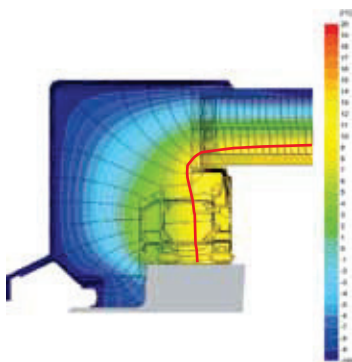
LAMILUX CI System Glass Element FE_{energysave}

Top efficiency class for the first Passive House-certified skylight

Beautifully designed and highly energy-efficient

Energy efficiency:

- First skylight certified to Passive House standard
- Top Passive House efficiency class – phA Advanced Component
- Thermal transfer coefficient (U_{gl}): 0,84 W/(m²K)
- Overall system with flawless isothermal characteristics and free of thermal bridges
- Thermal performance values calculated based on DIN EN ISO 10077-1 and 10072-2



12,6° isothermal line remains within the structure

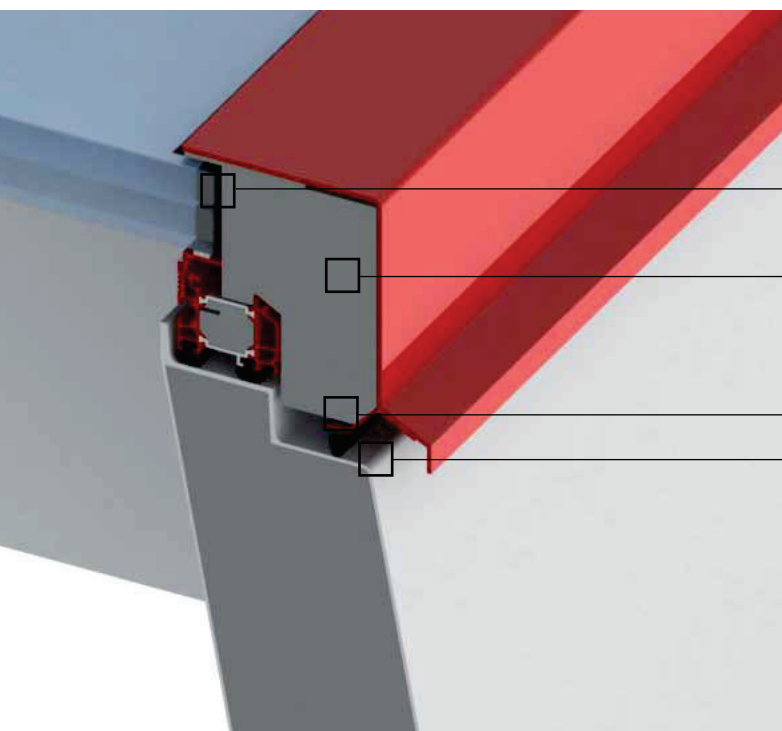
Comfort and hygiene:

The intelligent use of highly efficient materials limits the minimum surface temperature on the inside of glass structures, thus preventing condensate and mould formation.

Mould grows on surfaces at a relative humidity of just 80 per cent or above. When the indoor temperature is 20°C and relative humidity is 50 per cent (standard conditions), this corresponds to a surface temperature of 12.6 °C.

Such data is used to calculate the f_{Rsi} value, a coefficient which indicates the likelihood of mould growth. If this value is less than 0.7, there is a risk of mould forming.

In CI System Glass Element FE_{energysave}, the f_{Rsi} value is a stable 0.73, thus corresponding to a minimum surface temperature of 13.3 °C – An ideal value to ensure comfort and save energy.



NEW: “warm edge” with Super Spacer in serial-production triple glazing

NEW: optimised impermeable core

NEW: triple layered seal system

Upstand with layered geometry to hold layered seal

”Superior quality Passive House components”

LAMILUX CI System Glass Element FE_{energysave} achieves best efficiency

» A passive house requires highly energy-efficient components to maintain its high standards. As an independent testing centre, our institute carries out tests using standardised criteria to give architects and planners a clear idea of energy efficiency in construction components. We were able to place **LAMILUX CI-System Glass Element FE_{energysave}** in the highest efficiency class. This skylight thus offers a superior energy-efficient quality. «

Dr Benjamin Krick, engineer

Passive House Institute Darmstadt

Tested and certified to a recognised standard

In addition to heat insulation properties, the balance of heat losses and heat gains is also relevant to analysis according to the Passive House standard.

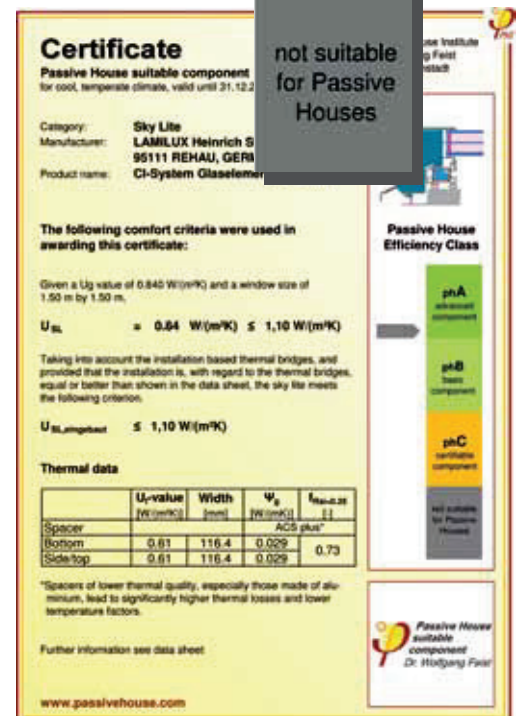
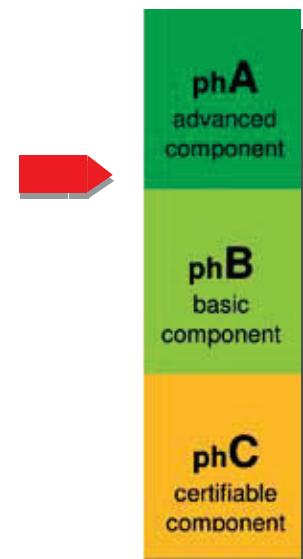
As solar gains are difficult to measure, established methods to determine heat losses are used. This involves quantifying areas where solar gains are not possible. Losses are defined using the Ψ_{opak} . The lower this value is, the higher the efficiency class.

Passive House efficiency classes

Ψ_{opak}	Passive House efficiency class	designation
$\leq 0,220 \text{ W}/(\text{mK})$	phA	Advanced component
$\leq 0,155 \text{ W}/(\text{mK})$	phB	Basic component
$\leq 0,110 \text{ W}/(\text{mK})$	phC	Certifiable component

System and method

- Aluminium frame structure with EPS insulation /glass thickness: 54 mm/ glass edge cover: 17 mm / spacer system: ACS plus
- Calculation of thermal bridges using the BISCO heat transfer software program
- Identification of thermal losses based on a three dimensional heat transfer analysis using the Solido software program



LAMILUX CI-SYSTEMS



DOMELIGHT F100



CONTINUOUS ROOFLIGHT B



LIGHT PANEL



GLASS ARCHITECTURE KWS 60 / M



SHEV CONTROL TECHNOLOGY



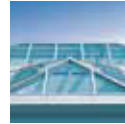
SUPPLY AIR DEVICES



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 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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