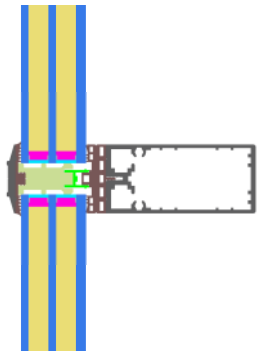
Certificate

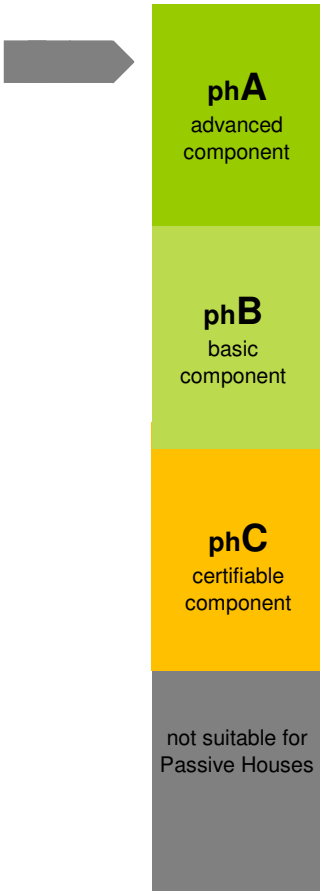
Certified Passive House component
for cool, temperate climate, valid until 31.12.2016

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
GERMANY

Category: **Curtain Wall**
Manufacturer: **LAMILUX Heinrich Strunz GmbH**
95111 Rehau, GERMANY
Product name: **CI-System Glasarchitektur PR60$_{energysave}$**
(vertical)



Passive House Efficiency Class



The following comfort criteria were used in awarding this certificate:

Given a Ug value of 0.7 W/(m²K) and an element size of 1.20 m by 2.50 m,

U_{CW} = 0.79 W/(m²K) ≤ 0.80 W/(m²K)

Taking into account the installation based thermal bridges, and provided that the installation is, with regard to the thermal bridges, equal or better than shown in the data sheet, the facade meets the following criterion.

$U_{CW,installed}$ ≤ 0.85 W/(m²K)

Thermal data of the construction

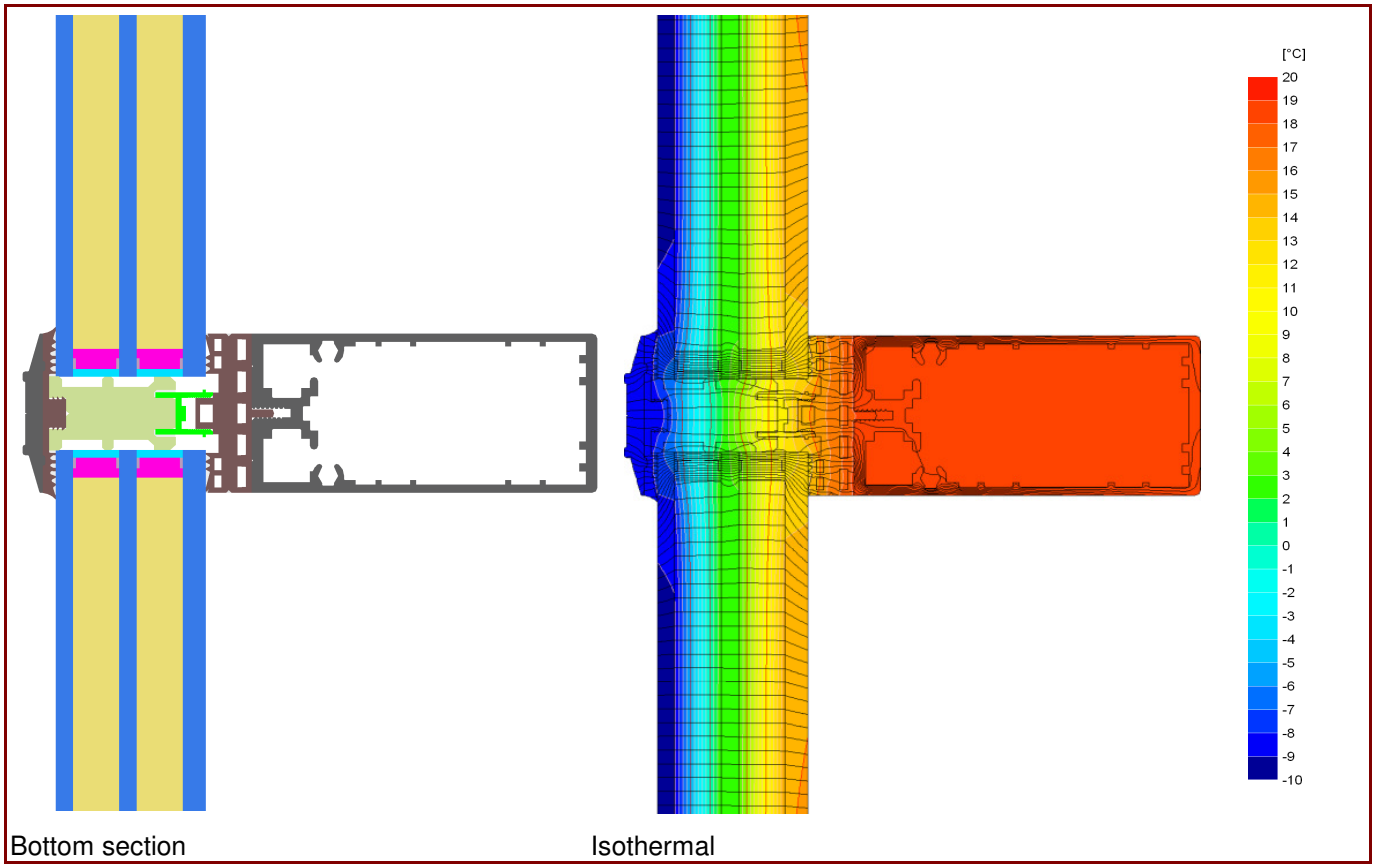
	U_f-value [W/(m²K)]	Width [mm]	Ψ_g [W/(mK)]	$f_{Rsi=0.25}$ [-]
Spacer			SuperSp. TriSeal PU*	
Transom (t)	0.85	60	0.033	0.79
Mullion (m)	0.85	60	0.033	
Thermal glass carrier bridge χ_{GT} [W/K]:				0.010

*Spacers of lower thermal quality, especially those made of aluminium, lead to significantly higher thermal losses and lower temperature factors.

Further information see data sheet

Data Sheet LAMILUX CI-System Glasarchitektur PR60$_{energysave}$ (vertical)

Manufacturer LAMILUX Heinrich Strunz GmbH
95111 Rehau, GERMANY
Tel.: +49 (0) 9283 595 0
www.lamilux.com



Bottom section Isothermal

Description

Aluminium construction, Aluminium pressure-strip. PE-foam insulator in the glazing rebate, plastic glass-carrier on stainless steel bolts. Used Pane: 52 mm (6/16/6/16/8), intersection of the Glass: 16 mm. Used spacer: SuperSp. TriSeal PU

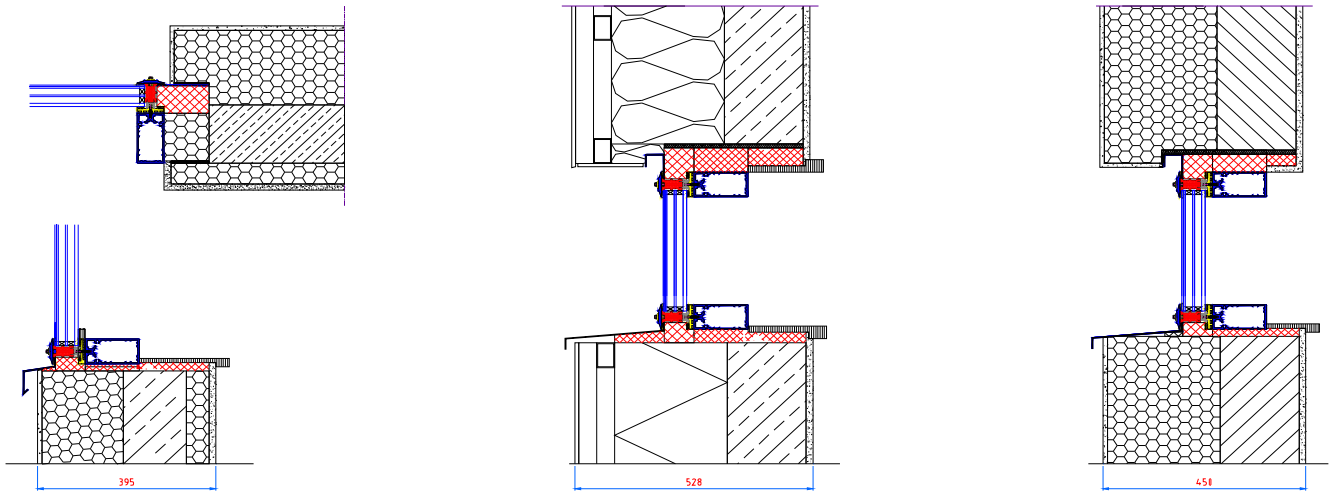
Thermal data

	U_f-value [W/(m²K)]	Width [mm]	Ψ_g [W/(mK)]	$f_{Rsi=0.25}$ [-]
Spacer			SuperSp. TriSeal PU*	
Transom (t)	0.85	60	0.033	0.79
Mullion (m)	0.85	60	0.033	
Opening element				
-				
Thermal glass carrier bridge χ_{GT} [W/K]:				0.010
1: Includes ΔU = 0.13 W/(m²K), Determined by measurement 2: Determined by 3D thermal flux simul. (PHI)				

* Spacers of lower thermal quality leading to higher thermal losses and lower temperatures.

Data Sheet LAMILUX CI-System Glasarchitektur PR60$_{energysave}$ (vertical)

Installation



Installation based thermal bridge $\Psi_{instal.}$ in Passive House suitable walls

Position		EIFS	Facing with air space	Insulated foamwork blocks
Bottom	[W/(mK)]	0.043	0.038	0.048
Side/top	[W/(mK)]	0.042	0.042	0.040
$U_{CW,install}$	[W/(m²K)]	0.84	0.84	0.85

Explanatory notes

The facade U-values were calculated based on a 1.20 m by 2.50 m with U_g = 0.70 W/(m²K).
If better glazing is used, the facade U-value decreases as follow:

U Glazing	**U_g** [W/(m²K)]	0.66	0.60	0.57
U Facade	**U_{CW}** [W/(m²K)]	0.77	0.71	0.68

Depending on the thermal losses through opaque elements, windows are categorised in to efficency classes. These thermal losses include the losses through the frame, multiplied by its width, the thermal bridge at the edge bond as well as the length of the edge bond.
Please ask the manufacturer for a detailed report.

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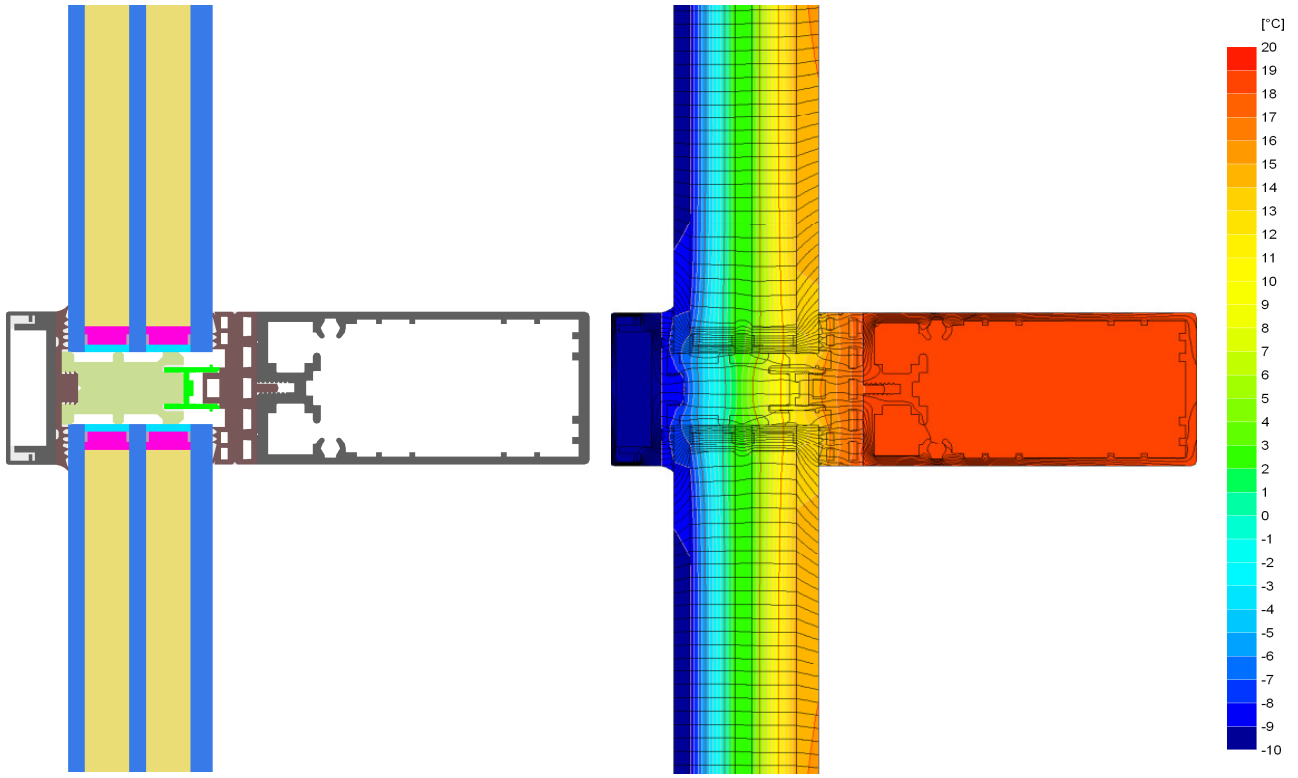

Bottom section Isothermal

Description

Aluminium construction, Aluminium covering- and pressure-strip. PE-foam insulator in the glazing rebate, plastic glass-carrier on stainless steel bolts. Used Pane: 52 mm (6/16/6/16/8), intersection of the Glass: 16 mm. Used spacer: SuperSp. TriSeal PU

Thermal data for the facade

	U-Wert [W/(m²K)]	**Breite** [mm]	**Ψ_g** [W/(mK)]	**$f_{Rsi=0,25}$** [-]
Spacer			SuperSp. Tri-Seal PU*	
Transom (t)	0.85	60	0.032	0.790
Mullion (m)	0.85	60	0.032	
Thermal glass carrier bridge χ_{GT} [W/K]:				0.010

1: Includes ΔU = 0.13 W/(m²K), Determined by measurement
2: Determined by 3D thermal flux simul. (PHI)

* Spacers of lower thermal quality leading to higher thermal losses and lower temperatures.