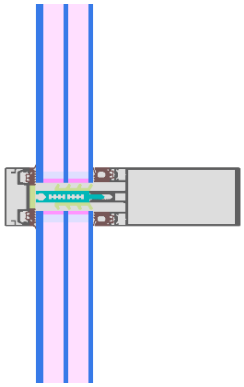
Certificate

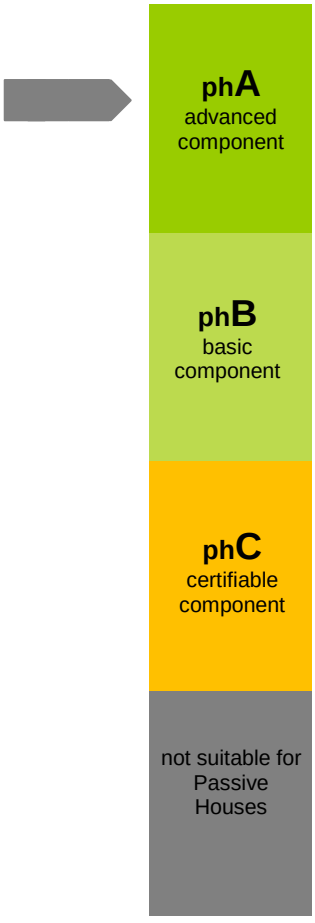
Certified Passive House Component
for cool, temperate climates; valid until 31.12.2016

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
GERMANY

Category: **Curtain wall**
Manufacturer: **SCHÜCO International KG**
33609 Bielefeld, GERMANY
Product name: **FWS 50.SI**



Passive House Efficiency Class



This certificate was awarded based on the following criteria:

Given a Ug value of 0.70 W/(m²K) and an element size of 1.20 m by 2.50 m,

U_{CW} = 0.80 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 window meets the following criterion.

$U_{CW,installed}$ ≤ 0.85 W/(m²K)

Thermal data

	$U_{m/t}$-value [W/(m²K)]	Width [mm]	Ψ_g [W/(mK)]	$f_{Rsi=0.25}$ [-]
Spacer			SWISSP. Ultimate*	
Mullion	0.88	50	0.034	0.79
Transom	0.88	50	0.035	
Thermal glas carrier bridge χ_{GT} [W/K]:				0.014

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

For further information, please see the data sheet

Data Sheet SCHÜCO International KG, FWS 50.SI

Manufacturer SCHÜCO International KG
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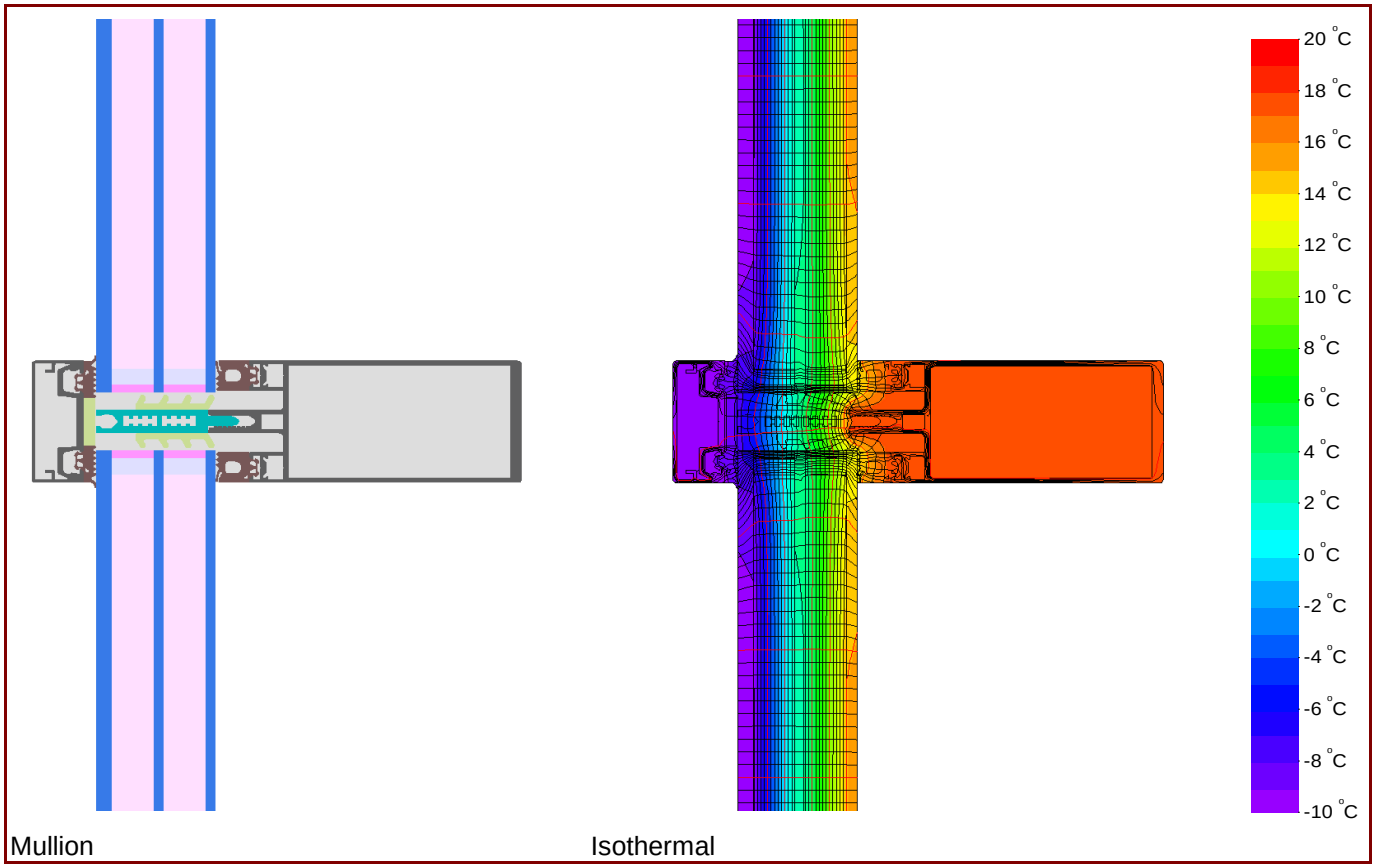


Mullion Isothermal

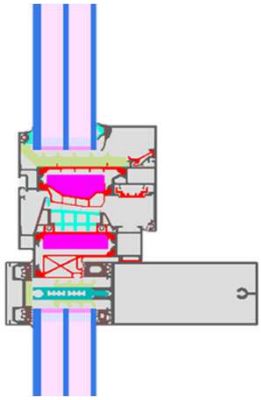
Description

Aluminum curtain wall, insulated by PE-foam (0,038 W/(mK)) and PET-foam (0,035 W/(mK)). Reduction of the radiation losses by low emmissivity tape.
Pane thickness: 46 mm (6/16/4/16/4), rebate depth: 13 mm, spacer: SWISSPACER Ultimate.

Thermal data for the window frame

	U_f-value [W/(m²K)]	Width [mm]	Ψ_g [W/(mK)]	$f_{Rsi=0.25}$ [-]
Spacer			SWISSP. Ultimate*	
Mullion (m)[1]	0.88	50	0.034	0.79
Transom (t)[1]	0.88	50	0.035	
Opening elemnt	1.20	156	0.031	0.78
Thermal glas carrier bridge χ_{GT} [W/K][2]				0.014

1: Includes ΔU = 0.17 W/(m²K), determined by 3d-thermal flux sim. (PHI)
2: Determined by 3d-thermal flux sim. (PHI)

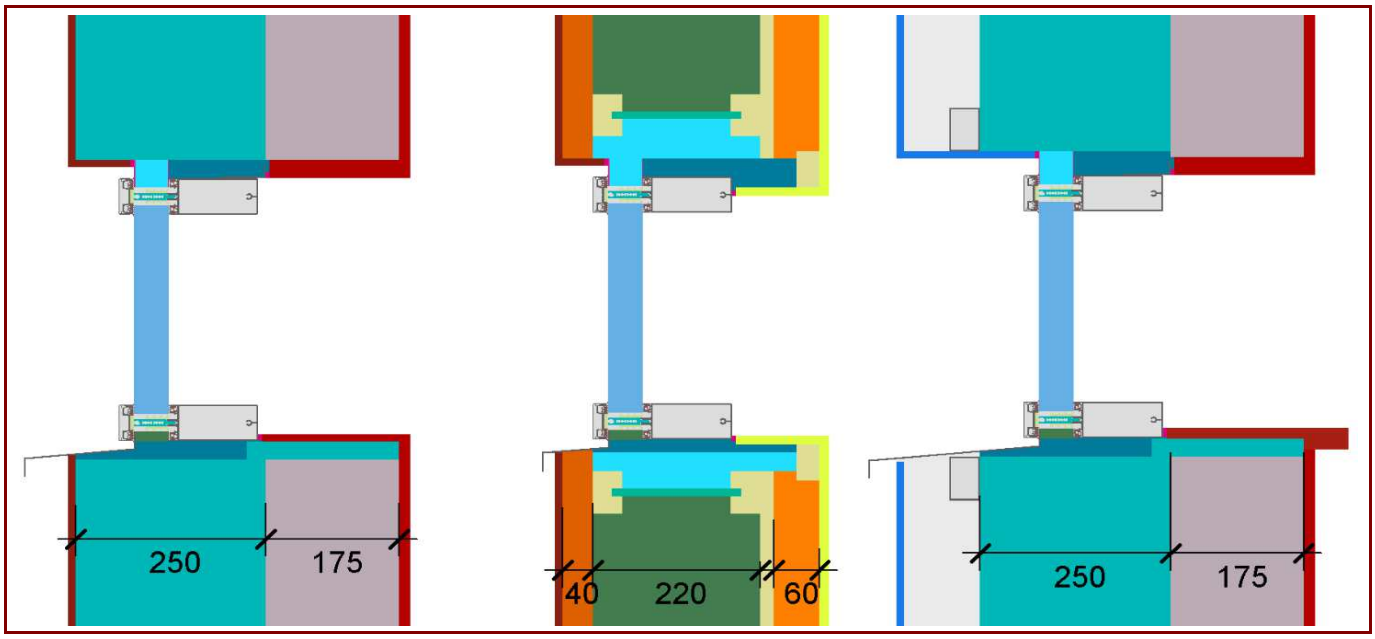


Opening element

* Spacers of lower thermal quality lead to higher thermal losses and lower glass edge temperatures.

Data Sheet SCHÜCO International KG, FWS 50.SI

Installation



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

Position		EIFS	Timber construction wall	Ventilated facade
Bottom	[W/(mK)]	0.037	0.042	0.037
Side/Top	[W/(mK)]	0.034	0.038	0.035
$U_{CW,installed}$	[W/(m²K)]	0.85	0.85	0.85

Explanatory notes

The element U-values were calculated based on a 1.20 m by 2.50 m window U_g = 0.70 W/(m²K).
If better glazing is used, the U-values decrease as follows:

U Glazing	**U_g** [W/(m²K)]	0.66	0.60	0.57
U Curtain wall	**U_{CW}** [W/(m²K)]	0.76	0.70	0.67

Depending on the thermal losses through opaque elements, transparent components are categorised according to efficency classes. These thermal losses include the losses through the frame, the frame width, the thermal bridge at the glass edge as well as the length of the glass edge. Certificates for arctic regions are too valid vor cold, certificates for cold regions are too valid for cool, temperate zones.
Please ask the manufacturer for a detailed report containing all calculations and results.
For further information, please visit www.passivehouse.com or www.passipedia.org.