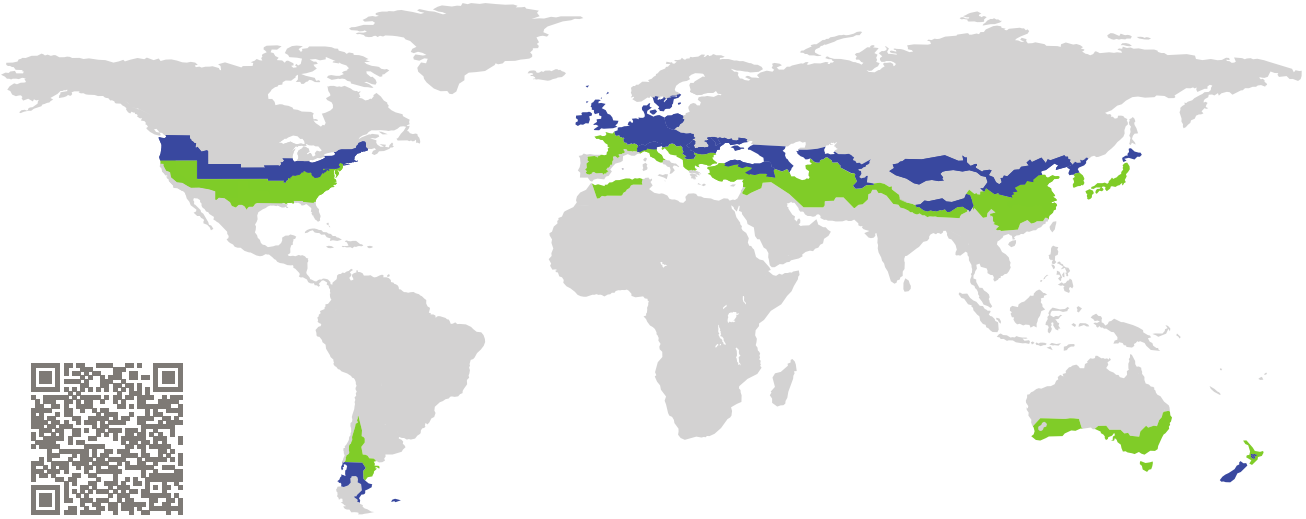
CERTIFICATE

Certified Passive House Component

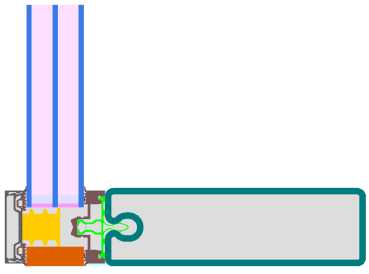
Component-ID 1023cw03 valid until 31st December 2018

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
Germany



Category:	**Curtain Wall**
Manufacturer:	**RAICO Bautechnik GmbH, Pfaffenhausen, Germany**
Product name:	**THERM+56 FS-I**

This certificate was awarded based on the following criteria for the cool, temperate climate zone



Comfort	U_{CW} = 0.79	≤	0.80 W/(m² K)
	$U_{CW,installed}$	≤	0.85 W/(m² K)
	with U_g	=	0.70 W/(m² K)
Hygiene	$f_{Rsi=0.25}$	≥	0.70

cool, temperate climate

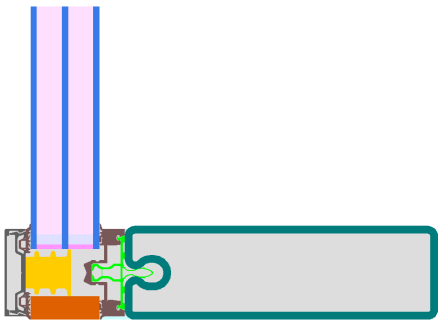
phA+

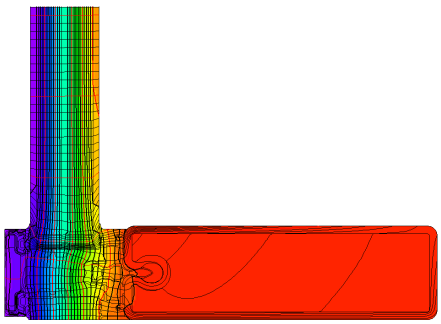
CERTIFIED COMPONENT

Passive House Institute

Passive House efficiency class	phE	phD	phC	phB	phA	phA+

www.passivehouse.com





Calculation model | Isothermal

Description

Construction: Aluminium-steel curtain wall with insulation inside the glazing rebate (0.038 W/(mK)) with an interior applied aluminium foil. Pane thickness: 44 mm (4/16/4/16/4), rebate depth: 13 mm, spacer: SWISSPACER Ultimate. Different versions of pressureplate, coverstrip and insulating material are available and have been evaluated. These values can be provided by the system provider and the PHI on request.

Explanation

The element U-values were calculated for the test element size of 1.20 m × 2.50 m with U_g = 0.70 W/(m² K). If a higher quality glazing is used, the element U-values will improve as follows:

Glazing	U_g =	0.70	0.64	0.58	0.52	W/(m² K)
		↓	↓	↓	↓	
Element	U_{CW}	0.79	0.73	0.68	0.62	W/(m² K)

Transparent building components are sorted into efficiency classes depending on the heat losses through the opaque part. The frame U-Values, frame widths, thermal bridges at the glazing edge and the glazing edge lengths are included in these heat losses. A more detailed report of the calculations performed in the context of certification is available from the manufacturer.

The Passive House Institute has defined international component criteria for seven climate zones. In principle, components that have been certified for climate zones with higher thermal requirements may also be used in climates with less stringent requirements. In a particular climate zone it may make sense to use a component of a higher thermal quality which has been certified for a climate zone with more stringent requirements.

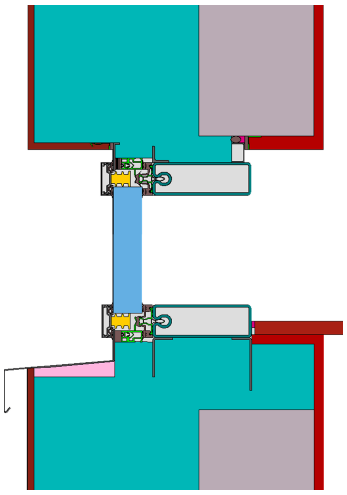
Further information relating to certification
can be found on www.passivehouse.com and passipedia.org.

Frame values			Frame width b_f mm	U-value frame U_f [1] W/(m² K)	Ψ-panel edge Ψ_g W/(m K)	Temp. Factor $f_{Rsi=0.25}$ [-]
Top fixed	(tof)		56	0.96	0.030	0.78
Side fixed	(sf)		56	0.93	0.031	0.78
Bottom fixed	(bof)		56	0.96	0.030	0.78
Mullion fixed	(m)		56	0.86	0.031	0.79
Transom fixed	(tf)		56	0.90	0.030	0.78
Transom 1 casement	(t1)		89	1.04	0.028	0.75
Spacer: SWISSPACER Ultimate				Secondary seal: Polysulfide		
Thermal glass carrier bridge [2] χ_{GT} = 0.004 W/K						

Validated installations

Exterior insulation and finishing system (EIFS) (fixed glazed)

U_{Wall} = 0.13 W/(m² K)

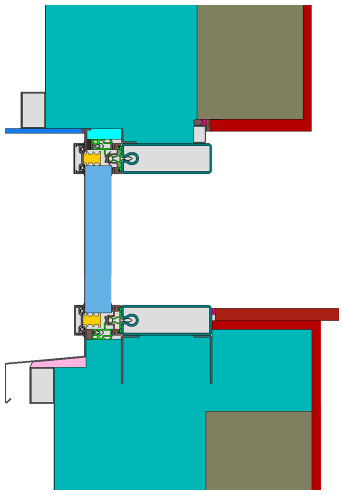


$\Psi_{install}$	W/(m K)
Top	0.044
Left	0.044
Right	0.044
Bottom	0.050

$U_{W,installed}$ = 0.85 W/(m² K)

Ventilated facade (fixed glazing)

U_{Wall} = 0.13 W/(m² K)

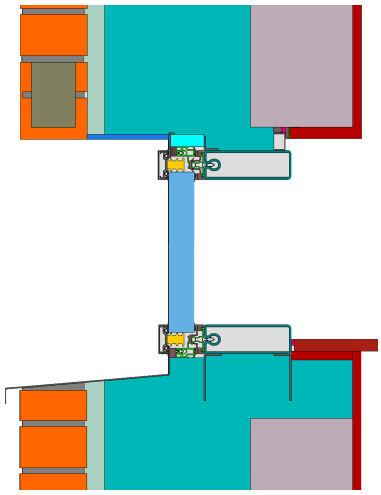


$\Psi_{install}$	W/(m K)
Top	0.042
Left	0.042
Right	0.042
Bottom	0.054

$U_{W,installed}$ = 0.85 W/(m² K)

Cavity wall (fixed glazing)

U_{Wall} = 0.13 W/(m² K)



$\Psi_{install}$	W/(m K)
Top	0.043
Left	0.043
Right	0.043
Bottom	0.054

$U_{W,installed}$ = 0.85 W/(m² K)

[1] Includes ΔU = 0.19 W/(m² K). Determined through 3D - FEM Simulation
[2] Determined through 3D - FEM Simulation . Glass carrier type : Non-Metallic