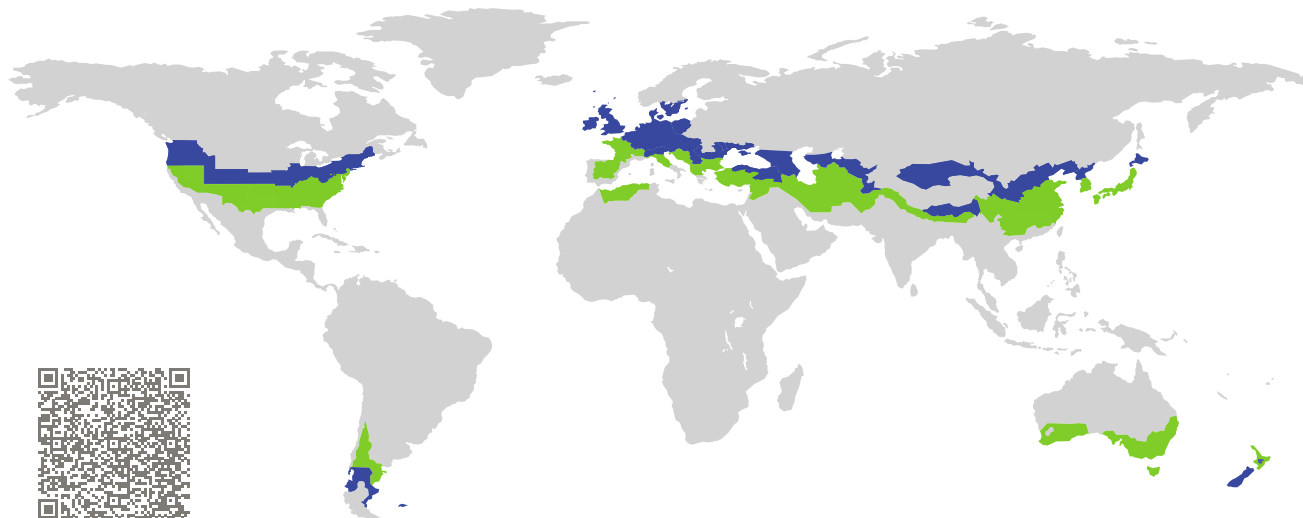


CERTIFICATE

Certified Passive House Component

Component-ID 1262cw03 valid until 31st December 2025

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
Germany

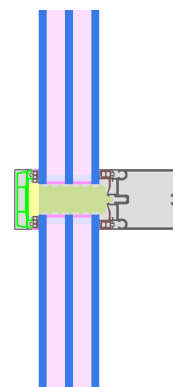


Category: **Curtain Wall**
Manufacturer: **Qing Dao Hong Hai Green Energy Co. LTD, Qingdao, China**
Product name: **HHGR 60 Curtain Wall System**

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

Comfort $U_{CW} = 0.78 \leq 0.80 \text{ W}/(\text{m}^2 \text{ K})$
 $U_{CW, \text{installed}} \leq 0.85 \text{ W}/(\text{m}^2 \text{ K})$
with $U_g = 0.70 \text{ W}/(\text{m}^2 \text{ K})$

Hygiene $f_{Rsi=0.25} \geq 0.70$



cool, temperate climate



CERTIFIED COMPONENT

Passive House Institute

Passive House efficiency class

phE

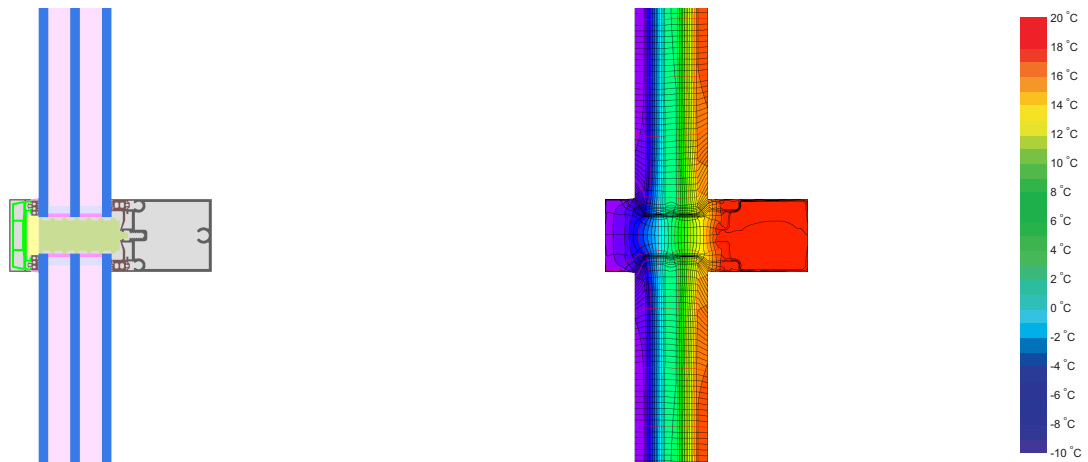
phD

phC

phB

phA

phA+



Calculation model

Isothermal

Description

Aluminium - mullion and transom facade, standard values used for screw and (plastic with metal screws) glass carrier. Screw channel and pressure-plate: PVC. Insulation: Kingspan Kooltherm (0,023 W/mK) and XPE foam (0,040 W/mK). Pane thickness: 60 mm (8/18/8/18/8 mm). Rebate depth: 16 mm. Spacer: TGI Precision. The glazing was calculated with a 3 mm secondary seal. As it is often the case that this is thicker, today the calculation is carried out with a 6 mm secondary seal. This leads to a higher glazing edge thermal bridge, which can also be estimated by way of the spacer certificates: www.passivhauskomponenten.org / glazing edge bonds. The higher rates of heat loss can be compensated for by using e. g. improved glazing.

Explanation

The element U-values were calculated for the test element size of 1.20 m × 2.50 m with $U_g = 0.70 \text{ W}/(\text{m}^2 \text{ K})$. 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	$\text{W}/(\text{m}^2 \text{ K})$
		↓	↓	↓	↓	
Element	U_{CW}	0.78	0.73	0.67	0.62	$\text{W}/(\text{m}^2 \text{ K})$

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/(m ² K)	Ψ -glazing edge Ψ_g W/(m K)	Temp. Factor $f_{RSI=0.25}$ [-]
Mullion fixed	(0M1)		60	0.79	0.031	0.80
Transom fixed	(0T1)		60	0.78	0.030	0.79
Mullion 1 casement	(1M1)		110	0.58	0.033	0.80
Bottom fixed	(FB1)		60	0.73	0.030	0.79
Top fixed	(FH1)		60	0.73	0.030	0.79
Lateral fixed	(FJ1)		60	0.73	0.030	0.84
			Spacer: TGI-Spacer Precision		Secondary seal: Polysulfide	

Thermal glass carrier bridge² $\chi_{GT} = 0.004$ W/K

Validated installations

Ventilated facade		Exterior insulation and finishing system (EIFS) (operable)	
$U_{Wall} = 0.13$ W/(m ² K)		$U_{Wall} = 0.13$ W/(m ² K)	
$\Psi_{install}$	W/(m K)	$\Psi_{install}$	W/(m K)
Top	0.018	Top	0.018
Left	0.018	Left	0.018
Right	0.018	Right	0.018
Bottom	0.022	Bottom	0.022
$U_{W,installed} = 0.80$ W/(m ² K)		$U_{W,installed} = 0.80$ W/(m ² K)	

¹ Includes $\Delta U = 0.30$ W/(m² K). Standard value

² Standard value. Glass carrier type: Non-metallic glass carrier with screws

