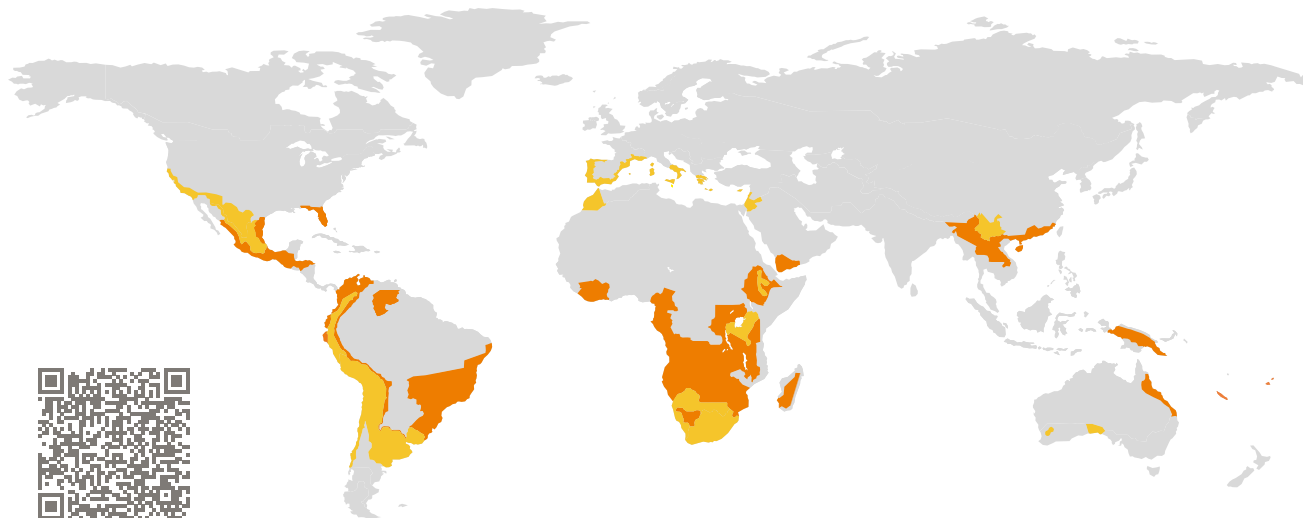


CERTIFICATE

Certified Passive House Component

Component-ID 1342wi05 valid until 31st December 2019

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
Germany

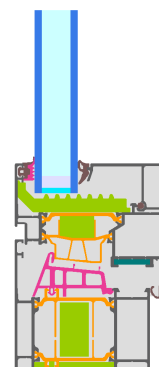


Category: **Window Frame**
Manufacturer: **METRA RAGUSA spa,**
Ragusa,
Italy
Product name: **NC75STH HES WS**

This certificate was awarded based on the following criteria for the warm climate zone

Comfort $U_W = 1.19 \leq 1.20 \text{ W}/(\text{m}^2 \text{ K})$
 $U_{W,\text{installed}} \leq 1.25 \text{ W}/(\text{m}^2 \text{ K})$
with $U_g = 1.10 \text{ W}/(\text{m}^2 \text{ K})$

Hygiene $f_{Rsi=0.25} \geq 0.55$



Passive House
efficiency class

phE

phD

phC

phB

phA

www.passivehouse.com

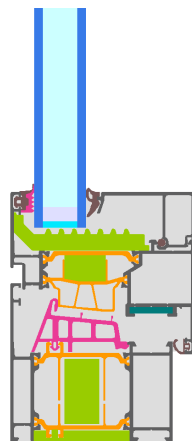
warm climate



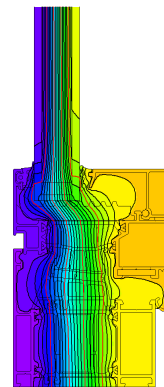
phC

**CERTIFIED
COMPONENT**

Passive House Institute



Calculation model



Isothermal

Description

Aluminium frame with thermal separation (low lambda PA 0.21 W/(mK)) and insulation (PET foam 0.029 W/(mK)); Pane thickness: 24 mm (4/16/4/0/0), rebate depth: 16 mm. Spacer: SWISSPACER Ultimate with polyurethane as secondary seal.

Explanation





The window U-values were calculated for the test window size of 1.23 m × 1.48 m with $U_g = 1.10$ W/(m² K). If a higher quality glazing is used, the window U-values will improve as follows:

Glazing	$U_g =$	1.10	1.00	1.20	1.30	W/(m ² K)
		↓	↓	↓	↓	
Window	$U_W =$	1.19	1.12	1.26	1.33	W/(m ² K)

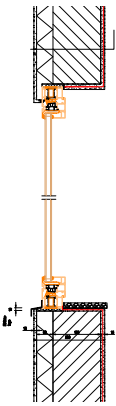
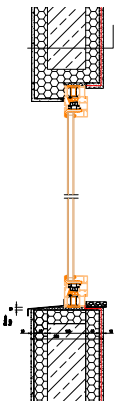
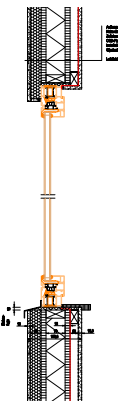
Transparent building components are classified into efficiency classes depending on the heat losses through the opaque part. The frame U-Values, frame widths, thermal bridges at the glazing edge, and the glazing edge lengths are included in these heat losses. A more detailed report of the calculations 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 which have been certified for climate zones with higher 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 W/(m ² K)	Ψ -panel edge Ψ_g W/(m K)	Temp. Factor $f_{RSi=0.25}$ [-]
Top	(to)		115	1.15	0.031	0.70
Side	(s)		115	1.15	0.031	0.70
Bottom	(bo)		115	1.15	0.031	0.70
Mullion 2 casements	(m2)		184	1.24	0.031	0.70
			Spacer: SWISSPACER Ultimate		Secondary seal: Polyurethane	

Validated installations

EIFS		Insulated formwork blocks		Timber frame	
$U_{Wall} = 0.48 \text{ W/(m}^2 \text{ K)}$		$U_{Wall} = 0.32 \text{ W/(m}^2 \text{ K)}$		$U_{Wall} = 0.31 \text{ W/(m}^2 \text{ K)}$	
					
$\Psi_{install}$	W/(m K)	$\Psi_{install}$	W/(m K)	$\Psi_{install}$	W/(m K)
Top	0.009	Top	0.008	Top	0.015
Side	0.009	Side	0.008	Side	0.015
Bottom	0.018	Bottom	0.021	Bottom	0.023
$U_{W,installed} = 1.23 \text{ W/(m}^2 \text{ K)}$		$U_{W,installed} = 1.22 \text{ W/(m}^2 \text{ K)}$		$U_{W,installed} = 1.24 \text{ W/(m}^2 \text{ K)}$	

