

# CERTIFICATE

Certified Passive House Component

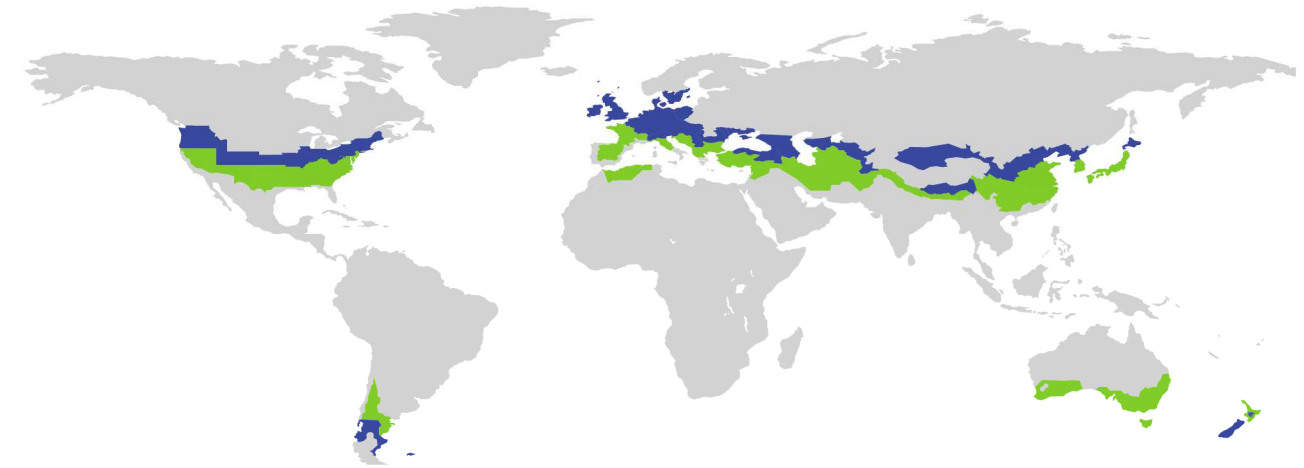
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Passive House Institute

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Category **Construction system | Lightweight timber Construction**  
Manufacturer **pro Passivhausfenster GmbH**  
**Oberaudorf**  
**GERMANY**  
Product name **smartshell timberframe G**

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

### Hygiene criterion

The minimum temperature factor of the interior surfaces is

$$f_{Rsi=0,25m^2K/W} \geq 0.70$$

### Comfort criterion

The U-value of the installed windows is

$$U_{w,i} \leq 0.85 \text{ W}/(\text{m}^2\text{K})$$

### Efficiency criteria

Heat transfer coefficient of building envelope

$$U \cdot f_{PHI} \leq 0.15 \text{ W}/(\text{m}^2\text{K})$$

Temperaturfactor of opaque junctions

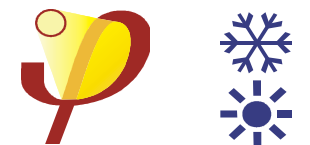
$$f_{Rsi=0,25m^2K/W} \geq 0.86$$

Thermal bridge free design for key connection details

$$\Psi \leq 0.01 \text{ W}/(\text{m}^2\text{K})$$

An airtightness concept for all components and connection details was provided.

cool, temperate climate



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cool, temperate climate

### Opaque building envelop

The construction system is built on a concrete floor slab supported by foam glass gravel and addition, 100 mm insulation at the inner side.

The timber frame walls are constructed with studs at 62.5 cm centers with gypsum fiber board fixed on the inside and plastered wood fiber board to the outside. The inside service cavity is insulated by wood fiber fleece. A gypsum board is mounted on the room side. The upper floors are formed with solid wood. The roof construction is formed with rafters at 80 cm spacing with cellulose insulation between. A gypsum fiber board works as airtightness layer between the rafters and the cross battens with gypsum board over.

### Windows

The certification was done with the window smartwin solar I, which is a very slim pA-class window with triple 18 mm argon glazing, Swisspacer Ultimate spacer bar with PU secondary seal. A special feature of smartwin solar I is, that the reveal becomes part of the windows frame.

In No. 01, the window is installed at the outer woodfiber board.

In No. 02, it is installed deeper in the wall, see certification report.

### Airtightness concept

The airtightness layer in the walls and roofs a gypsum fiber board. The boards are sealed together and to the windows with an airtightness tape. The board must be of sufficient airtightness and the tape has to seal the junctions durable.

### Explanatory notes

The Passive House Institute has defined international component criteria for seven climate zones based on hygiene-, comfort- and affordability criteria. In principle, components which have been certified for climate zones with higher requirements may also be used in climates with less stringent requirements. This use might make sense in certain circumstances.

Thermal bridge not calculated  
Criteria achieved

Efficiency criteria not achieved  
Hygiene- or comfort criterion not achieved

