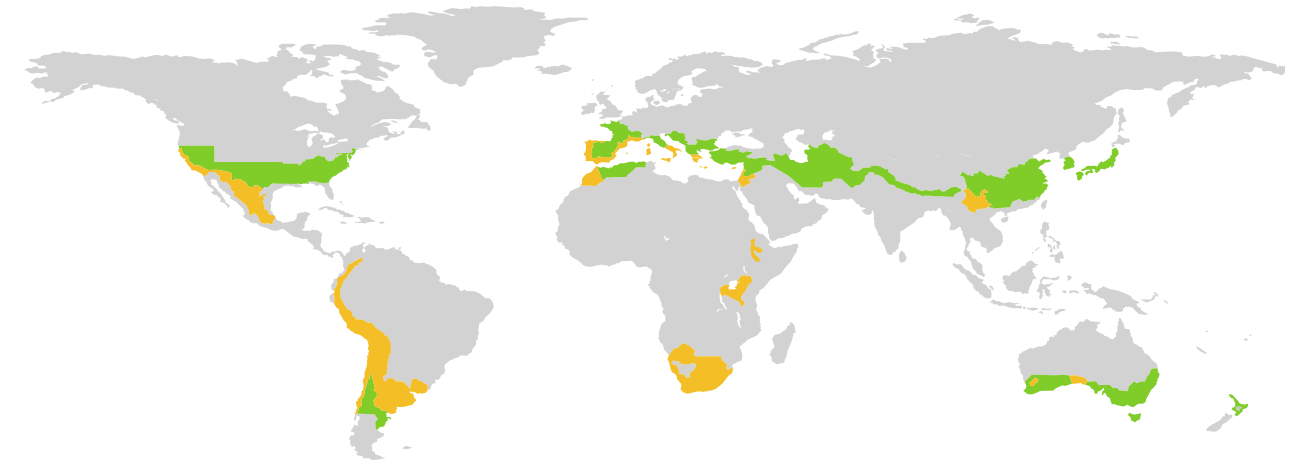


# CERTIFICATE

Certified Passive House Component

ID: 1884cs04 valid until 31. December 2023

Passive House Institute  
Dr. Wolfgang Feist  
64342 Darmstadt  
GERMANY



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

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

### Hygiene criterion

The minimum temperature factor of the interior surfaces is

$$f_{Rsi=0,25m^2K/W} \geq 0,65$$

### Comfort criterion

The U-value of the installed windows is

$$U_{w,i} \leq 1,05 \text{ W}/(\text{m}^2\text{K})$$

### Efficiency criteria

Heat transfer coefficient of building envelope

$$U \cdot f_{PHI} \leq 0,30 \text{ W}/(\text{m}^2\text{K})$$

Temperaturfactor of opaque junctions

$$f_{Rsi=0,25m^2K/W} \geq 0,82$$

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.

warm, temperate climate



**CERTIFIED  
COMPONENT**

Passive House Institute

### Opaque building envelope

The construction system is based on the most used Japanese earthquake-resistant timber construction. It is built on a concrete floor slab insulated by XPS and containing a 300 mm crawl space, which is containing installations and ventilation pipes.

The lightweight timber frame walls are constructed with solid studs at 45,5 cm centres with 9mm Japanese TBC plate to the outside and an installation area to the inside. An EPS layer with 100 mm forms the outside insulation, followed by organic compound plaster. The roof construction is formed with solid rafters at 92 cm spacings with 105 by 240 mm with 25 mm Japanese TBC plate to the outside and a 120 mm mineral wool insulation with 30 mm to 240 mm wooden slats to the inside. The false ceiling is made as a timber frame construction with a 300 mm free space for installation and ventilation pipes on bottom side.

### Windows

The certification was done with the window smartwin with (1) tripple glazing and (2) double glazing. Wall and window built a fusion. The window has no own outside layer as it is using the 9mm TBC board of the exterior wall for outside cladding. The shutter guide bar is forming the connection of TBC plate and exterior plaster.

### Airtightness concept

The airtight plane of the exterior wall is formed by an airtight membrane between the installation and the insulation level. Along the bottom ceiling the concrete forms the airtight plane. Along the roof the airtight plane is formed by an airtight membrane between the gypsum board and the insulation level.

### 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 driteria not achieved  
Hygiene- or comfortcriterion not achieved

