

# CERTIFICATE

Certified Passive House Component

ID: 1352cs02 valid until 31. December 2019

Passive House Institute  
Dr. Wolfgang Feist  
64342 Darmstadt  
GERMANY



Category **Wall system | Insulated formwork blocks**  
Manufacturer **VARIANT-HAUS-GROUP ICF Manufacturing & Sales GmbH**  
**Frankfurt am Main**  
**GERMANY**  
Product name **VARIANT HAUS**

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

#### Hygiene criterion

The minimum temperature factor of the interior surfaces is

$$f_{R_{si}=0,25m^2K/W} \geq 0,75$$

#### Comfort criterion

The U-value of the installed windows is

$$U_{W,i} \leq 0,65 \text{ W}/(m^2K)$$

#### Efficiency criteria

Heat transfer coefficient of building envelope

$$U * f_{PHI} \leq 0,12 \text{ W}/(m^2K)$$

Temperature factor of opaque junctions

$$f_{R_{si}=0,25m^2K/W} \geq 0,88$$

Thermal bridge-free design for key connection details

$$\Psi \leq 0,01 \text{ W}/(mK)$$

An airtightness concept for all components and connection details was provided



**Opaque building envelope**

Variante Haus is a concrete formwork wall system. The external walls are insulated with 250 + 50mm EPS (BASF Neopor, 0,032 W/mK), the flat roof with 220mm of mineral wool (or similar with 0,040 W/mK) and the floor slab with a proprietary insulation system comprising Styrodur (0,038 W/mK) from Lohr (ISOLOHR Passivhaus Bodenplatte, Komponenten-ID 0376fs03). The system has been evaluated according to the thermal performance criteria set out by the Passive House Institute for the cold climate and, although the intermediate floor connection does not meet the efficiency criteria, the system has been validated as suitable for passive houses in the cold and cool-temperate climate zones.

**Windows**

Analysis was undertaken using a generic, passive house standard timber-framed, triple-glazed window unit, featuring phA thermal values for the spacer and a polysulfide secondary seal. The calculations undertaken demonstrate that the window installation locations are suited to the cold climate zone, with no risk of surface condensation and subsequent mould growth.

**Airtightness concept**

The interior plaster works as the airtightness layer of the interior walls. In the roof a membrane provides the airtightness layer, which is connected to the plaster via airtightness tapes. The windows are connected in the same way. In the bottom, the concrete floor slab serves as airtightness layer.

**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

