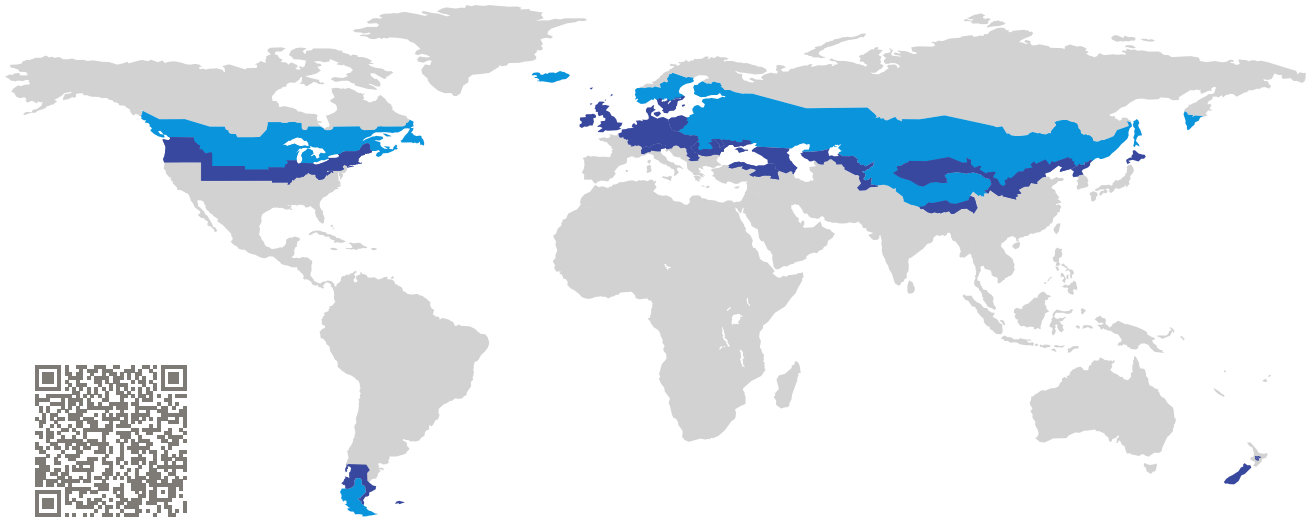


# CERTIFICATE

Certified Passive House Component

Component-ID 2128wi02 valid until 31st December 2026

Passive House Institute  
Dr. Wolfgang Feist  
64283 Darmstadt  
Germany

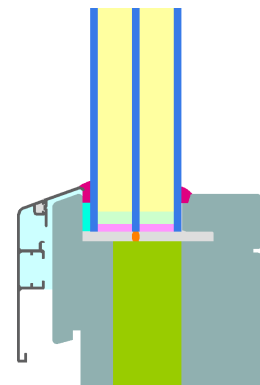


Category: **Fixed window**  
Manufacturer: **LP International,  
Dresden,  
Germany**  
Product name: **PF 90 Plus (fixed)**

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

Comfort  $U_W = 0.60 \leq 0.60 \text{ W}/(\text{m}^2 \text{ K})$   
 $U_{W, \text{installed}} \leq 0.65 \text{ W}/(\text{m}^2 \text{ K})$   
with  $U_g = 0.52 \text{ W}/(\text{m}^2 \text{ K})$

Hygiene  $f_{Rsi=0.25} \geq 0.75$



Passive House  
efficiency class

phE

phD

phC

phB

phA

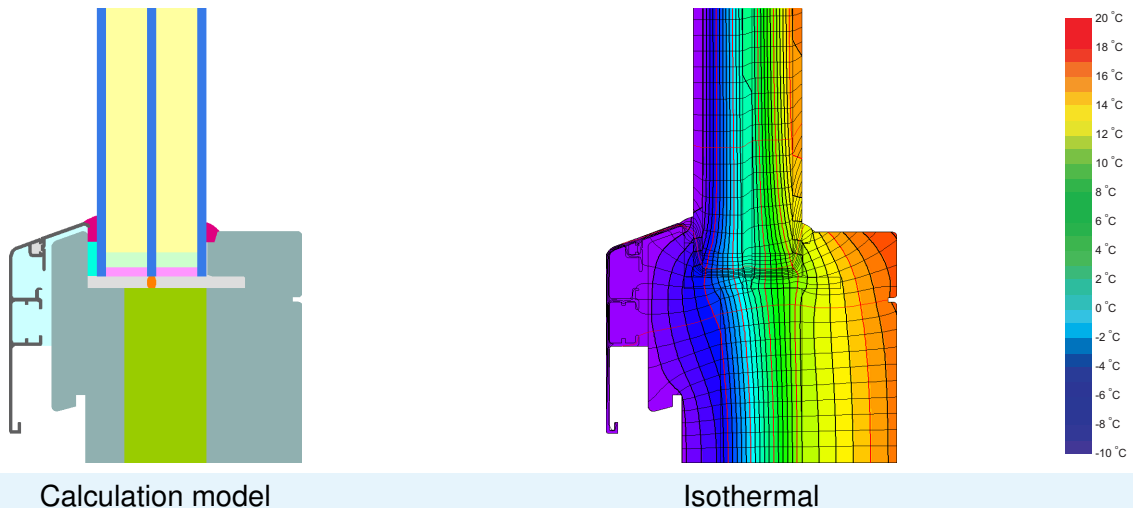
[www.passivehouse.com](http://www.passivehouse.com)

cold climate



**CERTIFIED  
COMPONENT**

Passive House Institute



## Description

Fixed Version of Vilstal AC 20 PH Plus; Timber aluminium frame (Spruce 0.11 W/(mK)), insulated with PUR-foam (0.031 W/(mK)). Spacer: Multitech G with polysulfide secondary seal Pane thickness: 48 mm (4/18/4/18/4), rebate depth: 24 mm.

## Explanation





The window U-values were calculated for the test window size of 1.23 m × 1.48 m with  $U_g = 0.52 \text{ W}/(\text{m}^2 \text{ K})$ . If a higher quality glazing is used, the window U-values will improve as follows:

Glazing	$U_g =$	0.52	0.35	0.58	0.64	W/(m <sup>2</sup> K)
		↓	↓	↓	↓	
Window	$U_w =$	0.60	0.48	0.64	0.68	W/(m <sup>2</sup> K)

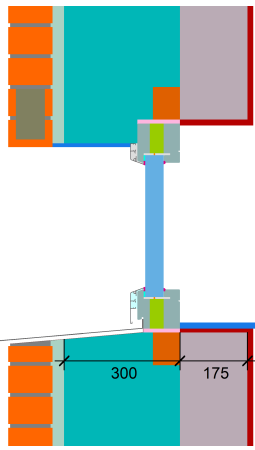
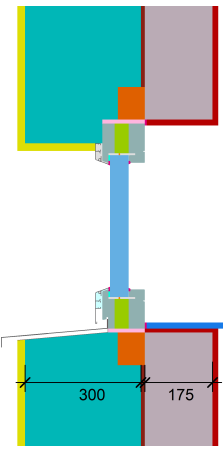
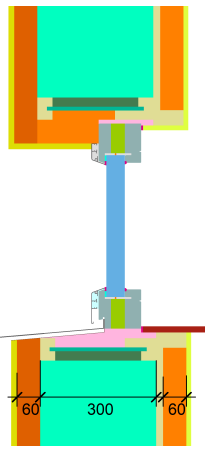
Transparent building components are classified into efficiency classes depending on the heat losses through the opaque part. The frame U-Values, frame widths, thermal bridges at the glazing edge, and the glazing edge lengths are included in these heat losses. A more detailed report of the calculations 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](http://www.passivehouse.com) and [passipedia.org](http://passipedia.org).

Frame values		Frame width $b_f$ mm	$U$ -value frame $U_f$ W/(m <sup>2</sup> K)	$\Psi$ -glazing edge $\Psi_g$ W/(m K)	Temp. Factor $f_{RSI=0.25}$ [-]
Mullion fixed	(OM1) 	202	0.64	0.024	0.81
Bottom fixed	(FB1) 	106	0.57	0.026	0.76
Top fixed glazing	(FH1) 	106	0.56	0.026	0.77
Jamb fixed glazing	(FJ1) 	106	0.56	0.026	0.77
Spacer: MULTITECH G			Secondary seal: Polysulfide		

## Validated installations

Cavity wall (fixed glazing)	Exterior insulation and finishing system (EIFS) (fixed glazed)	Lightweight timber (fixed glazed)
$U_{Wall} = 0.11 \text{ W/(m}^2 \text{ K)}$	$U_{Wall} = 0.11 \text{ W/(m}^2 \text{ K)}$	$U_{Wall} = 0.10 \text{ W/(m}^2 \text{ K)}$
		
$\Psi_{install}$ W/(m K)	$\Psi_{install}$ W/(m K)	$\Psi_{install}$ W/(m K)
Top 0.004	Top 0.004	Top 0.012
Side 0.004	Side 0.004	Side 0.010
Bottom 0.024	Bottom 0.025	Bottom 0.030
$U_{W,installed} = 0.62 \text{ W/(m}^2 \text{ K)}$	$U_{W,installed} = 0.62 \text{ W/(m}^2 \text{ K)}$	$U_{W,installed} = 0.64 \text{ W/(m}^2 \text{ K)}$

Disclaimer: The Passive House Institute GmbH (PHI) conducts heat-transfer analyses in accordance with the standards set out in Criteria and Algorithms for Certified Passive House Components: Transparent Building Components and Opening Elements in the Building Envelope, based on information provided by the manufacturer. PHI does not verify on-site implementation. It is the responsibility of the project leader to ensure that installed components match the certified specifications in terms of geometry, configuration, and materials. Manufacturers must make full product information available upon request to parties involved in a construction project. These parties may compare the provided information with project documentation and perform on-site inspections as part of the quality-assurance process.

