

# CERTIFICATE

Certified Passive House Component

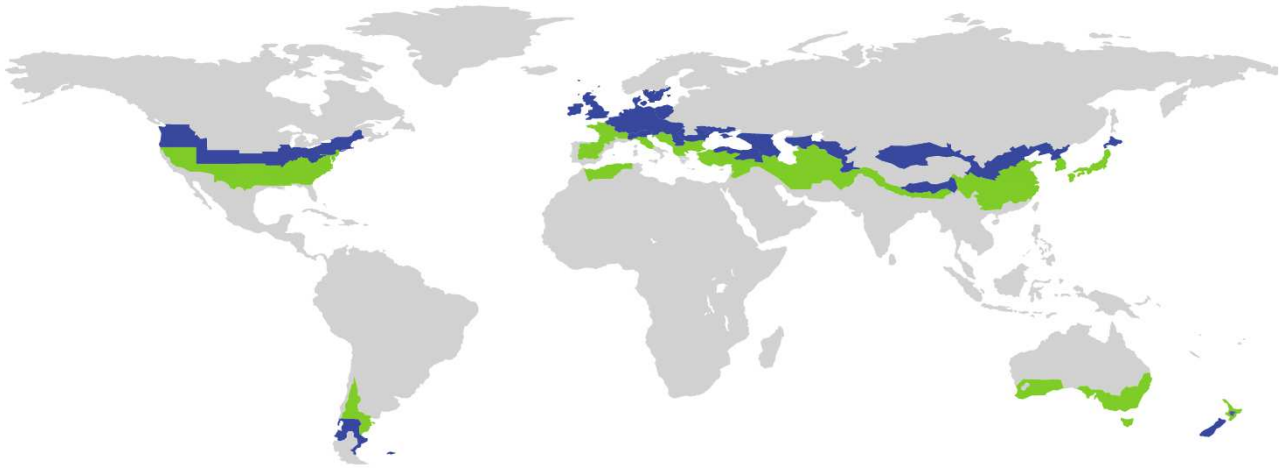
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Passive House Institute

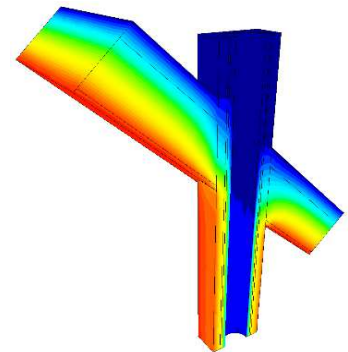
Dr. Wolfgang Feist

64342 Darmstadt

GERMANY



Category **Flue system**  
Manufacturer **K. Schröder Nachf.  
Kamen  
GERMANY**  
Product name **FUTURETHERM 45**



**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

$$f_{R_{si}=0,25m^2K/W} \geq 0,70$$

## Comfort criterion

The average surface temperature is

$$\theta_{si, av} \geq 17,00 \text{ } ^\circ\text{C}$$

The minimum surface temperature is

$$\theta_{si, min} \geq 15,30 \text{ } ^\circ\text{C}$$

## Airtightness criterion

The leakage of a 5 m high reference system is

$$V_{50 \text{ ref}} \leq 0,86 \text{ } m^3/h$$

cool, temperate climate

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



**Description**

The shaft consists of mineral boards of 45 mm thickness ( $0.139 \text{ W} / (\text{mK})$ ), which are glued and screwed together. The inner exhaust pipe, made of stainless steel, is coated with 25 mm of high-temperature-resistant insulation ( $0.045 \text{ W} / (\text{mK})$ ). The air space between the insulation material and the shaft is closed at the top by means of a high-temperature-resistant silicone sleeve.

	Shaft			Combustion air pipe		
	240 mm	310 mm	360 mm	50 mm	90 mm	120 mm
<b>Roof</b>						
$\Psi$ [W/mK]	<b>0,380</b>	<b>0,611</b>	<b>0,773</b>	<b>0,204</b>	<b>0,300</b>	<b>0,369</b>
$fR_{si} \text{ min}$ @0,25m <sup>2</sup> K/W	0,88	0,85	0,84	0,90	0,88	0,88
Ridge	0,70					
$\theta \text{ min}$ [°C]	17,82	17,36	17,17	18,30	18,03	17,90
Eaves	15,26	15,26	15,26	15,26	15,26	15,26
Verge	18,46	18,08	17,91	18,31	18,04	17,92
Eaves	17,00					
<b>Junction</b>						
Footing, flue pipe connection, cleaning	0,65					
Shaft incl. joints [m <sup>3</sup> / (hm)]	0,07	0,10	0,11			
reference system h = 5m [m <sup>3</sup> / (hm)]	0,20	0,22	0,24			
Limit [m <sup>3</sup> / (hm)]	1,00					
<b>Junctions</b>						
<b>Flat roof, long</b>						
X [W/K]	<b>0,120</b>	<b>0,178</b>	<b>0,215</b>			
$fR_{si} \text{ min}$ @0,25m <sup>2</sup> K/W	0,87	0,85	0,84			
<b>Flat roof, short</b>						
X [W/K]	<b>0,107</b>	<b>0,156</b>	<b>0,186</b>			
$fR_{si} \text{ min}$ @0,25m <sup>2</sup> K/W	0,87	0,85	0,84			
<b>Pitched roof, long</b>						
X [W/K]	<b>0,099</b>	<b>0,171</b>	<b>0,234</b>			
$fR_{si} \text{ min}$ @0,25m <sup>2</sup> K/W	0,78	0,73	0,74			
<b>Pitched roof, short</b>						
X [W/K]	<b>0,099</b>	<b>0,172</b>	<b>0,229</b>			
$fR_{si} \text{ min}$ @0,25m <sup>2</sup> K/W	0,78	0,73	0,74			
<b>Exterior wall</b>						
X [W/K]				<b>0,050</b>	<b>0,071</b>	<b>0,087</b>
$fR_{si} \text{ min}$ @0,25m <sup>2</sup> K/W				0,89	0,87	0,86
Coloured in green: Criteria achieved			Coloured in orange: Efficiency criteria not achieved			

**Input in the Passive House Planning Package (PHPP)**

The thermal bridges of penetrations of the insulation layer is to be inserted in the area-sheet, temperature zone A, group no. 15 (thermal bridges outside air) as punctual thermal bridge (length = 1). For the chimney within the thermal envelope are identified:

1. Sporadic operation of the connected heat source: Enter a thermal bridge group 15 with a length of 1 with a thermal bridge loss coefficient of  $52 \text{ W}/(\text{m}^2\text{K})$  \* (sum of the shaft cross -sections [m]).
2. Continued use of the connected heat source during the heating season: No further input is required.

This kind of approach is only for chimneys with a high level of insulation and high air tightness allowed (Certified Passive House Components).