

Reference load profile, existing single-family house, Germany

INFO Sheet D13-Germany-SFH-heatdemand-23.5MWh

Description:	Definition of the reference load profile of an existing single-family house, Germany
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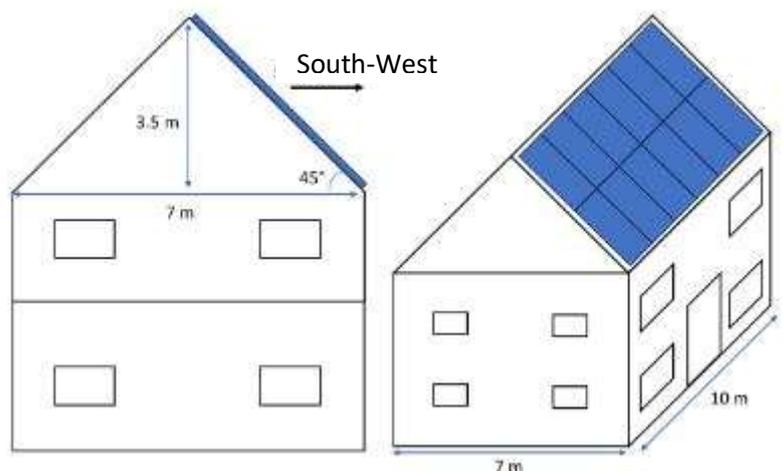
Introduction

This document describes the reference load profile of an existing single-family house in Germany. It is provided as information and is used as a basis in other work packages of IEA-SHC Task 71 for levelized cost of heat and life cycle assessment calculations.

General information

Location	Potsdam, Germany
Application	Existing single-family house
Weather data at location	Test reference year 2015 for Potsdam (city) //
- source	$\Sigma G_{\text{hem,hor}} = 1064.0 \text{ kWh}/(\text{m}^2 \cdot \text{a})$
- hemispherical irradiance on horizontal surface	$\Sigma G_{\text{beam,hor}} = 501.4 \text{ kWh}/(\text{m}^2 \cdot \text{a})$
- beam irradiance on horizontal surface	$\Sigma G_{\text{diff,hor}} = 562.6 \text{ kWh}/(\text{m}^2 \cdot \text{a})$
- diffuse irradiance on horizontal surface	$T_{\text{amb,av}} = 9.8 \text{ }^\circ\text{C}$
- yearly average ambient temperature	see appendix A
- hourly profiles	

Description existing single-family house

	
Orientation	South-West
Roof pitch	45°
Living space	140 m ²
Inhabitants	3
Heat transfer system	Radiators

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Heating temperatures	See appendix A
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Load profile: heat demand

- Yearly heat demand (total)	23539 kWh/a
- Yearly heat demand (SH)	22112 kWh/a respectively 157.9 kWh/(m ² a)
- Yearly heat demand (DHW)	1427 kWh/a /2/
- Daily hot water volume per inhabitant	31 l
- Yearly heat demand for circulation:	0 kWh/a

Load profile: temperature levels

- max. flow temperature SH	56.3 °C
- max. return temperature SH	45.9 °C
- flow temperature DHW	45 °C (according to EN 12977-2:2018)
- return temperature DHW	10 °C seasonal ± 2 K

Acronyms

DHW	domestic hot water
MFH	multi-family house
SFH	single-family house
SH	space heating

Appendix

- hourly weather data
- flow and return temperature profiles
- load profile characteristics

References

- /1/ https://www.dwd.de/DE/klimaumwelt/klimaforschung/spez_themen/try/try_node.html
 /2/ synPRO load files