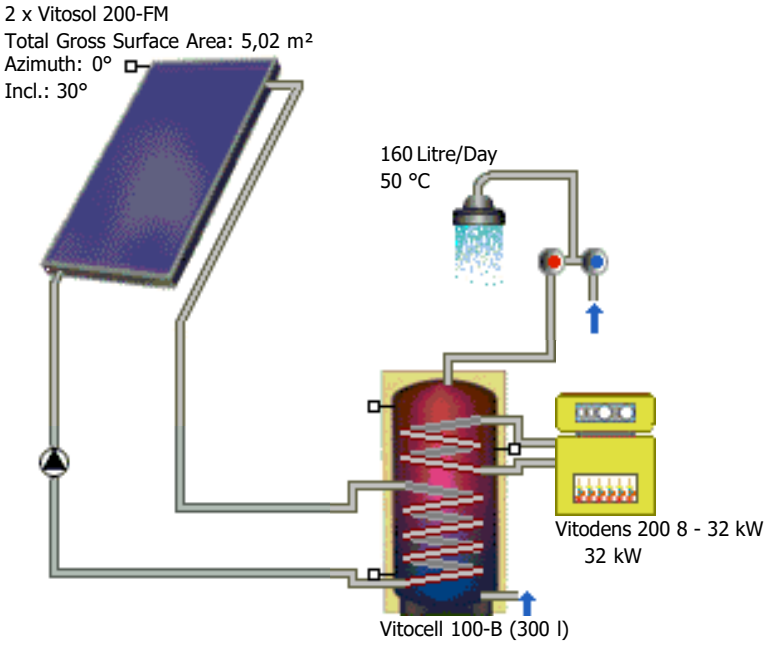


Results of Annual Simulation

Installed Collector Power:	3,51 kW	
Installed Gross Solar Surface Area:	5,02 m²	
Collector Surface Area Irradiation (Active Surface):	4,97 MWh	1.066,95 kWh/m²
Energy Produced by Collectors:	1.846,10 kWh	396,16 kWh/m²
Energy Produced by Collector Loop:	1.596,54 kWh	342,61 kWh/m²
DHW Heating Energy Supply:	2707,98 kWh	
Solar Contribution to DHW:	1596,54 kWh	
Energy from Auxiliary Heating:	1431,68 kWh	
Natural Gas (H) Savings:		**193,9 m³**
CO2 Emissions Avoided:		**410,05 kg**
DHW Solar Fraction:		**52,7 %**
Fractional Energy Saving (EN 12976):		**54,8 %**
System Efficiency:		**32,1 %**

Basic Data

Climate File

Location:	Uccle
Climate Data Record:	"Uccle"
Total Annual Global Radiation:	958,8 kWh
Latitude:	50,8 °
Longitude:	-4,35 °

Domestic Hot Water

Average Daily Consumption:	160 l
Desired Temperature:	50 °C
Load Profile:	Detached House (evening max)
Cold Water Temperature:	February:8 °C / August:12 °C
Circulation:	No

System Components

Collector Loop

Manufacturer:	Viessmann Werke GmbH & Co
Type:	Vitosol 200-FM
Number:	2,00
Total Gross Surface Area:	5,02 m²
Total Active Solar Surface Area:	4,66 m²
Tilt Angle:	30 °
Azimuth:	0 °

DHW Tank with Two Heating Coils

Manufacturer:	Viessmann
Type:	Vitocell 100-B (300 l)
Volume:	300 l

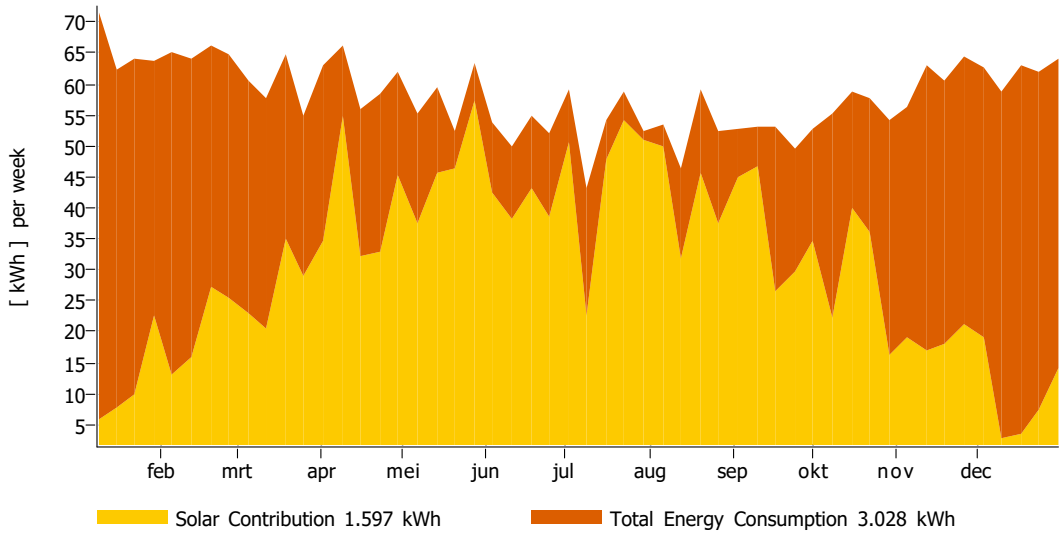
Auxiliary Heating

Manufacturer:	Viessmann
Type:	Vitodens 200 8 - 32 kW
Nominal Output:	32 kW

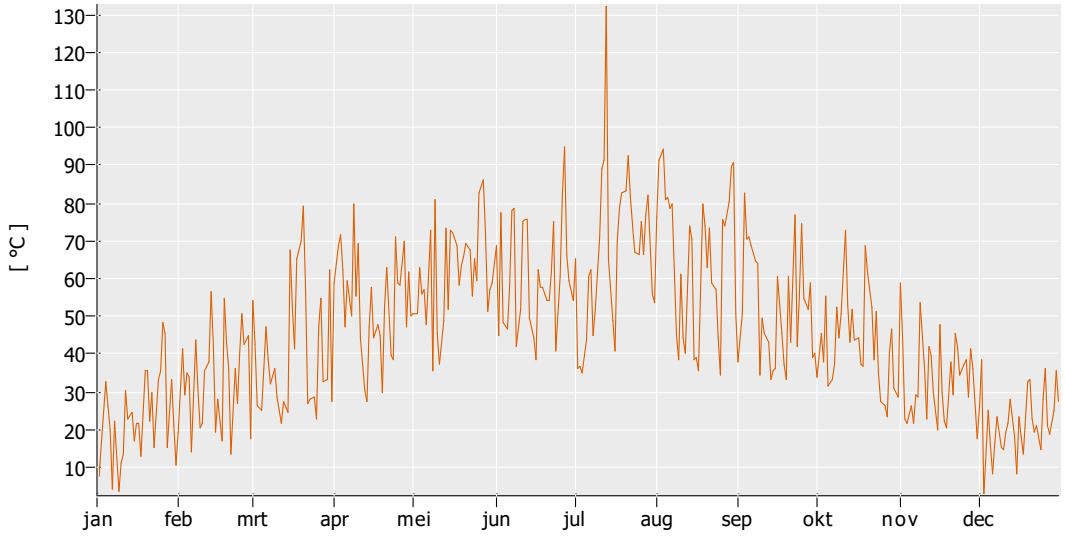
Legend

Original T*SOL Database
With Test Report
Solar Keymark

Solar Energy Consumption as Percentage of Total Consumption

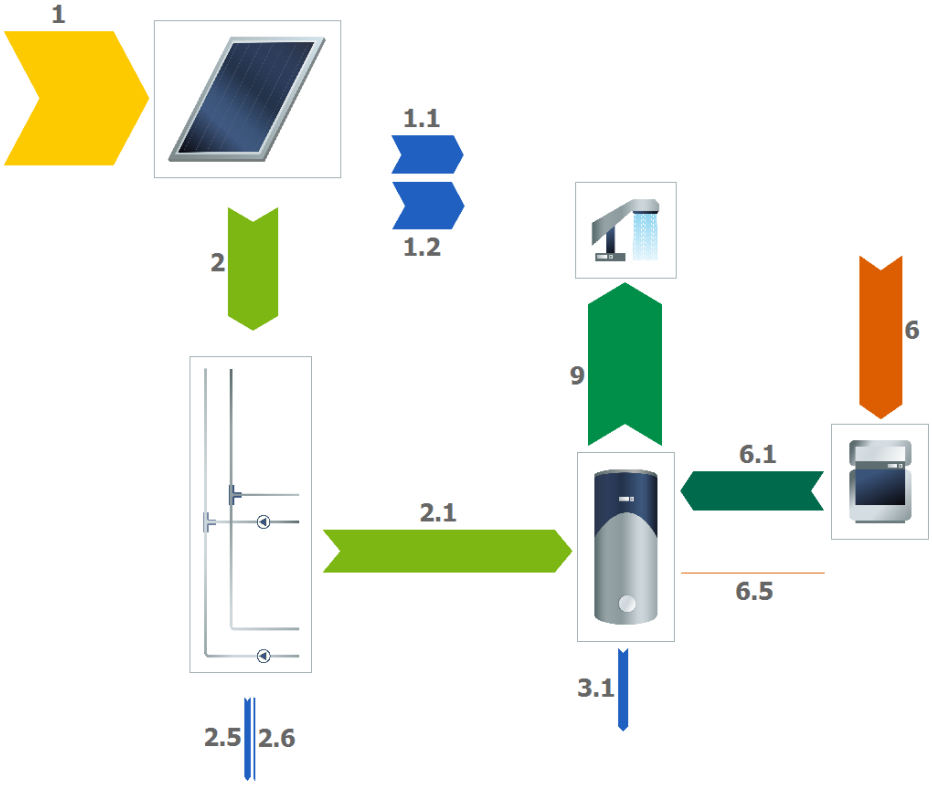


Daily Maximum Collector Temperature



These calculations were carried out by T*SOL Expert 4.5 - the Simulation Programme for Solar Thermal Heating Systems. The results are determined by a mathematical model calculation with variable time steps of up to 6 minutes. Actual yields can deviate from these values due to fluctuations in climate, consumption and other factors.The system schematic diagram above does not represent and cannot replace a full technical drawing of the solar system.

Energy Balance Schematic



Legend

1	Collector Surface Area Irradiation (Active Surface)	4.972 kWh
1.1	Optical Collector Losses	1.382 kWh
1.2	Thermal Collector Losses	1.744 kWh
2	Energy from Collector Array	1.846 kWh
2.1	Solar Energy to Storage Tank	1.597 kWh
2.5	Internal Piping Losses	207 kWh
2.6	External Piping Losses	43 kWh
3.1	Tank Losses	319 kWh
6	Final Energy	1.550 kWh
6.1	Supplementary Energy to Tank	1.432 kWh
6.5	Heating Element	0 kWh
9	DHW Energy from Tank	2.708 kWh

Glossary

1 Collector Surface Area Irradiation (Active Surface)
Energy Irradiated onto Tilted Collector Area (Active Solar Surface)

1.1 Optical Collector Losses
Reflection and Other Losses

1.2 Thermal Collector Losses
Heat Conduction and Other Losses

2 Energy from Collector Array
Energy Output at Collector Array Outlet (i.e. Before the Piping)

2.1 Solar Energy to Storage Tank
Energy from Collector Loop to Storage Tank (Minus Piping Losses)

2.5 Internal Piping Losses
Internal Piping Losses

2.6 External Piping Losses
External Piping Losses

3.1 Tank Losses
Heat Losses via Surface Area

6 Final Energy
Final Energy Current into System. This can flow in as natural gas, oil or electricity (not including solar energy) taking efficiency levels into account

6.1 Supplementary Energy to Tank
Supplementary Energy (e.g. Boiler) to Tank

6.5 Heating Element
Energy from Heating Element

9 DHW Energy from Tank
Heat for DHW Appliances from Tank (Exluding Circulation)