

## Results of Annual Simulation

Installed Collector Power:	3,51 kW	
Installed Gross Solar Surface Area:	5,02 m <sup>2</sup>	
Collector Surface Area Irradiation (Active Surface):	4,97 MWh	1.066,95 kWh/m <sup>2</sup>
Energy Produced by Collectors:	1.939,74 kWh	416,25 kWh/m <sup>2</sup>
Energy Produced by Collector Loop:	1.727,44 kWh	370,70 kWh/m <sup>2</sup>
DHW Heating Energy Supply:	2541,1 kWh	
Solar Contribution to DHW:	1727,44 kWh	
Energy from Auxiliary Heating:	1151,7 kWh	
<b>Natural Gas (H) Savings:</b>		<b>249,7 m<sup>3</sup></b>
<b>CO2 Emissions Avoided:</b>		<b>527,97 kg</b>
<b>DHW Solar Fraction:</b>		<b>60,0 %</b>
<b>Fractional Energy Saving (EN 12976):</b>		<b>62,3 %</b>
<b>System Efficiency:</b>		<b>34,7 %</b>

## 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:	200 l
Desired Temperature:	40 °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-F SV2C
Number:	2,00
Total Gross Surface Area:	5,02 m <sup>2</sup>
Total Active Solar Surface Area:	4,66 m <sup>2</sup>
Tilt Angle:	30 °
Azimuth:	0 °




### Bivalent (Twin Coil) DHW Tank

Manufacturer:	T*SOL Database
Type:	Vitocell 100-B
Volume:	300 l

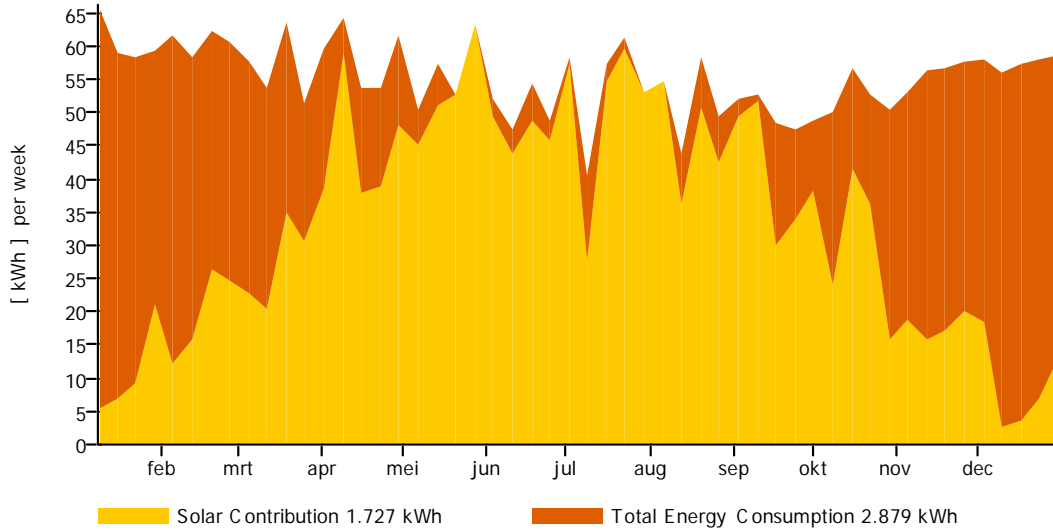
### Auxiliary Heating

Manufacturer:	T*SOL Database
Type:	Vitodens 200
Nominal Output:	35 kW

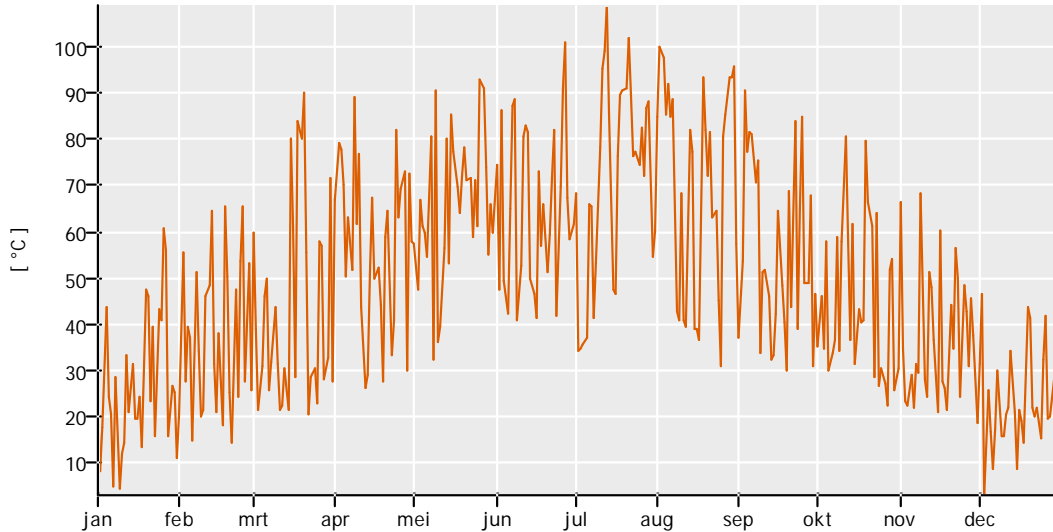
### Legend

	Original T*SOL Database
	With Test Report
	Solar Keymark

### Solar Energy Consumption as Percentage of Total Consumption

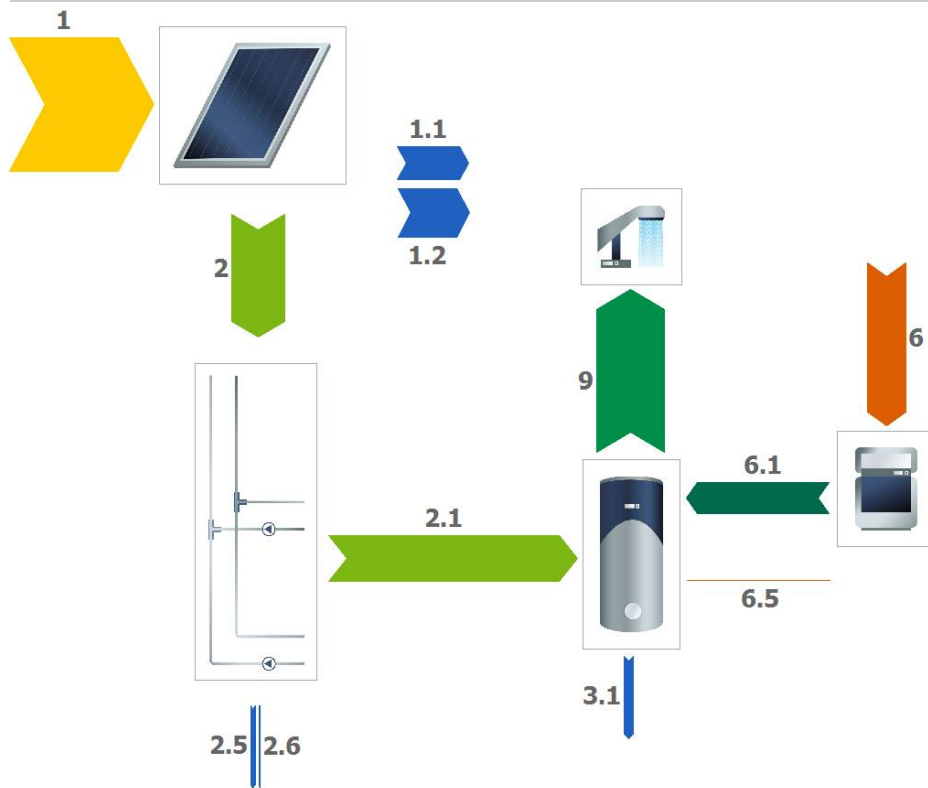


### Daily Maximum Collector Temperature



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	1.232 kWh
1.2	Thermal Collector Losses	1.800 kWh
2	Energy from Collector Array	1.940 kWh
2.1	Solar Energy to Storage Tank	1.727 kWh
2.5	Internal Piping Losses	175 kWh
2.6	External Piping Losses	37 kWh
3.1	Tank Losses	338 kWh
6	Final Energy	1.408 kWh
6.1	Supplementary Energy to Tank	1.152 kWh
6.5	Heating Element	0 kWh
9	DHW Energy from Tank	2.541 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 (Excluding Circulation)