

Results of Annual Simulation

Installed Collector Power:	1,65 kW	
Installed Gross Solar Surface Area:	2,36 m ²	
Collector Surface Area Irradiation (Active Surface):	1.611,09 kWh	1.066,95 kWh/m ²
Energy Produced by Collectors:	958,88 kWh	635,02 kWh/m ²
Energy Produced by Collector Loop:	799,45 kWh	529,44 kWh/m ²
DHW Heating Energy Supply:	2030,99 kWh	
Solar Contribution to DHW:	799,45 kWh	
Energy from Auxiliary Heating:	1547,67 kWh	
Natural Gas (H) Savings:		116,0 m³
CO2 Emissions Avoided:		245,31 kg
DHW Solar Fraction:		34,1 %
Fractional Energy Saving (EN 12976):		36,3 %
System Efficiency:		49,6 %

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:	120 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-T SP2A 1,5m ²
Number:	1,00
Total Gross Surface Area:	2,36 m ²
Total Active Solar Surface Area:	1,51 m ²
Tilt Angle:	30 °
Azimuth:	0 °




Bivalent (Twin Coil) DHW Tank

Manufacturer:	T*SOL Database
Type:	vitocal161-A
Volume:	300 l

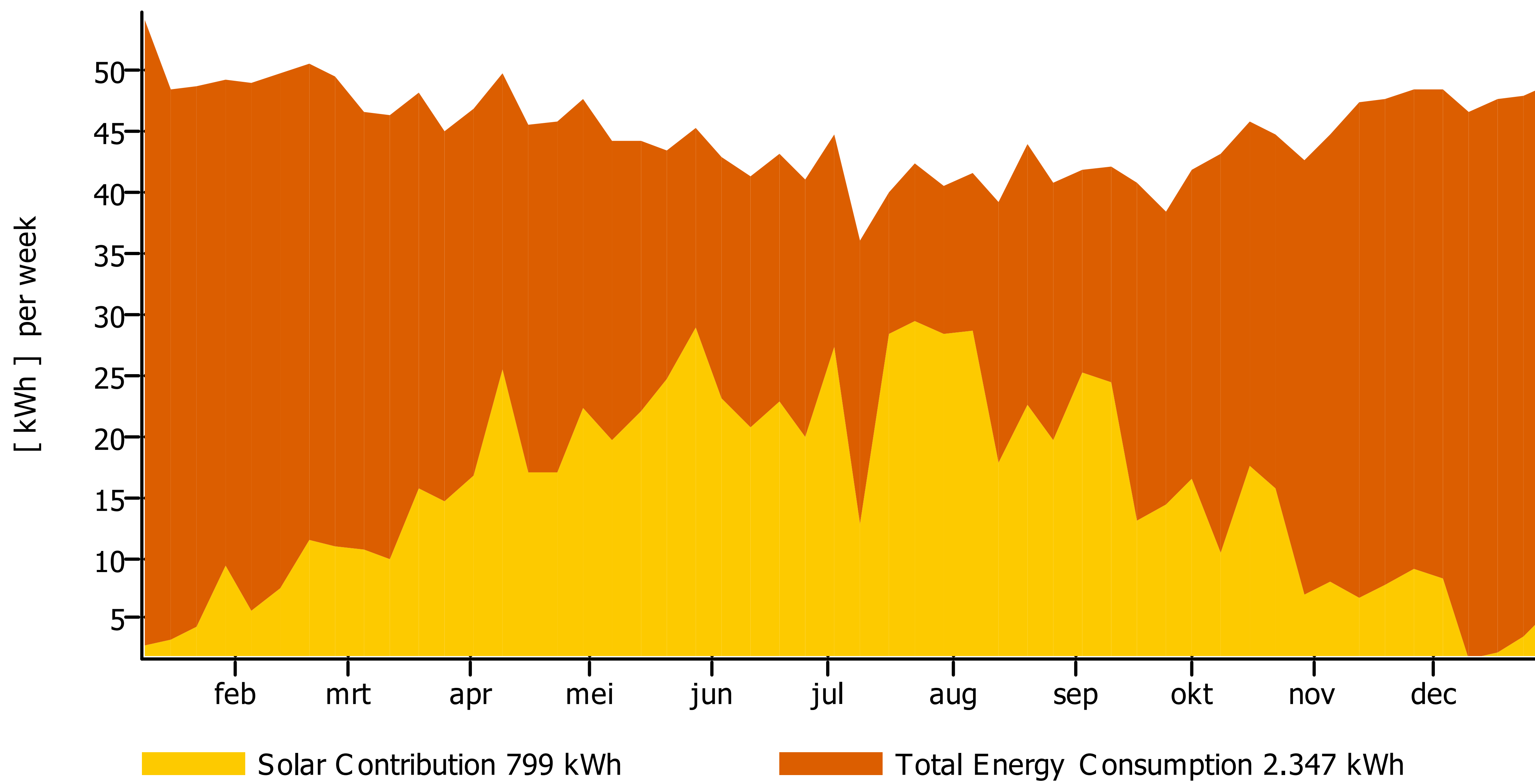
Auxiliary Heating

Manufacturer:	T*SOL Database
Type:	Vitocal 161-A
Nominal Output:	1,7 kW

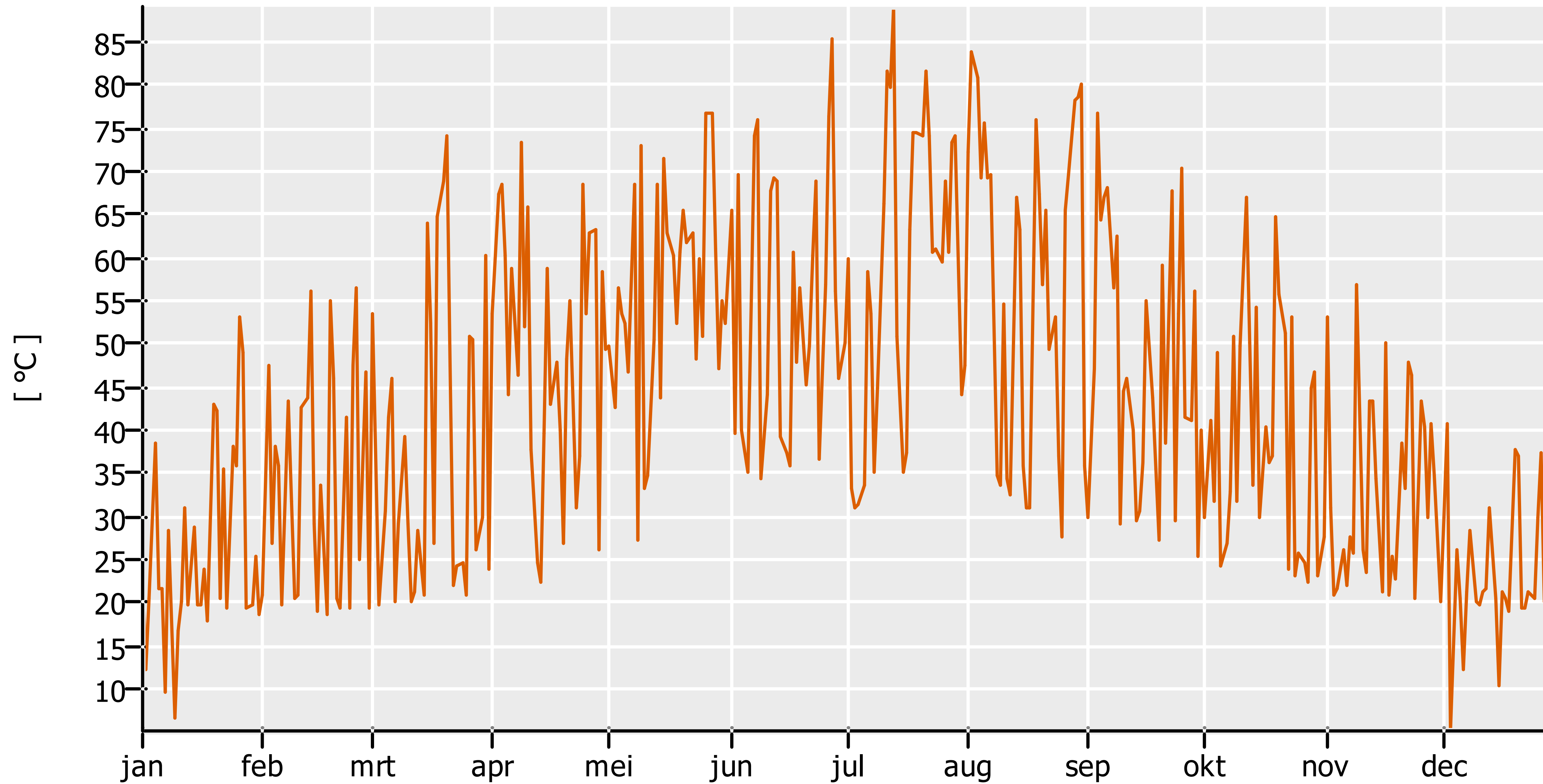
Legend

-  Original T*SOL Database
-  With Test Report
-  Solar Keymark

Solar Energy Consumption as Percentage of Total Consumption

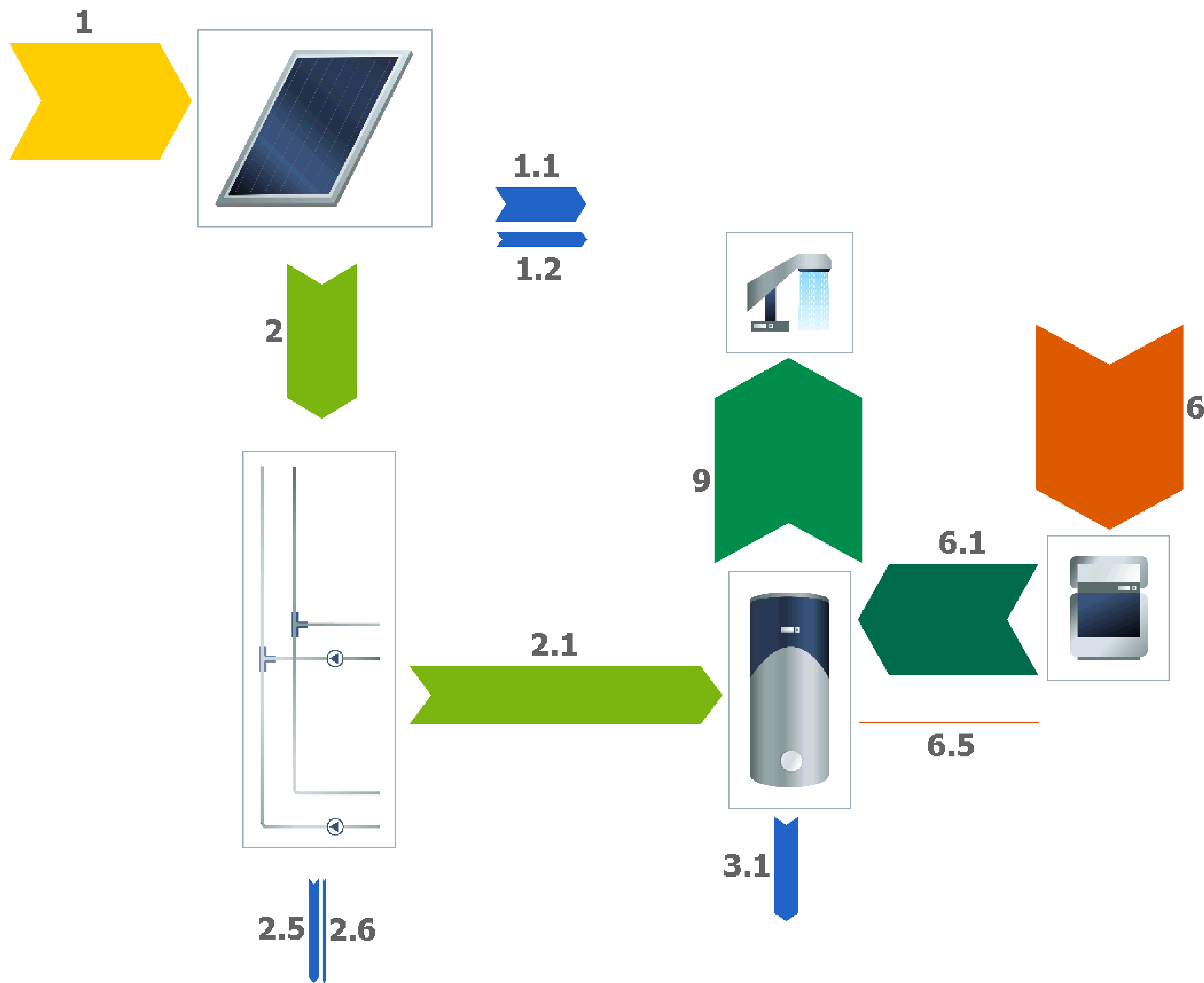


Daily Maximum Collector Temperature



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)	1.611 kWh
1.1	Optical Collector Losses	468 kWh
1.2	Thermal Collector Losses	184 kWh
2	Energy from Collector Array	959 kWh
2.1	Solar Energy to Storage Tank	799 kWh
2.5	Internal Piping Losses	128 kWh
2.6	External Piping Losses	31 kWh
3.1	Tank Losses	316 kWh
6	Final Energy	2.034 kWh
6.1	Supplementary Energy to Tank	1.548 kWh
6.5	Heating Element	0 kWh
9	DHW Energy from Tank	2.031 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)