

Results of Annual Simulation

| | | |
|------------------------------------------------------|----------------------|-----------------------------|
| Installed Collector Power: | 10,54 kW | |
| Installed Gross Solar Surface Area: | 15,06 m ² | |
| Collector Surface Area Irradiation (Active Surface): | 14,92 MWh | 1.066,95 kWh/m ² |
| Energy Produced by Collectors: | 4,60 MWh | 329,03 kWh/m ² |
| Energy Produced by Collector Loop: | 4,23 MWh | 302,83 kWh/m ² |
| DHW Heating Energy Supply: | 5,08 MWh | |
| Space Heating Energy Supply: | 10,14 MWh | |
| Solar Contribution to DHW: | 3,38 MWh | |
| Solar Contribution to Heating: | 856,22 kWh | |
| Energy from Auxiliary Heating: | 11,69 MWh | |

| | |
|---------------------------------------------|----------------------------|
| Natural Gas (H) Savings: | 496,2 m³ |
| CO2 Emissions Avoided: | 1.049,30 kg |
| DHW Solar Fraction: | 58,4 % |
| Total Solar Fraction: | 26,6 % |
| Fractional Energy Saving (EN 12976): | 26,2 % |
| System Efficiency: | 28,4 % |

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: | 300 l |
| Desired Temperature: | 50 °C |
| Load Profile: | Detached House (evening max) |
| Cold Water Temperature: | February:8 °C / August:12 °C |
| Circulation: | No |

Space Heating

| | |
|--------------------------------------|-------------|
| Standard Building Peak Heating Load: | 6 kW |
| Standard External Temperature: | -7 °C |
| Design Temperatures : | 40 °C/25 °C |

System Components

Collector Loop

| | |
|----------------------------------|---------------------------|
| Manufacturer: | Viessmann Werke GmbH & Co |
| Type: | Vitosol 200-FM |
| Number: | 6,00 |
| Total Gross Surface Area: | 15,06 m ² |
| Total Active Solar Surface Area: | 13,98 m ² |
| Tilt Angle: | 30 ° |
| Azimuth: | 0 ° |




Combination Tank (int HE)

| | |
|---------------|----------------|
| Manufacturer: | Viessmann |
| Type: | Vitocell 360-M |
| Volume: | 950 l |

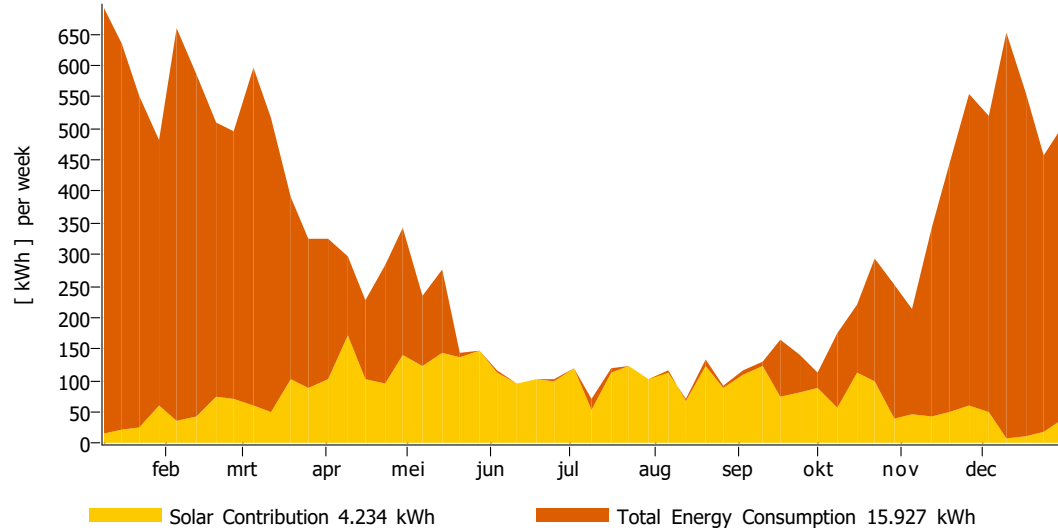
Auxiliary Heating

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

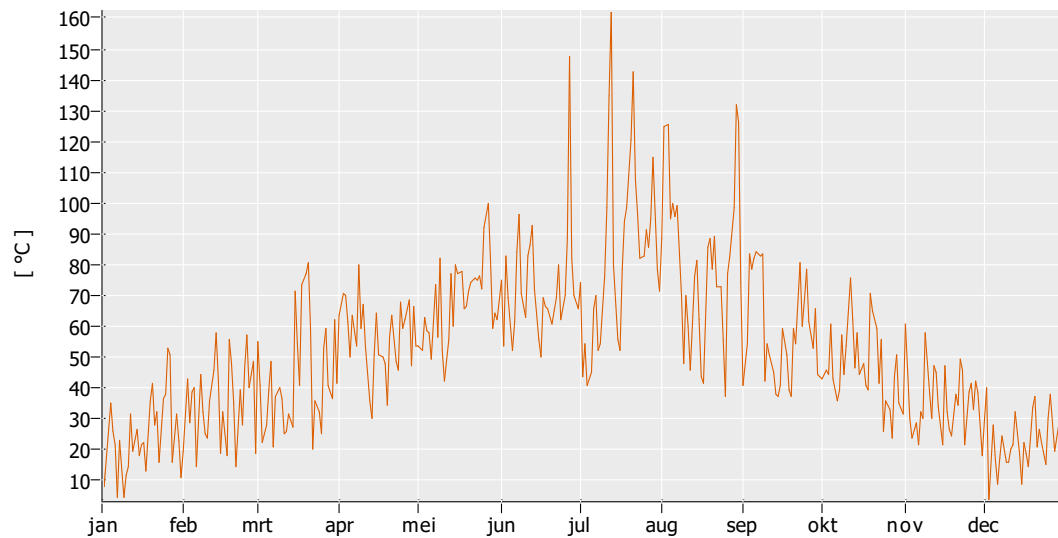
Legend

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

Solar Energy Consumption as Percentage of Total Consumption

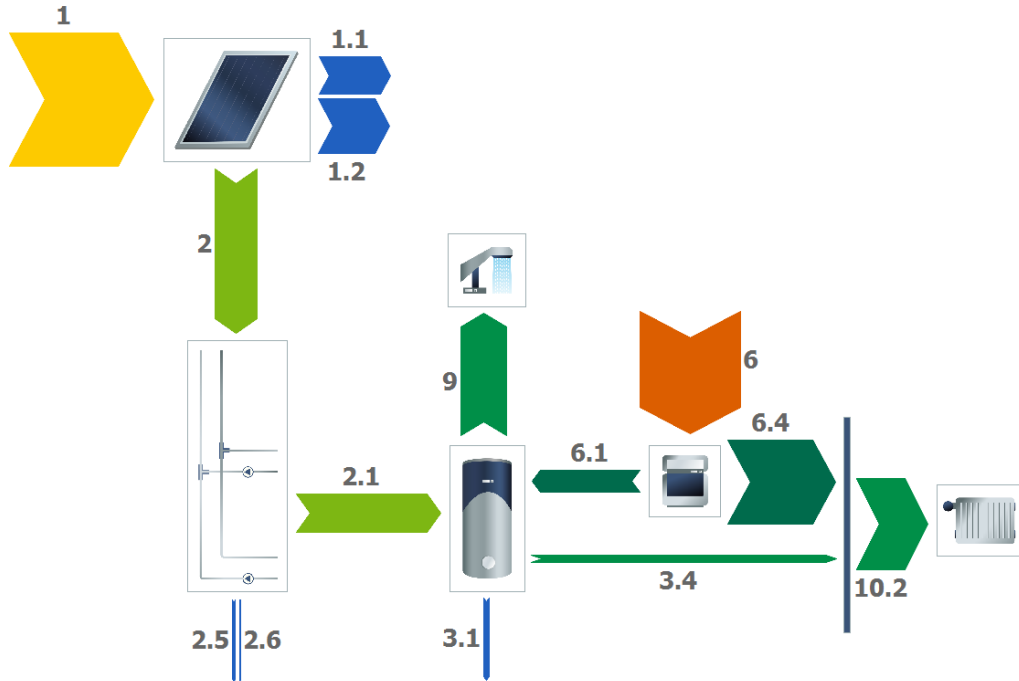


Daily Maximum Collector Temperature



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) | 14.916 kWh |
| 1.1 | Optical Collector Losses | 4.147 kWh |
| 1.2 | Thermal Collector Losses | 6.169 kWh |
| 2 | Energy from Collector Array | 4.600 kWh |
| 2.1 | Solar Energy to Storage Tank | 4.234 kWh |
| 2.5 | Internal Piping Losses | 293 kWh |
| 2.6 | External Piping Losses | 74 kWh |
| 3.1 | Tank Losses | 704 kWh |
| 3.4 | Tank to Space Heating | 856 kWh |
| 6 | Final Energy | 11.267 kWh |
| 6.1 | Supplementary Energy to Tank | 2.405 kWh |
| 6.4 | Supplementary Energy to Space Heating | 9.288 kWh |
| 9 | DHW Energy from Tank | 5.077 kWh |
| 10.2 | Heat to LT Heating | 10.145 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
- 3.4 **Tank to Space Heating**
Heat from Tank to HT/LT Heating. For tanks with circulation, there is a solar contribution and a contribution from the temperature mix in the tank.
- 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
- 6.4 **Supplementary Energy to Space Heating**
Supplementary Energy (e.g. Boiler) to HT/LT Heating
- 9 **DHW Energy from Tank**
Heat for DHW Appliances from Tank (Excluding Circulation)
- 10.2 **Heat to LT Heating**
Heat to Low Temperature Heating