

# Thermosiphon System SECUterm



**Wagner Solar**

ENERGIETECHNIK  
ENERGY TECHNOLOGY  
TECHNOLOGIE ÉNERGÉTIQUE  
ENERGIETECHNIEK



**Solar Domestic Hot Water Supply - safe and reliable**  
Thermosiphon system for free standing or roof parallel installation

## STANDOUTS

- **Top of the line solar collector**
- **Efficient insulation concept and straight forward setup**
- **Overheat protection**
- **Complete all-in-one delivery**

## DETAILS

The selective vacuum coated flat plate absorber, highly transparent and tempered solar safety glass and the seamless side and 30 mm back insulation assure excellent energy yields. High quality material and workmanship guarantee a long operational lifetime.

Minimized heat loss through excellent storage insulation and a return pipe that's integrated within the collector. The compact and appealing design of this rugged and durable construction is easy to install.

Within the storage tank the hot water temperature is automatically limited to 80 °C, considerably reducing maintenance: no scaling of safety valves, no system failures from lost solar liquid, no lost drinking water from overheat blow-off.

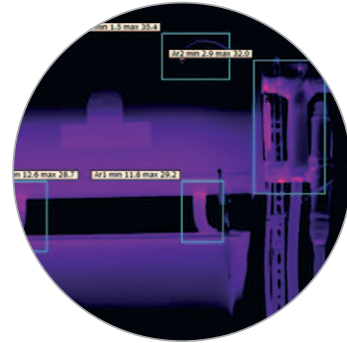
Choice of solar tanks, 160 l, 200 l or 300 l, with or without electric heater, powerful collector, freestanding or on roof racking set, overheat protection valve, solar liquid, DHW and solar circuit safety valves and insulated stainless steel.

Simply different - simply better:  
The SECUterm performance

**+ Extra Strong Insulation**

The specifically designed integrated insulation concept minimizes heat losses within the storage tank as well as the collector.

- No heat loss through nocturnal reverse circulation from storage tank to collector. The return pipe is integrated within the well insulated collector and thus holds the same temperature level as the absorber, avoiding unwanted convection at night.
- The connection pipes between collector and storage tank feature seamless insulation, as indicated by the dark colors of thermographic images that represent low temperatures.

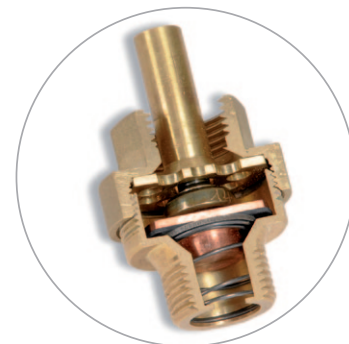


Thermographic imaging proves the excellent insulation of SECUterm connection pipes and storage tank..

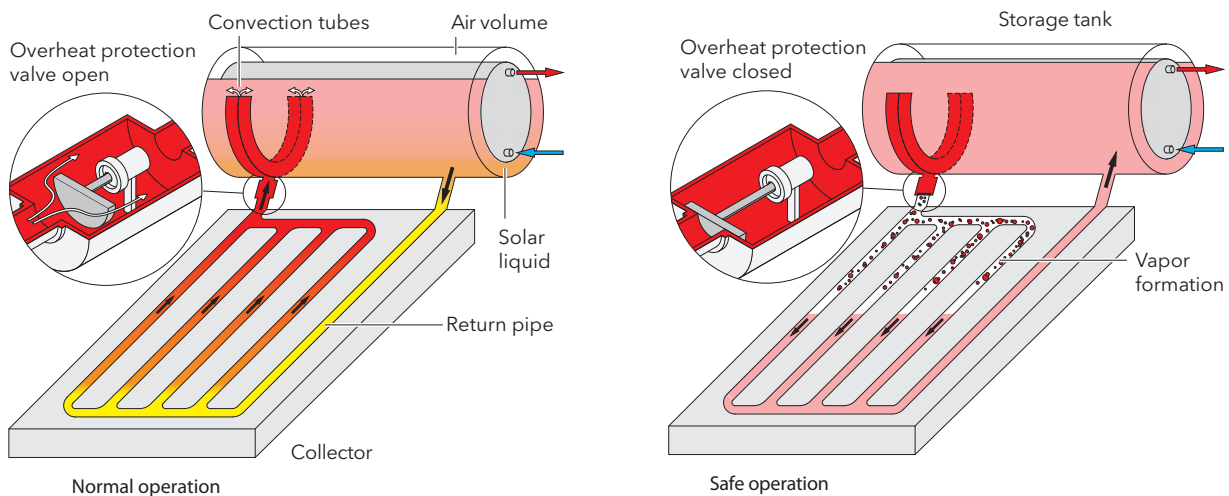
**+ Reliable Operation**

SECUterm's innovative overheat protection guarantees a safe, trouble free and durable operation of your solar installation. It limits the storage tank temperature to 80 °C.

- No scaling of safety valves
- No system breakdown caused by leaking solar liquid
- No lost drinking water due to overheat blow off



Overheat protection - a clever detail!



During normal operation the overheat protection is open, enabling the natural convective heat circulation between collector and heat exchanger through the flow-flue. It is U-shaped in order to optimize the heat stratification in the tank. If the temperature at the overheat protection rises to approx. 80°C it closes, thus interrupting the convection flow. Within the collector vapor bubbles force the entire liquid content through the return pipe and into the heat exchanger. The air volume in the storage now is compressed - it therefore also acts as an internal expansion vessel. Heating of the storage now stops. As soon as hot water is drawn from the storage tank and cold water intake cools it down, the over-heat protection automatically opens again

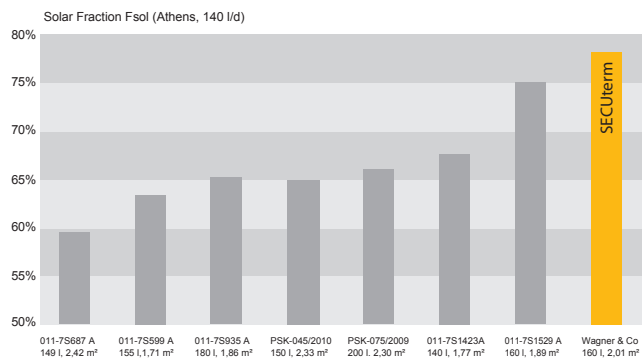


## Highest Yield

SECUterm 160/200 with its powerful newly developed collector EURO L42 TS and the optimized heat insulation concept marks the top performance for thermosiphon systems. Among all Solar Keymark certified installations of its class it achieved the highest yields (location Athens) as tested and documented by the Testing Center Saabrücken (TZSB).



SECUterm at testing facility at the Test Center Saabrücken



Maximized utilization of solar heat - 78% coverage solar hot water demand for the location Athens!



## Solar Keymark Certification

Solar systems according to EN 12976 are subject to strict standardized testing criteria, thus assuring a manufacturer independent testing result (see info box below).



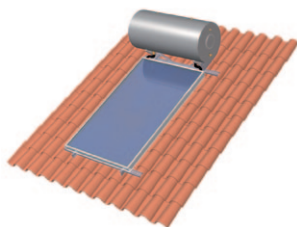
Solar Keymark  
011-7S1749 A

### SOLAR KEYMARK TESTING CRITERIA

- Systems to be tested are randomly selected from the manufacturer's warehouses by the testing institute
- Installation and analysis of the complete system under real world conditions
- Solar yield determination for comparable „standard-locations“ such as Athens or Davos
- Safety check for overheating, water pressure, water contamination and electric risks
- Reliability verification of lightning protection and back flow prevention
- Structural testing of collectors and storage tanks
- Additional comprehensive reliability proofing of the collector according to EN 12975
- Examination of installation and operation instructions



Combined SECUterm 300 P - innovative installation at large Brewery in Uganda



SECUterm for on-roof mounting

### PRODUCT RANGE

- Mounting systems for on-roof and free standing installation
- Three sizes: SECUterm 160 and 200 with 1 collector and 160 l or 200 l storage tank, SECUterm 300 with 2 collectors and 300 l storage tank.

### SECUterm System Yields for Various Locations

| SECUterm | 160                                 |      | 200                             |      | 160                                 |      | 200                             |      | 160                                 |      | 200                             |      |
|----------|-------------------------------------|------|---------------------------------|------|-------------------------------------|------|---------------------------------|------|-------------------------------------|------|---------------------------------|------|
|          | V = 110 l/d                         |      |                                 |      | V = 140 l/d                         |      |                                 |      | V = 170 l/d                         |      |                                 |      |
|          | Annual solar yield<br>$Q_L$ [kWh/a] |      | Solar fraction<br>$f_{sol}$ [%] |      | Annual solar yield<br>$Q_L$ [kWh/a] |      | Solar fraction<br>$f_{sol}$ [%] |      | Annual solar yield<br>$Q_L$ [kWh/a] |      | Solar fraction<br>$f_{sol}$ [%] |      |
| Athen    | 1078                                | 1078 | 84.8                            | 84.8 | 1261                                | 1270 | 77.8                            | 78.4 | 1419                                | 1437 | 72.3                            | 73.2 |
| Madrid   | 1226                                | 1235 | 81.9                            | 82.5 | 1394                                | 1445 | 75.6                            | 76   | 1603                                | 1621 | 69.3                            | 70.1 |
| Rom      | 1349                                | 1349 | 87.5                            | 87.5 | 1595                                | 1594 | 81.3                            | 81.3 | 1778                                | 1778 | 74.6                            | 74.6 |

| Technical Data   | SECUterm 160  | SECUterm 200                              | SECUterm 300                             |
|--|---|---|--|
| <b>Solar collector</b>   | 1 x EURO L42 TS HTF   | 1 x EURO L42 TS HTF                       | 2 x EURO L42 TS HTF                      |
| Gross area /aperture area<br>(light collecting area, acc. to EN 12975) | 2.25 m <sup>2</sup> / 2.01 m <sup>2</sup>   | 2.25 m <sup>2</sup> / 2.01 m <sup>2</sup> | 4.5 m <sup>2</sup> / 4.02 m <sup>2</sup> |
| Collector efficiency (acc. to EN 12975)                                | $\eta_o = 77.4\%$ ; $a_1 = 3.86 \text{ W/m}^2\text{K}$ ; $a_2 = 0.015 \text{ W/m}^2\text{K}^2$  |   |  |
| Incident angle modifier  | $k_{\theta}(50^\circ) = 88\%$ ; $k_{diff} = 82\%$   |   |  |
| Absorber   | Aluminum heat conducting sheet, copper pipe register, laser welded;<br>highly selective vacuum coating $\alpha = 95\%$ , $\epsilon = 5\%$ |   |  |
| Weight   | 34 kg   | 34 kg                                     | 68 kg                                    |
| <b>Storage tank</b>  | <b>Storage 160</b>  | <b>Storage 200</b>                        | <b>Storage 300</b>                       |
| DHW volume   | 160 l   | 200 l                                     | 300 l                                    |
| Max. DHW temperature   | 80°C  |   |  |
| Heat insulation  | 50 mm PU hard foam  |   |  |
| Heat exchanger   | Double jacket heat exchanger  |   |  |
| Wall strength  | 2.5 mm  |   |  |
| Corrosion protection   | Enamel and protective sacrificial magnesium anode   |   |  |
| Electric immersion heater  | 1.5 kW (thermostat controlled)  |   |  |
| Weight   | 72 kg   | 79 kg                                     | 116 kg                                   |