

# SOLAR COLLECTORS

TS 300 / TS 330 M / TS 400

**HARGASSNER**  
BIOMASS HEATING TECHNOLOGY



over 40 years of  
experience

[www.thermosolar.de](http://www.thermosolar.de)

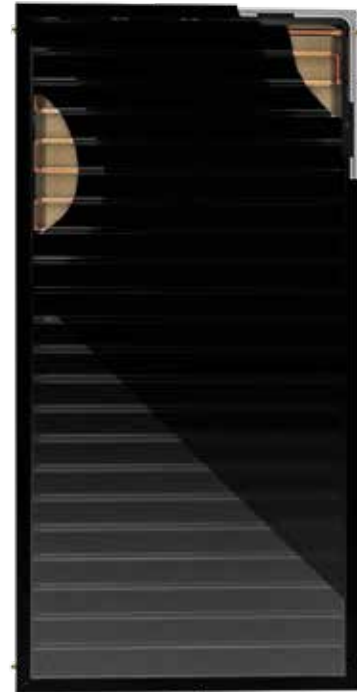
## High-performance flat-plate collector **TS 300**

### High-performance flat-plate collector for vertical installation

**Usage:** The TS 300 is the most cost-effective solution in cases where high performance standards are required. Excellent manufacturing combined with the latest solar technology makes this collector unique. Thanks to its outstanding performance, this collector is particularly suitable for heating domestic water and supporting heating systems.

**Structure:** This collector consists of a compact deep-drawn trough made from an aluminium-magnesium alloy that is 0.8mm thick and attached to a sheet of safety glass by a frame of anodised aluminium. The full-surface absorber is coated with a carefully selected aluminium oxide alloy and connected to the internal meandering pipe using a special forming technology. The solderless flange connections ensure the absorber is able to link up to the solar circuit quickly and safely. Up to 10 of these collectors can be connected together consecutively.

- On-roof
- Flat-roof/free-standing
- In-roof
- Facade installation



## High-performance horizontal collector **TS 330 M**

### High-performance flat-plate collector for horizontal installation

**Usage:** The horizontal installation of this collector allows existing roof spaces to be used in the best possible way without the usual quality and performance expected from solar thermal collectors having to be compromised.

**Structure:** This collector consists of a compact deep-drawn trough made from an aluminium-magnesium alloy that is 0.8mm thick and attached to a sheet of safety glass by a frame of anodised aluminium. The full-surface absorber is coated with a carefully selected aluminium oxide alloy and connected to the internal meandering pipe using a special forming technology. The solderless flange connections along the short sides ensure the absorber is able to link up to the solar circuit quickly and safely. Up to five of these collectors can be connected together consecutively.



- On-roof
- In-roof
- Flat-roof/free-standing
- Facade installation



## Vacuum flat-plate collector **TS 400**

### Vacuum flat-plate collector for vertical installation

**Usage:** Thanks to its impressive performance, this collector is particularly suitable for process heat, special heat pump systems and supporting heating systems. The vacuum insulation technology means that condensate doesn't appear in the collector even at low temperatures.

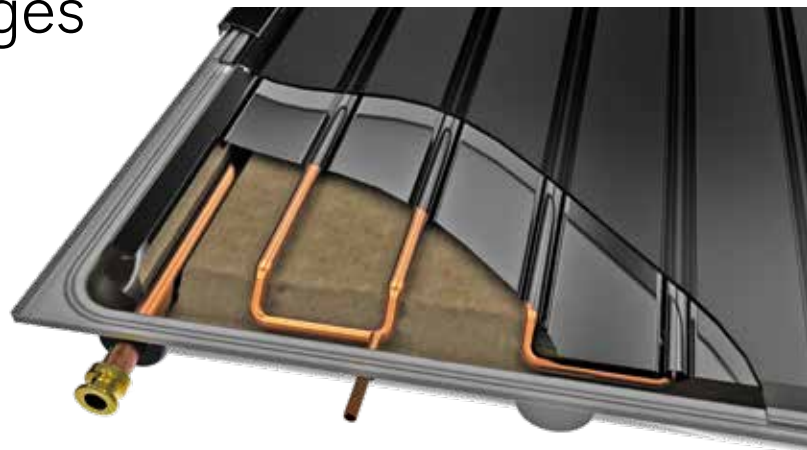
**Structure:** This collector consists of a compact deep-drawn trough made from an aluminium-magnesium alloy that is 1.3mm thick and attached to a sheet of safety glass by a frame of anodised aluminium. The full-surface absorber is coated with a carefully selected aluminium oxide alloy and connected to the internal meandering pipe using a special forming technology. The solderless flange connections ensure the absorber is able to link up to the solar circuit and the vacuum line quickly and safely. By filling the evacuated collector with krypton, performance is increased by 10%. As it is completely hermetically sealed, it is well-suited to areas with high levels of air pollution and a maritime climate. Up to 10 of these collectors can be connected together consecutively.

- On-roof
- Flat-roof/free-standing
- In-roof
- Facade installation



## Premium quality: advantages

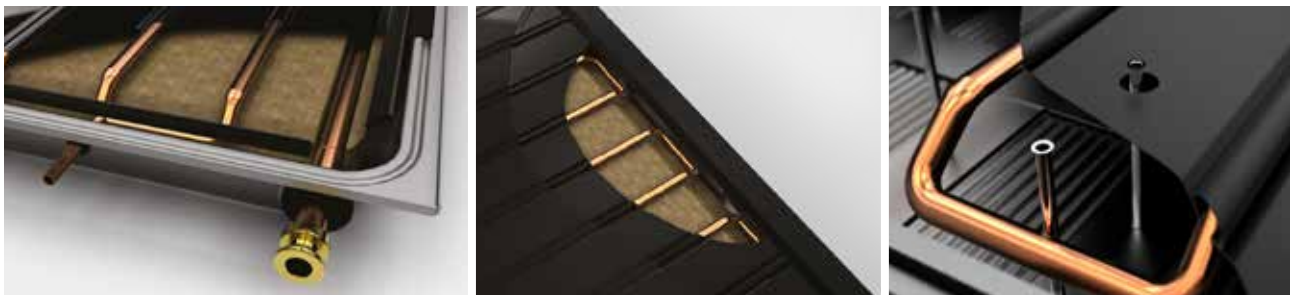
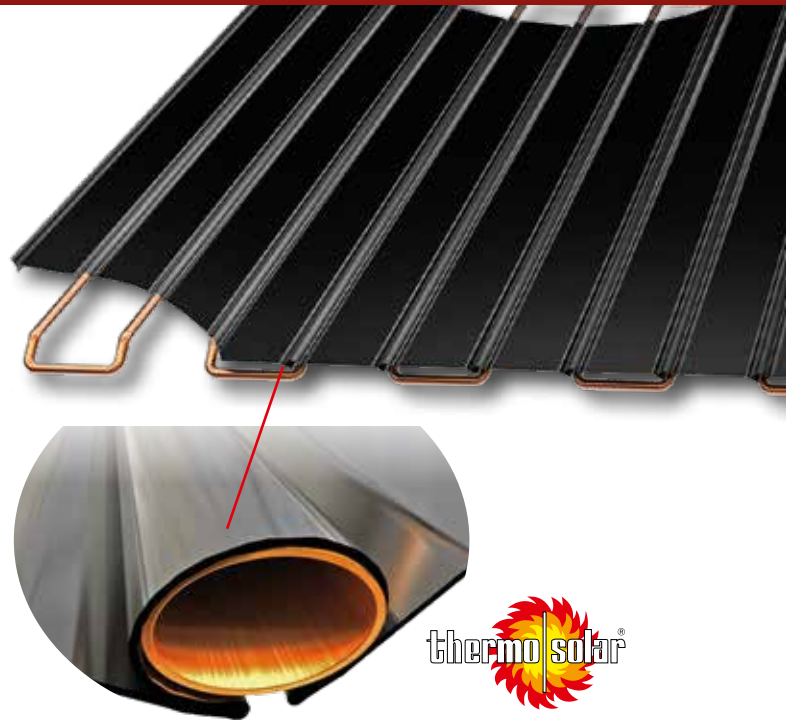
- **The deep-drawn collector trough** made from a seawater-proof alloy of aluminium and magnesium is light and yet very stable.
- **The meandering pipe** made from copper guarantees high thermal conductivity levels and short reaction times.
- **The mechanical connection** between the meandering pipe and the absorber ensures consistent performance for decades.
- **The glass covering** made from 4mm specially toughened solar safety glass has been hail-tested in accordance with standard EN ISO 9806.
- **The solderless collector connections** enable fast, easy and safe installation.
- **Consistently high quality levels** are guaranteed thanks to modern manufacturing methods and quality assurance.
- **Solar funding:** All collector models are KEYMARK-certified and fully **eligible for funding** (BAFA (Federal Office for Economic Affairs and Export Control), KfW, etc.).



## Absorber technology

Unlike many other manufacturers, who only weld their absorbers and heat transfer pipes at selected points, Thermosolar mechanically connects the nearly all the surface area of its collectors to the absorber. The benefits of this include maximum transfer area, rapid heat exchange, high performance levels, low energy loss levels and long service lives.

**Thanks to mechanical pressing, the collector has an effective transfer surface of more than 90%!**



## Solar collector technical data

| Technical Data                        | TS 300   | TS 330 M                   | TS 400                     |
|---------------------------------------|--|----------------------------|----------------------------|
| Dimensions (L x W x H):               | 2009 x 1009 x 75 mm  | 1009 x 2009 x 75 mm        | 2009 x 1009 x 75 mm        |
| Gross collector area:                 | 2.031 m <sup>2</sup>   | 2.031 m <sup>2</sup>       | 2.031 m <sup>2</sup>       |
| Absorber area:                        | 1.78 m <sup>2</sup>  | 1.78 m <sup>2</sup>        | 1.70 m <sup>2</sup>        |
| Aperture area:                        | 1.78 m <sup>2</sup>  | 1.78 m <sup>2</sup>        | 1.84 m <sup>2</sup>        |
| Total weight:                         | 36.1 kg  | 36.5 kg                    | 45.3 kg                    |
| Glass covering:                       | Toughened solar safety glass d = 4 mm  |                            |                            |
| Casing:                               | Deep-drawn trough made from an AlMg alloy  |                            |                            |
| Glass strips:                         | Dark brown or anodised aluminium   |                            |                            |
| Connections:                          | Tension clip connections (solderless)  |                            |                            |
| Thermal insulation:                   | 40 mm mineral wool   | 40 mm mineral wool         | Vacuum                     |
| Meandering pipe liquid content:       | 1.57 l   | 1.50 l                     | 1.57 l                     |
| Absorber technology:                  | Thin-sheet, full-surface absorber coated with a carefully selected aluminium oxide alloy |                            |                            |
| Stagnation temperature:               | 190 °C   | 189 °C                     | 224 °C                     |
| Recommended flow rate:                | 1 l/min per collector  | 1 l/min per collector      | 1 l/min per collector      |
| Module peak performance*:             | 1445 W   | 1435 W                     | 1464 W                     |
| Angle-of-incidence correction factor: | 0.95   | 0.95                       | 0.95                       |
| Effective heat capacity:              | 6.32 kJ/(km <sup>2</sup> )   | 6.32 kJ/(km <sup>2</sup> ) | 5.12 kJ/(km <sup>2</sup> ) |
| KEYMARK:                              | TSU 010-12   | TSU 010-12                 | TSU 005-12                 |
| Item no. for dark brown glass strips: | S1542  | S1542                      | S1617                      |
| Item no. for silver glass strips:     | S1486  | S1486                      | S1621                      |

\* G<sub>b</sub> = 850 W/m<sup>2</sup>; G<sub>d</sub> = 150 W/m<sup>2</sup>

Technical changes reserved

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