

Technical datasheet | Heat Pipe

Innovative – Powerful – Long-living

Product description:

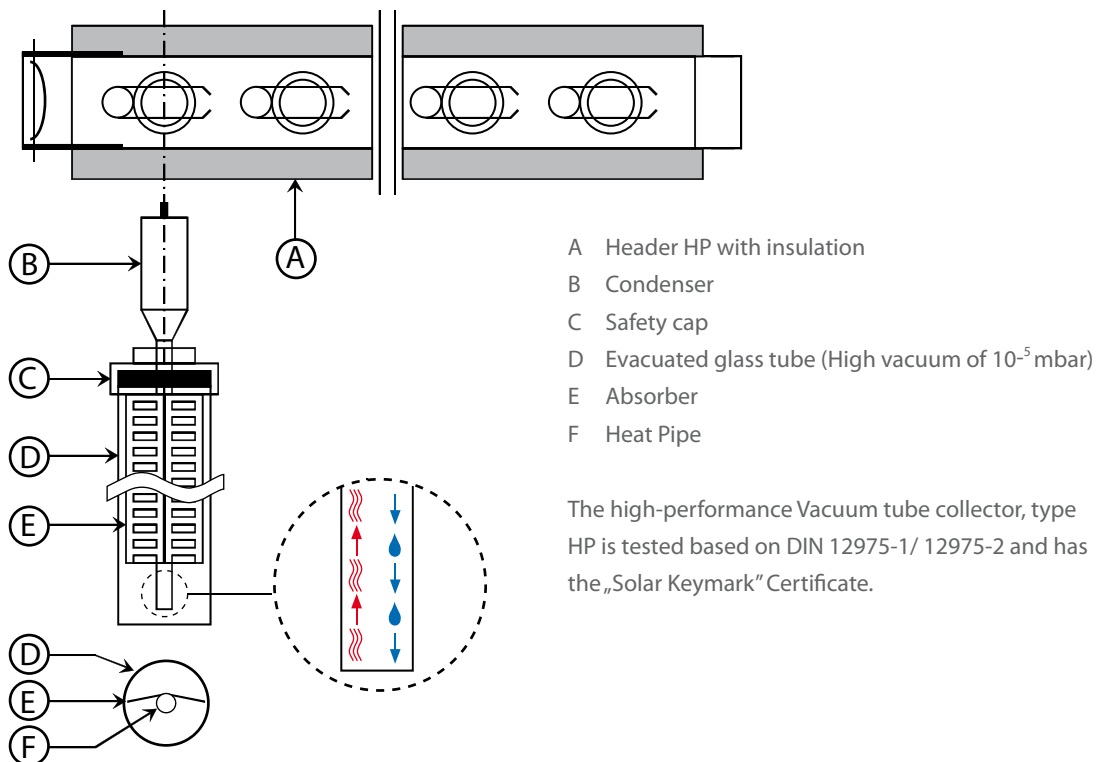
HP (Heat Pipe) collector systems

Based on their hydraulic properties, HP collectors are able to be integrated with an angle of 20-90° on any building (pitched roof, facade or even free standing). The s-power HP collectors are used for solar drinking water, pool heating, furnace support and process heat. Under the influence of the heat, the liquid which is inside the Heat Pipe evaporates and the vapor erases into the condenser. In order to limit the temperature, the s-power HP vacuum tubes do not have a valve in their construction. Even in stagnation, the temperature on the condenser head does not rise above 160°C. This serves as a self-security system for the s-power HP collectors. All vacuum tubes are axial adjustable towards the sun and due to their dry connection they can be individually exchanged even during operation. The innovative plug-in connection system of the tubes allows them to be fast and securely assembled inside the header. Their modular concept allows the collectors to be fast and easy installed onto the building.

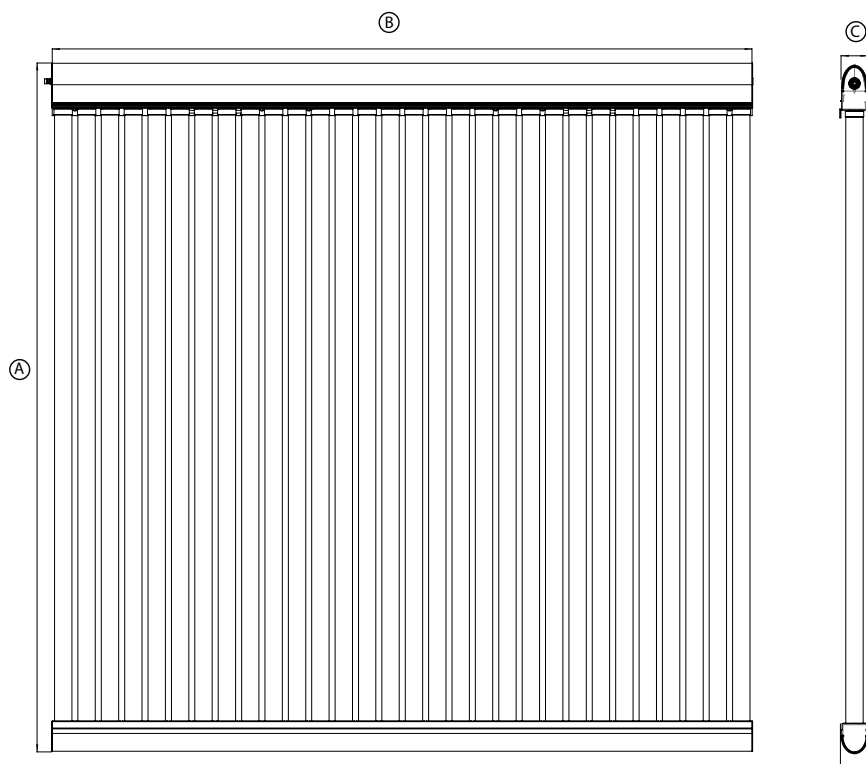
The s-power HP (Heat Pipe) collectors are „real“ all seasons systems with exceptional yearly solar earnings (kW/m²/a). They therefore set new standards in the area of diffuse irradiation. The one-of-a-kind anti-reflex-coating (nano-coating) applied onto the inner and outer side of the glass tube allows for an extraordinary high light transmission (~97%), a very low light reflection (~3%) and therefore outperforms all standards so far. The high performance-copper-absorber, which is coated with Titan-Nitrid-Oxide (TINOX), absorbs the sunlight highly effective. (~96%). The absorber is welded onto the heat-carrier-pipe using ultrasound-welding. The patented, innovative glass-metal connection grants for highest quality measures (10 years warranty by the manufacturer). The glass-metal connection seals the glass tube to preserve the high-performance-absorber-unit enduringly under a vacuum of 10⁻⁵mbar (100% Insulation).



Technical details



Technical facts



Technical data

Collector type	HP10-1000	HP20-2000	HP30-3000
Performance Power Plus * ¹	1000 Wpeak	2000 Wpeak	3000 Wpeak
Aperture area Power Plus	1,487 m ²	2,974 m ²	4,461 m ²
η_0 Power Plus * ¹	0,68	0,68	0,68
Performance Power * ²	717 Wpeak	1434 Wpeak	2151 Wpeak
Aperture area Power	1,017 m ²	2,034 m ²	3,051 m ²
η_0 Power * ²	0,70	0,70	0,70
Number of vacuum tubes	10 Stk.	20 Stk.	30 Stk.
Length (A)	2210 mm	2210 mm	2210 mm
Width (B)	750 mm	1500 mm	2250 mm
Height (C)	88 mm	88 mm	88 mm
Gross area	1,66 m ²	3,32 m ²	4,97 m ²
Weight	25,24 kg	50,48 kg	75,72 kg
Vacuum in the tube (100% insulated)	10 ⁻⁵ mbar	10 ⁻⁵ mbar	10 ⁻⁵ mbar
Fluid volume	0,47 l	0,94 l	1,41 l
Collector flow rate	0,68-0,83 l/min.	1,37-1,66 l/min.	2,05-2,48 l/min.
Pressure loss with flow rate	2 mbar	6 mbar	22 mbar
Max. operating pressure	10 bar	10 bar	10 bar
Max. collector stagnation temperature	158° C	158° C	158° C
Collector connection	18 mm Ø	18 mm Ø	18 mm Ø
Collector installation (tube)	min. 20° max. 90°	min. 20° max. 90°	min. 20° max. 90°
Heat carrier fluid	S-SOL-VT ⁵⁰	S-SOL-VT ⁵⁰	S-SOL-VT ⁵⁰

*¹ Peak performance as per Keymark, with a solar irradiation of 985 W/m² and a radiation angle of 15° in relation to the aperture area absorber fin of vacuum tubes are coated on both sides.

*² Peak performance as per "Keymark", with a solar irradiation of 985 W/m² and a radiation angle of 15° in relation to the aperture area absorber fin of vacuum tubes is coated on one side.

Product advantages:

- ▶ Vacuum tube collector „Made in Germany“
- ▶ featuring the NARVA High-Performance-Vacuum tubes „Made in Germany“ labeled with the OTTI-Innovation award of 2008.
- ▶ High performance due to the anti-reflex coating on the basis of nano-particles and high selective absorber surface.
- ▶ Hail and impact resistance certified by TÜV - Rheinland Group based on DIN EN 12975-2.
- ▶ Patented glass-metal-connection (by highly experienced glass manufacturer) protects the vacuum permanently.
- ▶ 10 years warranty for vacuum by the manufacturer.
- ▶ Tube connection via plug-in principle of Heat Pipe.
- ▶ Tubes are able to be rotated and individually angled.
- ▶ Consistent tube distance when mounting more than one module together.
- ▶ Low weight
- ▶ Low fluid volume
- ▶ Shortest energy amortization
- ▶ Amortization of purchase cost within 6-8 years possible.
- ▶ Simple installation due to s-power mounting-and connection systems.

Certificates

The s-power high-performance vacuum tube collectors comply with guidelines of a variety of certification-and testing institutions:



Solar Keymark certification DIN EN 12975-1 and 12975-2.



TÜV Rheinland collector testing DIN EN 12975-1 and 12975-2.



CE-label according to EC-guidelines.



SRCC-label (Solar Rating and Certification Corporation) for the USA according to SRCC guidelines.



CSA-label (Canadian Standards Association) for the USA, Canada and countries worldwide according to CSA guidelines.



OTTI Innovations award 2008 for the Narva high-performance-vacuum tube.



submitted by:

s-power[®]
Entwicklungs- & Vertriebs GmbH

Industriestraße 24-27
49716 Meppen
Fon: +49 (0) 5931 88 3 88-0
Fax: +49 (0) 5931 88 3 88-99
Net: www.s-power.de