

HEAT PIPE COLLECTOR

Introduction of heat pipe

Heat pipe is a vacuum heat transmission device filled with heat conduction fluid. It is the most efficient thermal conductivity device so far which is 1000 times of silver and with characters of excellent isothermal performance and thermal flux flow reversible.

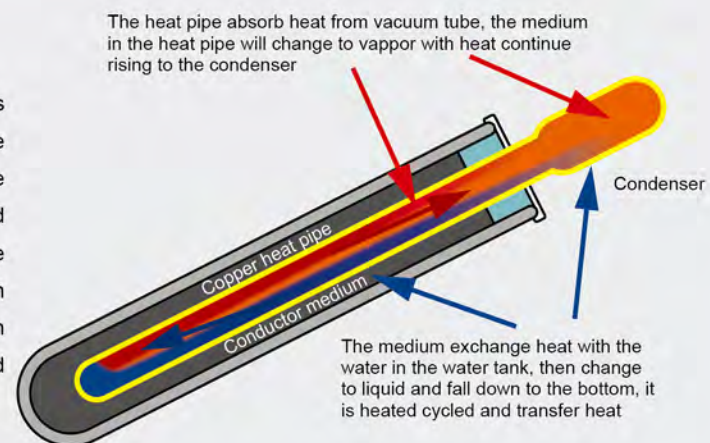


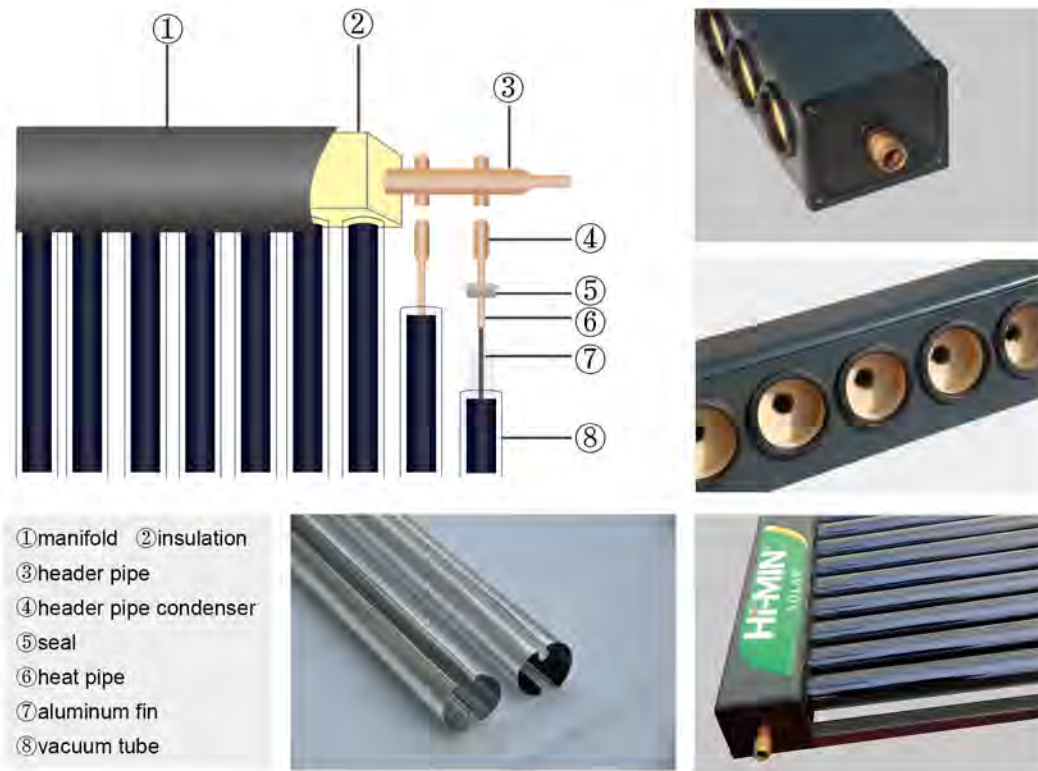
Introduction of heat pipe collector

Heat pipe solar collector consists of thermal superconductive heat pipes and evacuated glass tubes. The Himin tube adopts the interferential coating technology. The high-efficiency absorbing layers have features of high and low temperature resistance and high-efficiency energy absorption. No water inside glass tubes extends the lifetime and avoids breakage.

Working principle

Heat conduction fluid filled in the heat pipe is vaped after heat absorption. Vapor flows to the condensation section under the inner pipe pressure, and meanwhile turns liquefy and release heat. Conduction fluid condensed at the condensation section back to evaporator section caused by gravity. Finally, heat transmission process is accomplished by conduction fluid phase transformation.





① manifold ② insulation
③ header pipe
④ header pipe condenser
⑤ seal
⑥ heat pipe
⑦ aluminum fin
⑧ vacuum tube

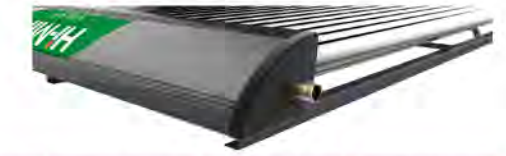
Technical specifications of heat pipe collector

High efficiency heat pipe collector



Specification	HRJ-10/1.8	HRJ-15/1.8	HRJ-20/1.8	HRJ-25/1.8	HRJ-30/1.8
Condenser end size(mm)	φ 24	φ 24	φ 24	φ 24	φ 24
Vacuum tubes model	φ 58c×1800	φ 58c×1800	φ 58c×1800	φ 58c×1800	φ 58c×1800
No. of vacuum tubes	10	15	20	25	30
Weight(KG)	41	59	76	94	110
Outline dimension(mm)	840×1945×143	1200×1945×143	1560×1945×143	1920×1945×143	2280×1945×143
Capacity(L)	0.55	0.83	1.1	1.37	1.64
Flow L/(min · m ²)	0.6~1.2	0.6~1.2	0.6~1.2	0.6~1.2	0.6~1.2
Collector types	Heat pipe	Heat pipe	Heat pipe	Heat pipe	Heat pipe
Material of inner tank	Copper	Copper	Copper	Copper	Copper
Material of insulation	Glass wool	Glass wool	Glass wool	Glass wool	Glass wool
Heat-transmission fluid	Propylene glycol, water	Propylene glycol, water	Propylene glycol, water	Propylene glycol, water	Propylene glycol, water
Rated pressure (MPa)	0.6	0.6	0.6	0.6	0.6
Gross area(m ²)	1.52	2.22	2.92	3.73	4.32
Aperture area(m ²)	0.94	1.41	1.88	2.5	2.82
Absorber area(m ²)	0.81	1.22	1.62	2.03	2.44
Material of shell	Aluminum profile	Aluminum profile	Aluminum profile	Aluminum profile	Aluminum profile
Material of frame	Hot-galvanized steel plate	Hot-galvanized steel plate	Hot-galvanized steel plate	Hot-galvanized steel plate	Hot-galvanized steel plate
Material of tailstock	Nylon	Nylon	Nylon	Nylon	Nylon
Collector interface	3/4" coupling nut	3/4" coupling nut	3/4" coupling nut	3/4" coupling nut	3/4" coupling nut
Max operating temperature (°C)	240	240	240	240	240
Loading capacity (Set)	20Ft	164	104	70	61
	40Hq	329	216	164	130

Leaf type heat pipe collector



Specification	HRJ-12/1.8	HRJ-16/1.8	HRJ-20/1.8	HRJ-24/1.8	HRJ-28/1.8	HRJ-32/1.8	HRJ-36/1.8
Condenser end size(mm)	φ 14	φ 14	φ 14	φ 14	φ 14	φ 14	φ 14
Vacuum tubes model	φ 58c × 1800	φ 58c × 1800	φ 58c × 1800	φ 58c × 1800	φ 58c × 1800	φ 58c × 1800	φ 58c × 1800
No. of vacuum tubes	12	16	20	24	28	32	36
Weight(KG)	48	62	76	90	104	118	132
Outline dimension (mm)	1030 × 1977 × 150	1318 × 1977 × 150	1606 × 1977 × 150	1894 × 1977 × 150	2182 × 1977 × 150	2470 × 1977 × 150	2758 × 1977 × 150
Capacity(L)	0.66	0.88	1.32	1.54	1.10	1.77	1.98
Flow [L/(min · m ²)]	0.6 ~ 1.2	0.6 ~ 1.2	0.6 ~ 1.2	0.6 ~ 1.2	0.6 ~ 1.2	0.6 ~ 1.2	0.6 ~ 1.2
Collector types	Heat pipe	Heat pipe	Heat pipe	Heat pipe	Heat pipe	Heat pipe	Heat pipe
Material of inner tank	Copper	Copper	Copper	Copper	Copper	Copper	Copper
Material of insulation	Glass wool	Glass wool	Glass wool	Glass wool	Glass wool	Glass wool	Glass wool
Heat-transmission fluid	Propylene glycol, water	Propylene glycol, water	Propylene glycol, water	Propylene glycol, water	Propylene glycol, water	Propylene glycol, water	Propylene glycol, water
Rated pressure (Mpa)	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Gross area(m ²)	2.04	2.61	3.18	3.74	4.31	4.88	5.45
Aperture area(m ²)	1.20	1.61	2.00	2.41	2.81	3.21	3.61
Absorber area(m ²)	0.97	1.30	1.62	1.95	2.27	2.59	2.92
Material of shell	Aluminum profile	Aluminum profile	Aluminum profile	Aluminum profile	Aluminum profile	Aluminum profile	Aluminum profile
Material of frame	Hot-galvanized steel plate	Hot-galvanized steel plate	Hot-galvanized steel plate	Hot-galvanized steel plate	Hot-galvanized steel plate	Hot-galvanized steel plate	Hot-galvanized steel plate
Material of tailstock	Nylon	Nylon	Nylon	Nylon	Nylon	Nylon	Nylon
Collector interface	3/4" coupling nut	3/4" coupling nut	3/4" coupling nut	3/4" coupling nut	3/4" coupling nut	3/4" coupling nut	3/4" coupling nut
Max operating temperature (°C)	240	240	240	240	240	240	240
Loading capacity (Set)	20Ft	96	90	67	52	41	33
	40Hq	198	186	139	108	99	82

Why Himin

Heat pipe material property:

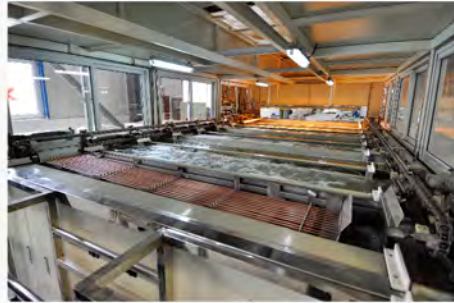
- Materials selection: use of oxygen-free copper TU1 which is the most pure copper with copper content up to 99.97%.
- Aging quality resistance: Attenuation of product property ≤5% for 5000H aging performance under 250°C, Lifespan is more than 15 years.
- Anti-freezing technology: Performance consistency when it's freezing for 48 hours under the experiment environment of -30°C.
- Starting performance: the starting temperature ≤ 30°C, starting speed ≤ 60 seconds.
- Isothermal performance: the temperature difference of axial direction wall ≤1°C.

Heat pipe collector property:

Diameter of heat pipe condensation end is 24mm. The overall efficiency is up to 73.5% with stability and durability based on the aperture area transient efficiency.

Advanced production line

- **Own the first automatic gravity heat pipe production line in China with annual capacity of more than 2 million pcs.**
- **Automatic cleaning line:**
High cleansing ability. Products undertake eight procedures such as pre-cleaning, cleaning, passivation, spray washing, bake etc. ensure cleaning quality. Oil, impurities, beryllia on tube wall is cleaned up by Chemical cleaning method. And then protective film is formed by polishing and passivation processing to increase compatibility between tube wall and working medium to prolong lifespan.
- **Independently developed high temperature annealing line:** vacuum annealing can eliminate the air adhere to the heat pipe surface and realize the elimination of stress on the welding point, make sure no permeation of non-condensable gases and long life-span of the product.



- **Vacuum exhaust line:** the first and largest automatic production line integrated by collector vacuum exhaust, medium filling, cold welding and sealing technology. Automatic process exhausts the gases adhered to the inner side surface to make sure vacuum rate of the tube. Automatic medium filling makes sure vacuum rate of the tube. Automatic cold welding assures the welding accuracy. Meanwhile, realizes large scale production and remote monitoring. By adopting the vacuum exhaust technology, it improves vacuum rate of the heat pipe and startup speed, which realize low attenuation and long life span of heat pipes.
- **Himin's other advantage in solar heat pipe is its patented secondary exhaust process.** It eliminates the non-condensable gas thoroughly which improve the isothermal performance, and also solve the fluid filling uncontrollable problem caused by the second exhaust, increase heat-transmission efficiency.
- **Special product order.** Himin can make specific products according to customers' demands



Certificate



Heat Pipe Projects



Himin's solar heating & cooling project for high-end residence property



Himin's solar heating program for the first Tibetan hydropower plant