Product Introduction

"SWH Core"solar heat pipe is developed by Nanjing HETE Energy Conservation & Environmental Protection Co.,ltd. to meet the demand for popular use. Its substance is to adjust solar water heater export and reduce domestic engineer cost.

Product Technical Feature

- Trial sale for 3years, the pipe performance is stable, no failure, decay or complaints.
- IC-CN patent technology, compatibility of high and low temperature between−30˚C ~300˚C, global available.
- Cu+H_2O, the most stable configurations till now, pass RoHS certification.
- We have material TU1 and TP2, to meet your demand for various products.
- S-WHT technology, treatment of the inner wall and space, reduce the non-condensable gas effectively.

Product Application Characteristic

Pass Quality System Certificate of ISO 9001:2000.

Pass RoHS Certification.

It is the Products that Cover the Quality Insurance from PICC.

Quality Guarantee of 2-3 Years Heat Transfer Performance.

Product Technical Date

Lifetime: lifetime is the first consideration of solar heat pipe, it mainly focus on the pipe does not transfer heat or heat transfer efficiency decay.

(1)Form of Expression: Heat transfer power

(2)Test method: test high temperature performance→ test heat transfer power

(3)Judge base:

Power	Q⩾120W	120W⩾Q⩾80W	Q⩽80W
Result	Qualified	Not qualified	Failure

(4)The curve diagram of solar heat pipe.(see picture 1:the decay curve of solar heat pipe)

High-temperature resistance properties: High-temperature resistance properties are the base of choosing heat pipe and test preparative, it mainly represent on the heat pipe burst, failure or decay under high temperature.

It represents on the solar heat pipe preventing blast under high temperature, the parameter is:

Wall Thickness	0.5mm	0.6mm	0.7mm
Allowable Temperature	200˚C	220˚C	250˚C

It represents on solar heat pipe failure or decay under high temepture (see the test method and judge base),it proves the solar heat pipe exists problems as following:

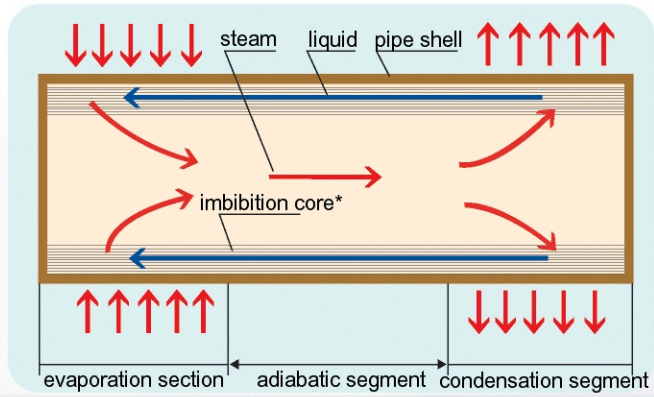
1. The working media is not appropriate
2. Working Media and shell is incompatible.
3. Solar heat pipe exist chronic leakage
4. Impurity exists in shell or working media.

Low-temperature resistance properties: IC-CN antifreeze technology, change the working media icing sequence, so it will not frost cracking under -30˚C.

Heat transfer power: Heat transfer Power is an important indication of judging heat pipe performance, it reflects the heat loss during the heat transfer procedure from the side. The larger the transmission power, the less the heat loss, accordingly, the solar collector can gain more heat.

Isothermal performance: Isothermal performance is the auxiliary evaluation indications of solar heat pipe performance .The heat pipe that tested under high temperature can be judged if exist non-condensable gas inside it .By the isothermal performance testing. Accordingly, we can check if the shell and working media is appropriate.

Heat pipe



*Imbitition core only for horizontal heat pipes

Heat pipe is the most effective heat transfer component nowadays. Especially, it can transmit heat of great distance through a small section without any outside power.

Axial thermal conductivity of heat pipe is far in excess of any known metal. Thermal conductivity of some metals is as shown in the following table:

Material	Thermal conductivity W/(m.˚C)	Material	Thermal conductivity W/(m.˚C)
heat pipe	2×10^4 ~1.6×10^6	Pure aluminum	236
silver	428	Beryllium	218
pure copper	401	Aluminum alloy	150~210
gold	318	Carbon steel	47.6

What is heat pipe?

Heat pipe is an element whose heat conductivity efficiency is particularly high. It uses phase change theory and capillarity action, making its own heat transfer efficiency is several thousands of times higher than the same material metal. Phase change heat transfer coefficient of water is shown as the following table:

Kinds of phase change heat transfer	Heat transfer coefficient W/(m^2.˚C)
Water's boiling	2500~5000
Steam condensation	6000~400000
Organic steam condensation	500~2000

The working principle of heat pipe

As the diagram shows: Inside the heat pipe is a vacuum closed cavity of $1.3\times(10^{-1}\sim10^{-4})$Pa, and filled with working liquid. When one side is heated, the liquid evaporate in the core, the steam flow to the other side under slim pressure and emit heat condensing to liquid, and the liquid flow to evaporate side by capillarity along the porous material, on such endless cycle, the heat is transformed from one side to the other side.