

CHIRYU HEATER

Large Scale Installation

*Hotel, Resort,
Hospital, Care home, . . .*



Swimming facility



Apartment house



Resort hotel



Apartment house



Care facility



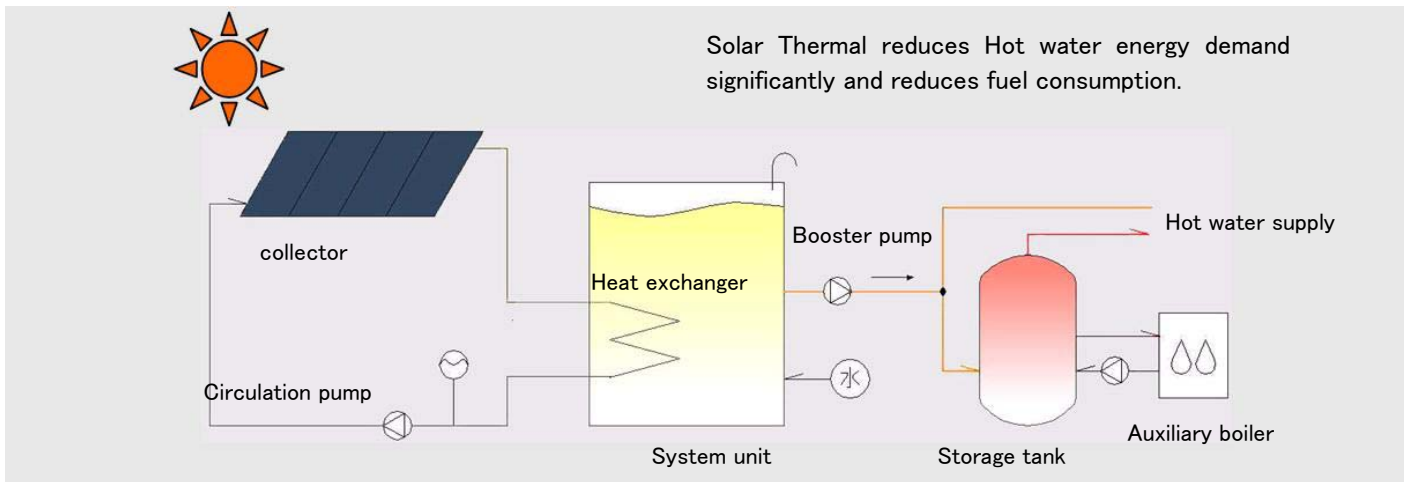
Apartment house



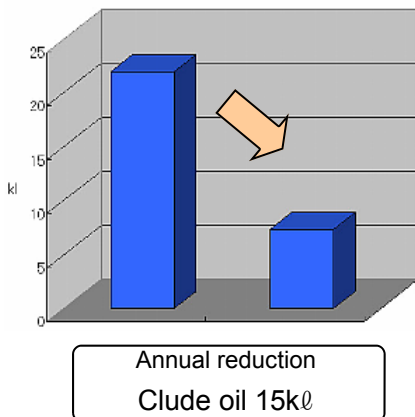
Apartment house

Chiryu Heater Co., Ltd. was founded in 1944, and the most experienced specialist of solar energy in Japan.

Sample System diagram for Large scale Application

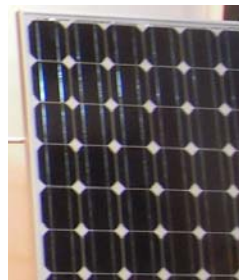


Fuel cut down



Collector CSC2C 210 m².
Storage tank 12 m³
Hot water demand 45°C 15m³/day
Japan

5 times powerful
compared to Photovoltaic



Photovoltaic

$$1\text{m}^2 = 0.1 \sim 0.13 \text{ kW}$$



Solar thermal

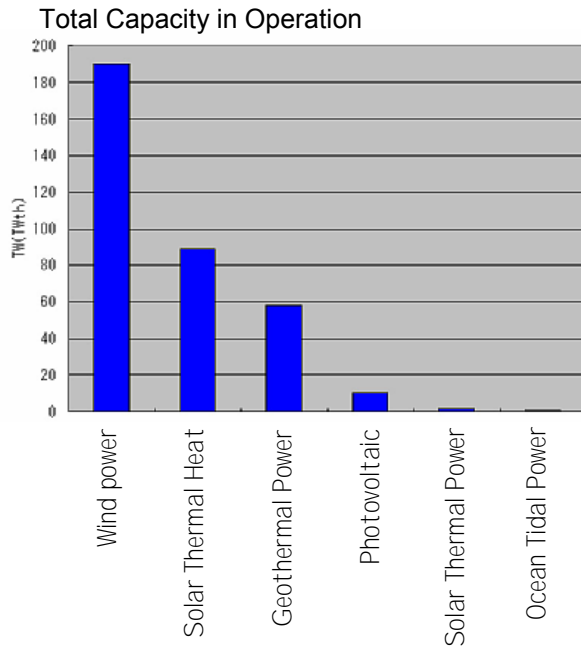
$$1\text{m}^2 = 0.7 \text{ kW}$$

Under 1 kW/m² solar irradiation, when the temperature of Photo cell or Solar collector is equal to ambient air temperature, Efficiency of the Solar cell is about 10–13% while Efficiency of Solar collector is about 70%.



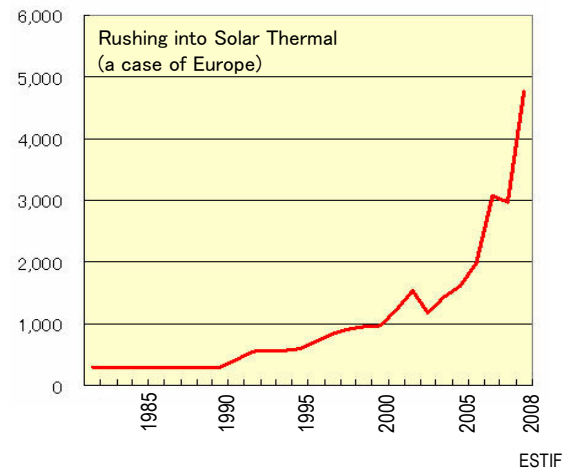
Still keep spending precious energy Merely for Hot Water or Space Heating?

“Solar thermal application” plays an important role in the worldwide Renewable Energy Use.



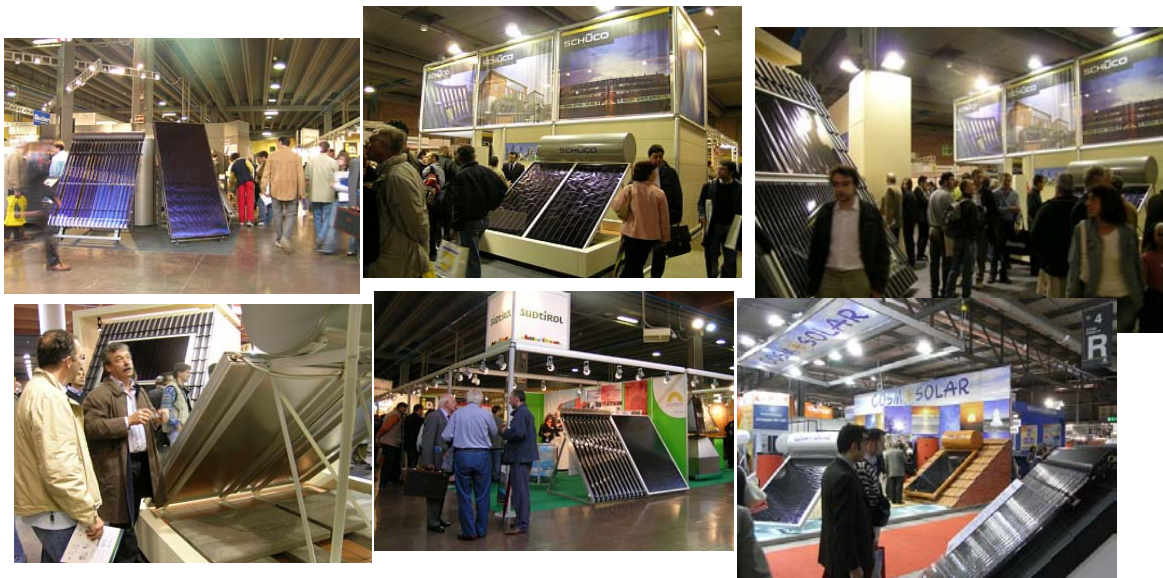
IEA—Solar Heat Worldwide Markets and Contribution to the Energy Supply 2007 EDITION 2009

International Energy Agency “Solar Heat Worldwide- Markets and contribution to the energy supply 2007”

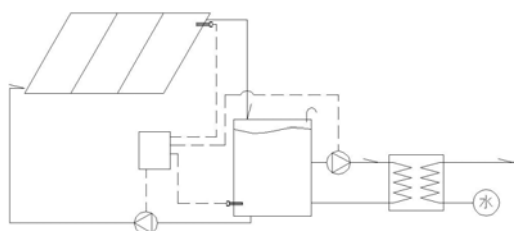


From the view point of Energy Security of now and future, it is a world choice to use Solar Thermal Heat for middle to low temperature Heat Demand, like Domestic Hot Water, Process Heat and Space Heating,. Europe, for example, are expanding the Solar Thermal Use and other REs enormously and increasing the Energy Self-sufficiency.

Booming Solar Exhibitions Worldwide



Large scale system



Type CSW01

Sun heats Heat Storage and Brine directly and the Brine heats Water Supply via the External Heat Exchanger.

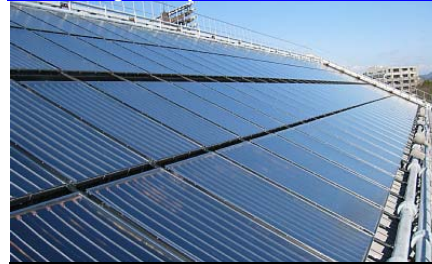
Sports facility (Tokyo)



Collector156m² Storage tank10m³

Mainly for the shower.

Swimming facility (Gifu)



Collector288m² Storage tank10m³

For the shower and the spa, and partly pool heating.

Care facility (Inabe)



Collector68m² Storage tank5m³

Roof integrated solar collectors.
For bathing of old and disabled people.

Golf club (Kani)



Collector368m² Storage tank10m³

For a big spa. Collectors are installed above the parking area.

Municipal facility for Garbage Cart Station (Nagoya)



Collector102m² Storage tank10m³

For shower and spa for the garbage collecting people. Spa is used day and night.

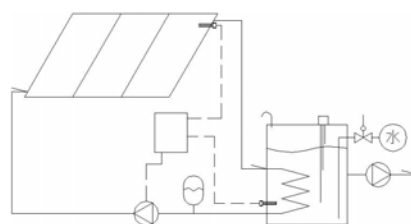
Pony land (Tokyo)



Collector44m² Storage tank1.5m³

Dual collector lines facing east and west by the elaborate design.
For hot water to wash ponies. Taking care of ponies are good for mentally retarded children.

Middle scale system



Type CSW02

CSW02 plus Heat Pump hot water supplier. Solar hot water and Heat Pump hot water are mixed by Thermal mixing valve.

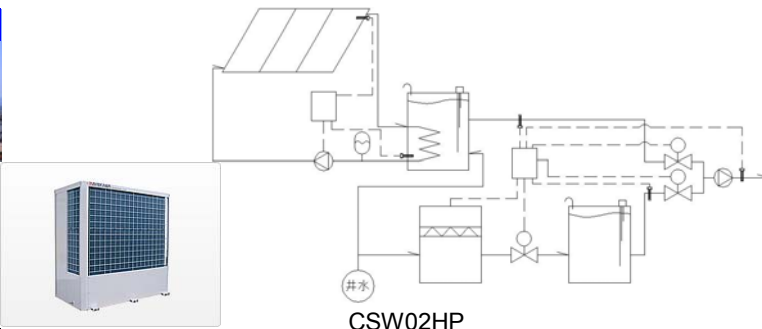
Solar Thermal and Heat Pump combined system

Swimming facility (Hamamatsu)



Collector200m² Storage tank12m³

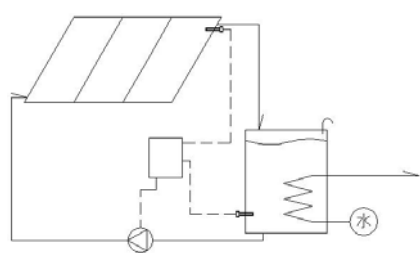
Mainly for the shower.



CSW02HP

Heat Pump is combined with CSW02. Solar heated water and Heat Pump heated water are mixed when supplied.

Middle to Small scale system



Type CSW03

Sun heats directly Storage water.
Supply water goes through Internal Heat Exchanger with supplied pressure.



Resort hotel (Hachijojima Island)
Collector40m² Storage tank5m³
For the shower and hot water supply.
Extremely salty environment required anti-salt treatment.



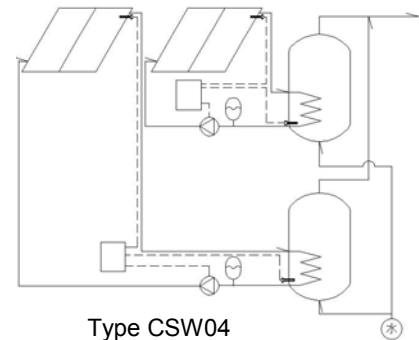
Religious Accommodation (Kakegawa)
Collector28m² Storage tank1.5m³
Shower and spa.



Cowshed (Kani)
Collector40m² Storage tank1.5m³
Hot water to wash Sanitary Plumbing for Milk..



Care home (Honjo)
Collector64m² Storage tank1.5m³
For spa and shower.



Type CSW04

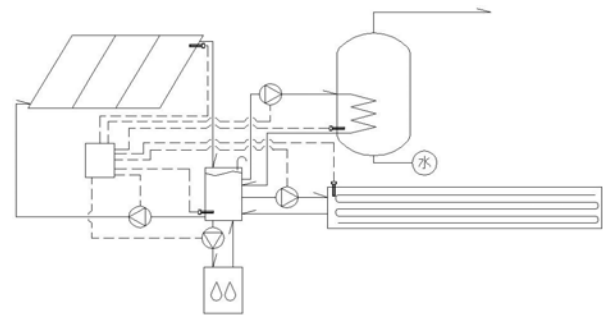
Combination of Pre-assembled standard system with 300-370 L pressurized tank.. Installation cost can be reduced.

Hybrid SOLAR HOUSE system

Solar Floor Heating and Hot Water Supply



Care home (Komagane)
Collector92m² Storage tank1.1m³
Space heating and Hot water for spa and shower. Day-care and Short period staying facility for old people.

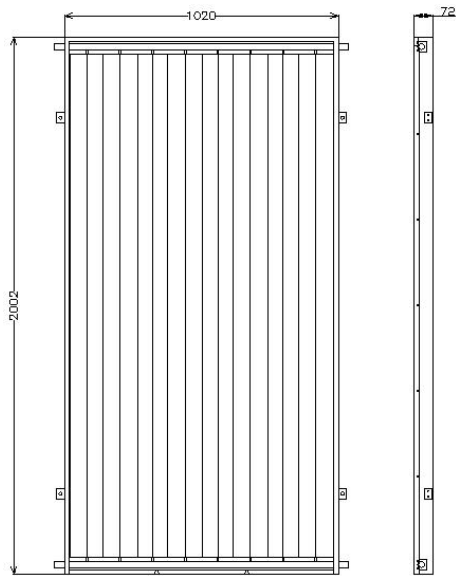


Intelligent Controller “AMATELAS” delivers heat to Heat Radiant Floor and Domestic Hot Water appropriately, and control Supplement Heating Boiler. Spreading into Office, Apartment house, Welfare Facilities, Medical Facilities, Day-care centers for infant as well as Care Homes.

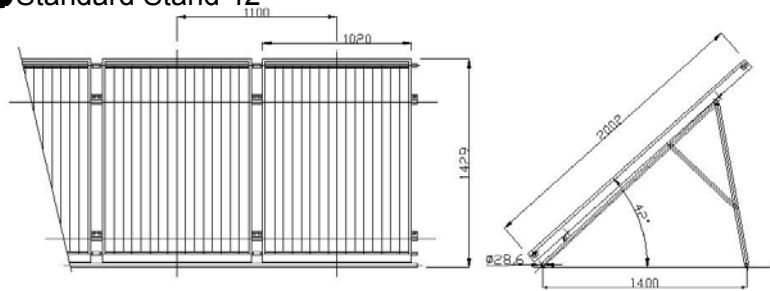


Specifications

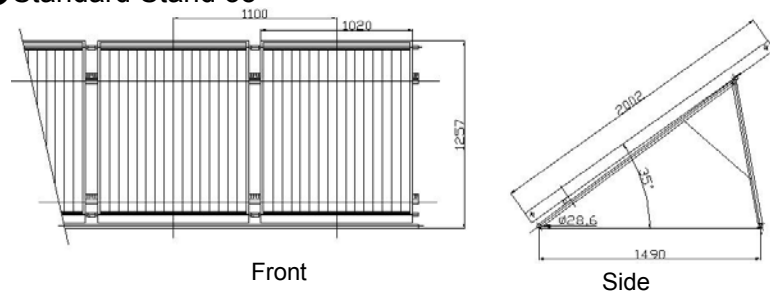
●CSC2C Flat Plate Collector



●Standard Stand 42°



●Standard Stand 35°



Front

Side



1. High efficiency
2. High pressure
3. Light weight
4. Various optional design

●Reliable



CSC2C is used since 1980. Some are still used after installed 30 years ago.

●Roof-integrated Solar Collectors (CSR0920, CSR0915)

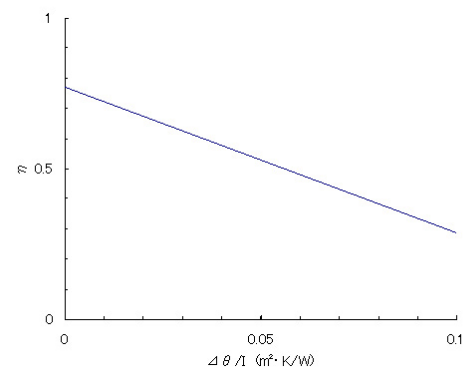


●Collector specifications

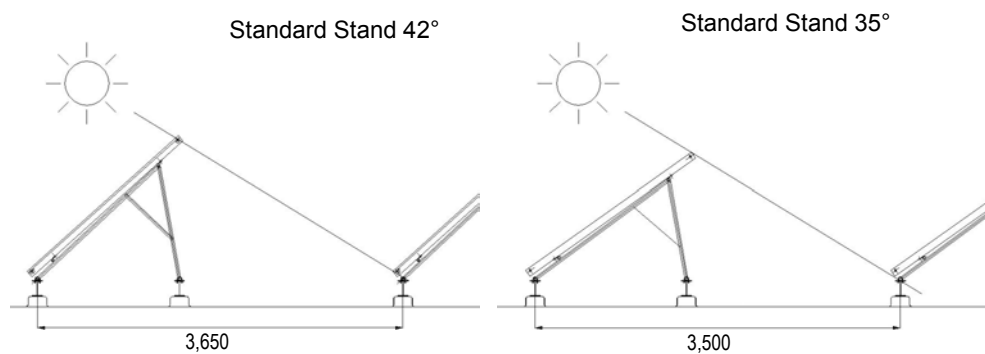
		Flat plate collector	
Model		CSC2C type-A	CSC2C type-B
Collector area		2.04m ²	
Dimensions		1020×2002×72 (mm)	
Weight (with water)		36.5kg	
Water capacity		1.5L	
Maximum pressure		1.0MPa *1	
Material	Absorber	Aluminum , Copper	
	Header	Copper	
	Case	Stainless steel & else	
	Cover	Tempered glass	
	Back insulation	Fiber glass(16kg/m ³)	
	Side insulation	Foamed Polyorefine	
	Selective Surface	α=0.95 ε=0.047	α=0.95 ε=0.40
Transparency		τ=0.91	

*1 250 kPa when connected by Standard Rubber Joint

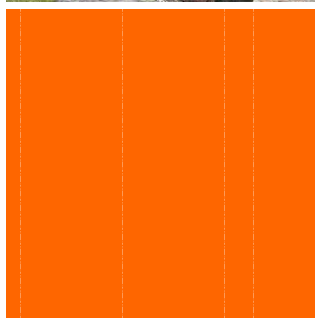
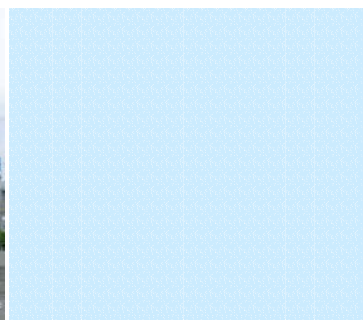
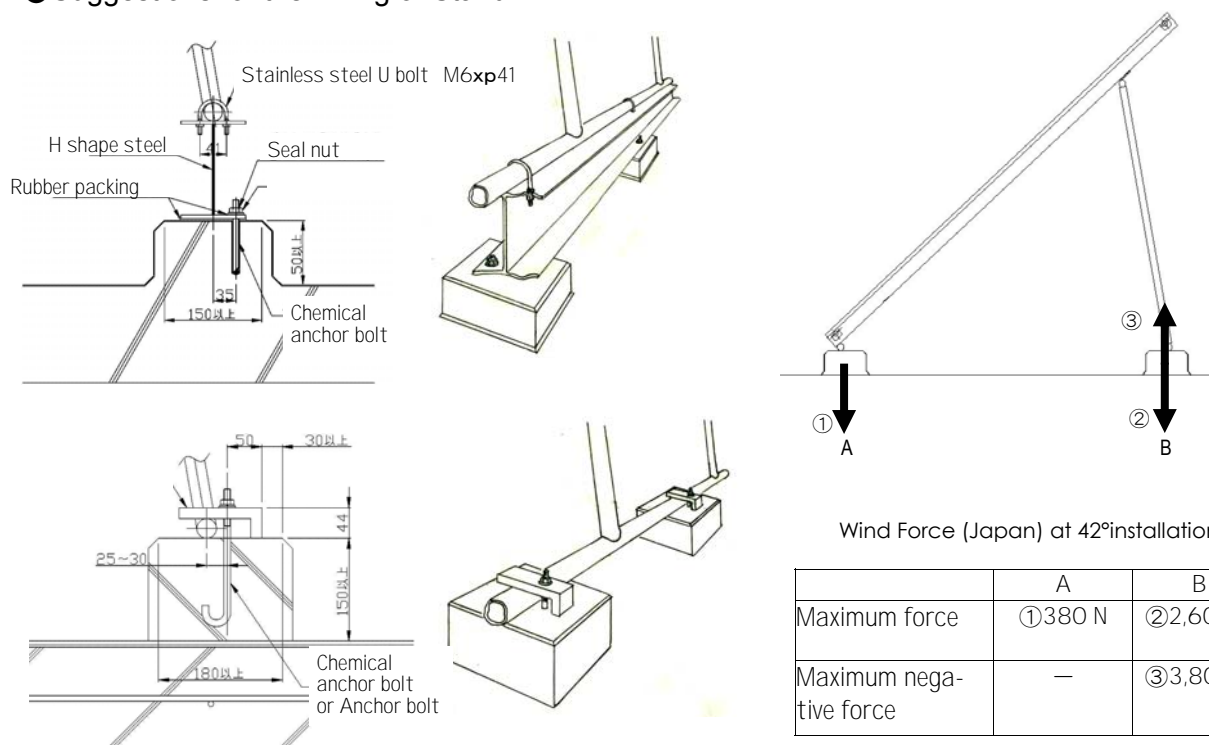
●Collector Efficiency



$\Delta\theta$: collector temperature – ambient air temperature (K)
I : Solar Irradiation (W/m²)



● Suggestions for the Fixing of Stand



The oldest solar company in Japan

2nd oldest flat plate in the world

History of Chiryu Heater History of solar system



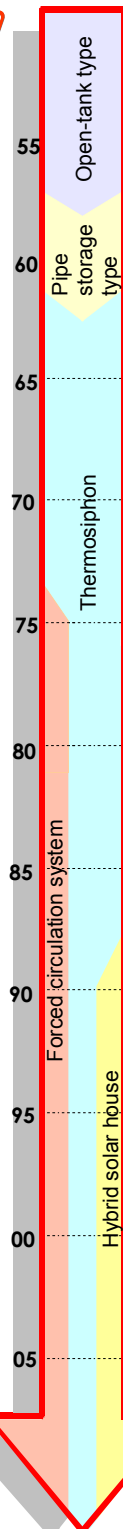
1962
1st solar water heater boom in Japan.

1965
The age of mass oil consumption started.

1973
The 1st oil crisis

1979
The 2nd oil crisis

1986
Catastrophe at Chernobyl Plant.



1944
Founded

1957
First factory-manufactured solar water heater in Japan.

1962
Pipe storage solar heater

1963
The first Thermosiphon in Japan CH-270, with Stainless plate Absorber.

1974
Forced circulation solar system

1980
Forced circulation water heater
1981
Thermosiphon solar water heater 250-S

1986
JIS (Japan Industrial Standard) certificated
1989
"Hybrid Solar House" with integrated-roof solar collector

1994
Associated Home Builders for Hybrid Solar House established.

1997
Chiryu Heater CSC-300 series



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