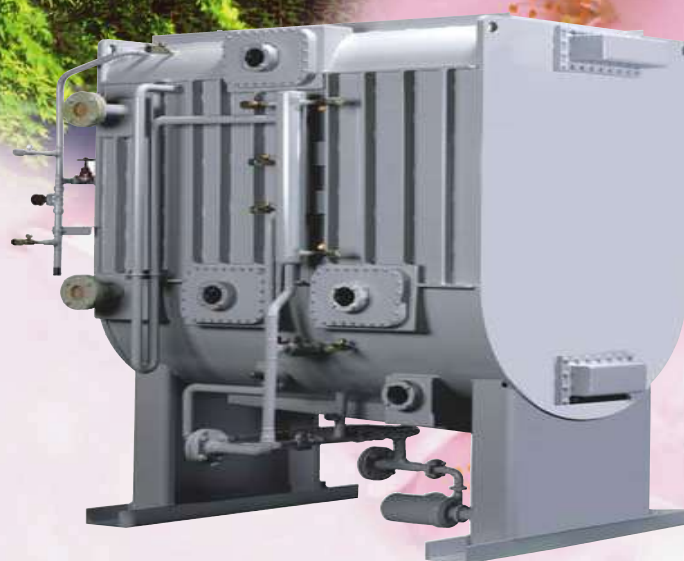


Sakura Air Conditioner User-friendly, Earth-friendly



SAKURA Adsorption Chiller
Adref-Noa

Waste water at 60~80
can produce chilled water.
The 21st century business model

The ideal solution to reduce CO₂ emissions! Unlimited application of renewable and unused energy!!

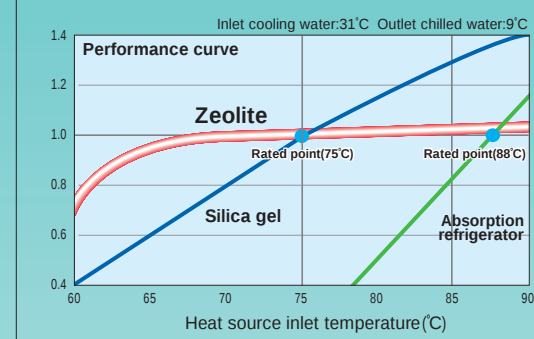
Examples of heat sources : Solar heat, hot spring, geothermal, Combined heat and power, fuel cells, vapor condensate, waste heat from industrial furnaces, distilling columns, reactor towers, district heating networks etc..

Features

Minimizing Life Cycle Cost

- 1 HCFC/HFC free using water
- 2 Energy-saving
- 3 Lower operation and maintenance costs
- 4 No noise and no vibration
- 5 No certified/qualified operator required

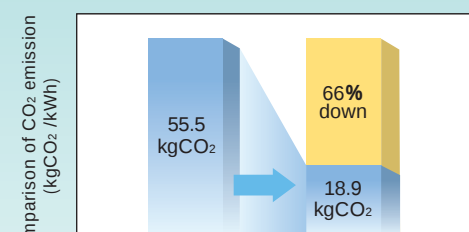
The comparison of cooling capacity



Effects

Achieving COP 10

The system comparison in 100USRT scale



Comparison of CO₂ emission

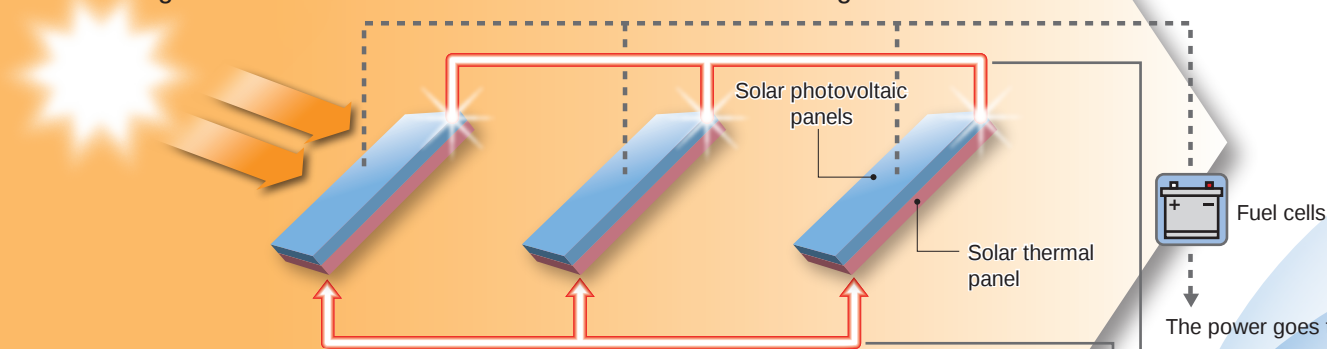
*CO₂ emission factor 0.555kg CO₂/kWh

Air-cooled chiller	Adsorption chiller
Driving power 100kW	Driving power 1.1kW
	Cooling tower fan 16.5kW
	Cooling water pump 11kW
	Hot water pump 5.5kW

Total 100kW	Total 34.1kW
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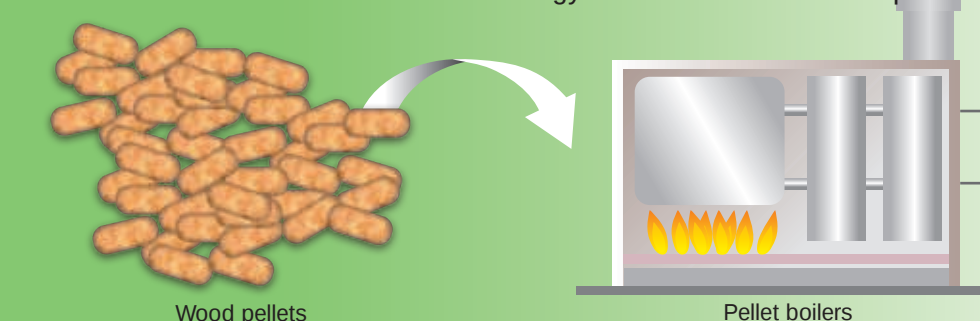
Renewable energy (solar heat, hot spring, geothermal, etc.)

Use solar light and heat to achieve HCFC/HFC free air conditioning.



Biomass energy (Forest thinning, Scrap wood, Food waste, sewage sludge, etc.)

Convert industrial waste into biomass energy to realize zero-emission plants.

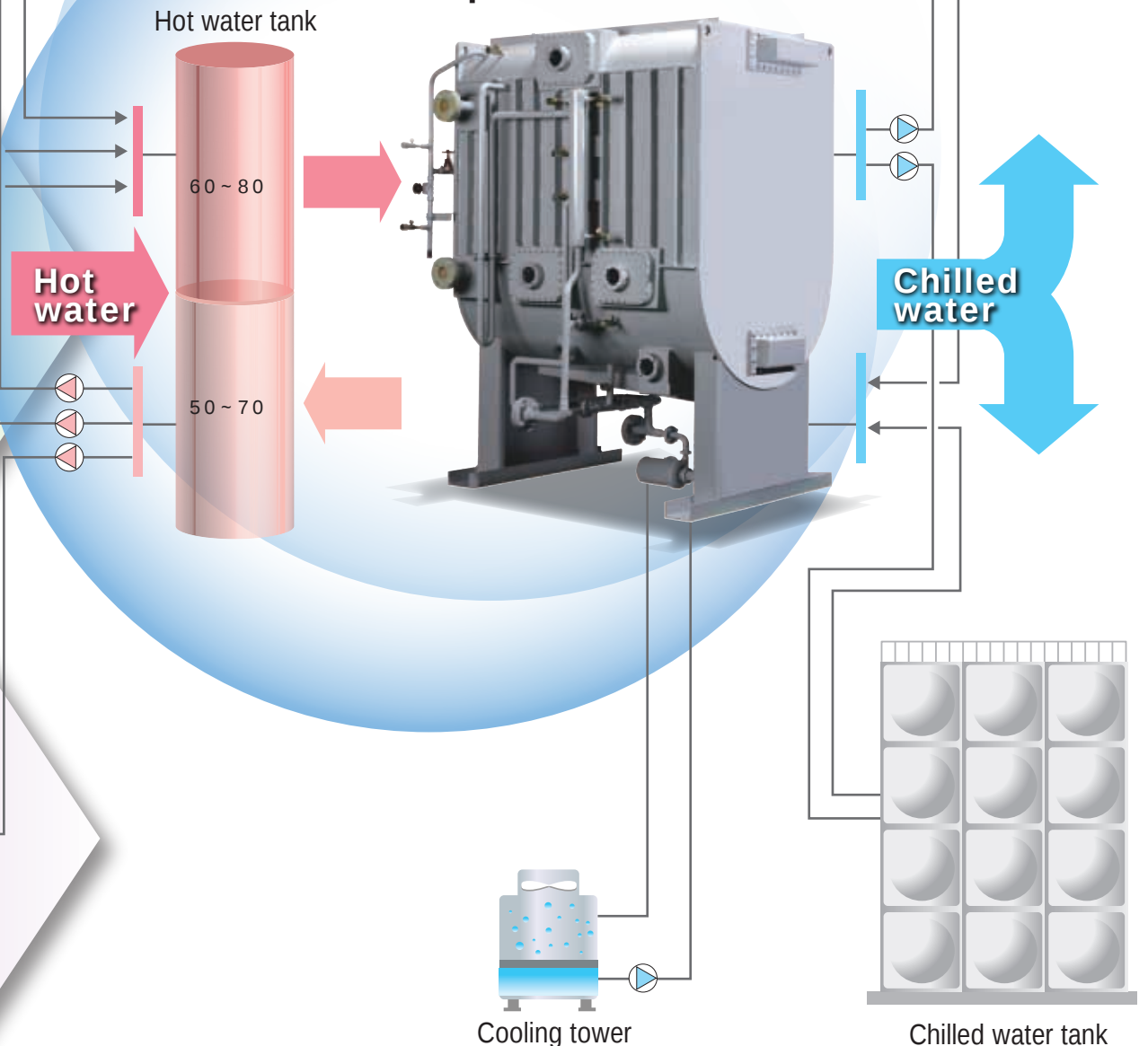


Unused energy (Waste heat from plants, Combined heat and power (CHP), waste heat from industrial furnace, etc.)

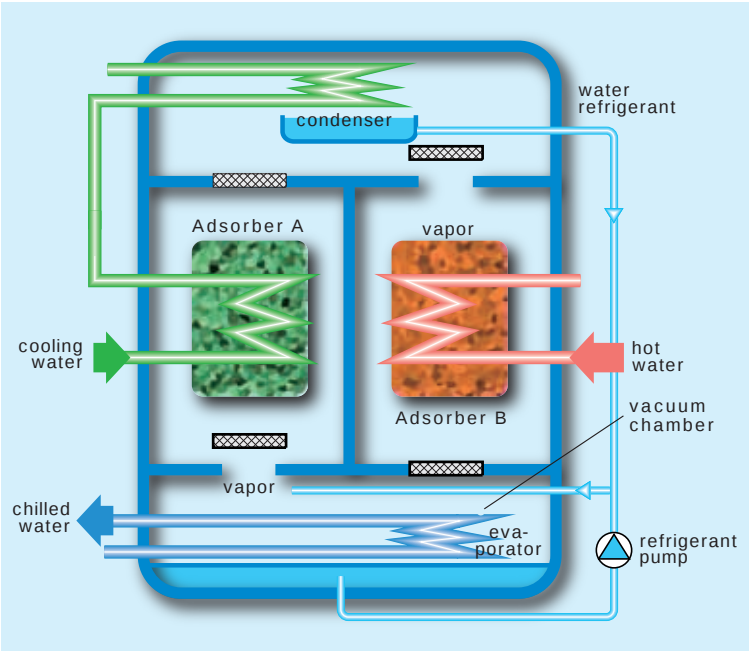
Produce chilled water from unused heat source alternative to existing HCFC/HFC chillers for green solution.



Adsorption Chiller AdRef-Noa



Operating principle



AdRef-Noa consists of two identical adsorption / desorption heat exchanging sections, one for each evaporative and condensing heat exchanger. Adsorption-desorption process, described below, is interchanged and repeated in these two sections.

ADSORPTION

Water as a refrigerant evaporates in the evaporative heat exchange section. AdRef produces chilled water by using evaporative latent heat. The vapor is then adsorbed by an adsorber A. The adsorber generates heat, but removing this heat by cooling water further enhances the evaporating process.

DESORPTION

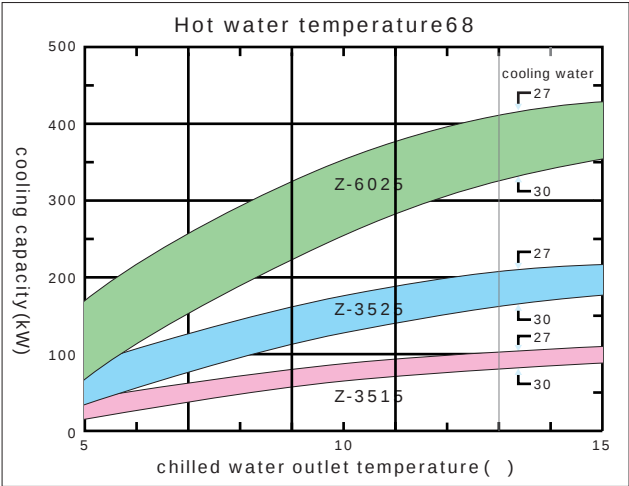
Hot water (the heat source) is used to remove the moisture that is adsorped in the adsorber B. The released moisture enters the condensing section and is condensed for next evaporation.

Adsorbent : Zeolite is utilized instead of Silica gel.

Standard specifications

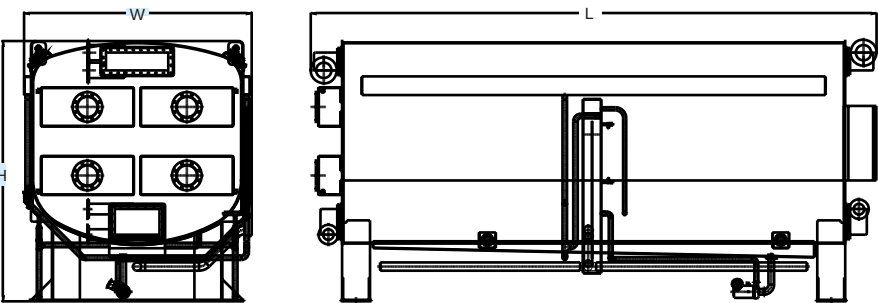
model			Z-3515	Z-3525	Z-6025
item					
cooling capacity		kW	105	215	430
chilled water	outlet temperature		15	15	15
	mass flow rate	m³/h	12.1	24.3	48.7
heat source	inlet temperature		68	68	68
	mass flow rate	m³/h	20	40	80
cooling water	inlet temperature		27	27	27
	mass flow rate	m³/h	50	99	198
refrigerant pump		kW	0.3	0.55	1.1
vacuum pump		kW	0.4	0.4	0.75
outer dimensions	L	mm	3,200	3,500	5,000
	W	mm	1,600	2,800	2,800
	H	mm	2,550	3,000	3,450
net weight		kg	5,800	10,000	19,000

Performance comparison of models



*Standard design conditions Provided hot water temperature:60~80
Chilled water outlet temperature: 5~25
Cooling water inlet temperature:32 or below
Please contact us for other conditions.

Outer Dimensions



• This product is commercialized by the project "Research and Development of Technologies for New Solar Energy Utilization Systems" of New Energy and Industrial Technology Development Organization (NEDO).

