

NEW TECHNOLOGY FOR HEAT PUMP AND COMPRESSOR

MAYEKAWA MFG. CO., LTD



REFRIGERATION COMPRESSOR



FREEZER AND FOOD PROCESSING



REFRIGERATION ENGINEERING

“CO2 Heat Pump = Eco-Cute”

unimo



Eco-Cute “unimo A/W”

Eco-Cute “unimo W/W”

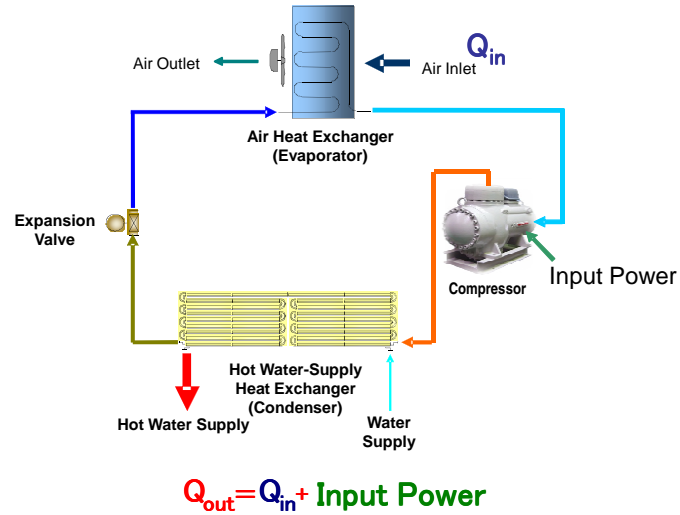


What is Heat Pump? What is Eco-Cute?

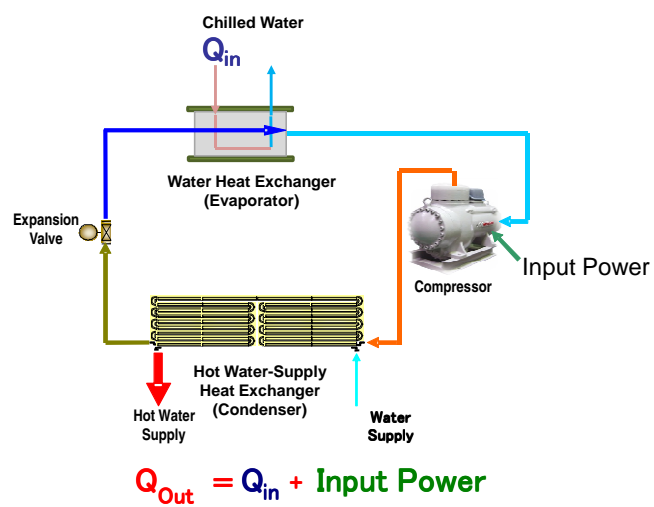
- ✓ A Heat pump is a device or a system that transfer thermal energy from heat source using refrigeration cycle.
- ✓ We are calling Heat Pump Device using CO2 “Eco-Cute” in Japan.
- ✓ **unimo** is Mayekawa’s CO2 heat pump brand.



AIR HEAT SOURCE



WATER HEAT SOURCE



Capacity of UNIMO (CO2 Heat Pump)

Air Heat Source Type

Model : HWA-2HTC

Heating Capacity : 70kW (1 m³/h, 30°C→90°C)

Motor power consumption : 22kW

COP : 70kW/22kW = 3.18

Advantage :

- 90°C hot water supply
- No chimney
- No fuel tank
- Easy installation
- Stable heat source in Vietnam



Capacity of UNIMO (CO2 Heat Pump)

Water Heat Source Type

Model : HWW-2HTC

Heating Capacity : 80kW (1.1 m³/h, 30°C→90°C)

Cooling Capacity : 57kW (9.6 m³/h, 22°C→17°C)

Motor power consumption : 25kW

COP : (80kW+57kW)/25kW = 5.48

Advantage :

- 90°C hot water supply
- Available chilled water also (max.7°C)
- No Chimney & No Fuel tank
- Higher COP



CO2 as NATURAL REFRIGERANT

Refrigerant Groups	Banned Freon (CFC)		Limited Freon (HCFC)	Alternative Freon (HFC)				Natural Refrigerants (Natural Five)		
Refrigerant	R11	R12	R22	R134a	R404A	R407C	R410A	R717 NH ₃	R744 CO ₂	R600a Iso-Butan
ODP	1.0	1.0	0.055	0	0	0	0	0	0	0
GWP	4750	10900	1810	1430	3922	1650	2088	>1	1	4
Characteristics	<ul style="list-style-type: none"> • ODP is high • Used as refrigerant for car air conditioning • banned in 1995 		<ul style="list-style-type: none"> • Limited use • Banned in 2010 	<ul style="list-style-type: none"> • Instable gas • Ozone depletion potential is zero. • Specified as GDP gas by Kyoto Protocol • Anticipated to be regulated by authority 				<ul style="list-style-type: none"> • Exist in the natural environment Ammonia, CO₂, Water, Air, Hydrocarbon 		

ODP: Ozone Depleting Potential

GWP: Global Warming Potential

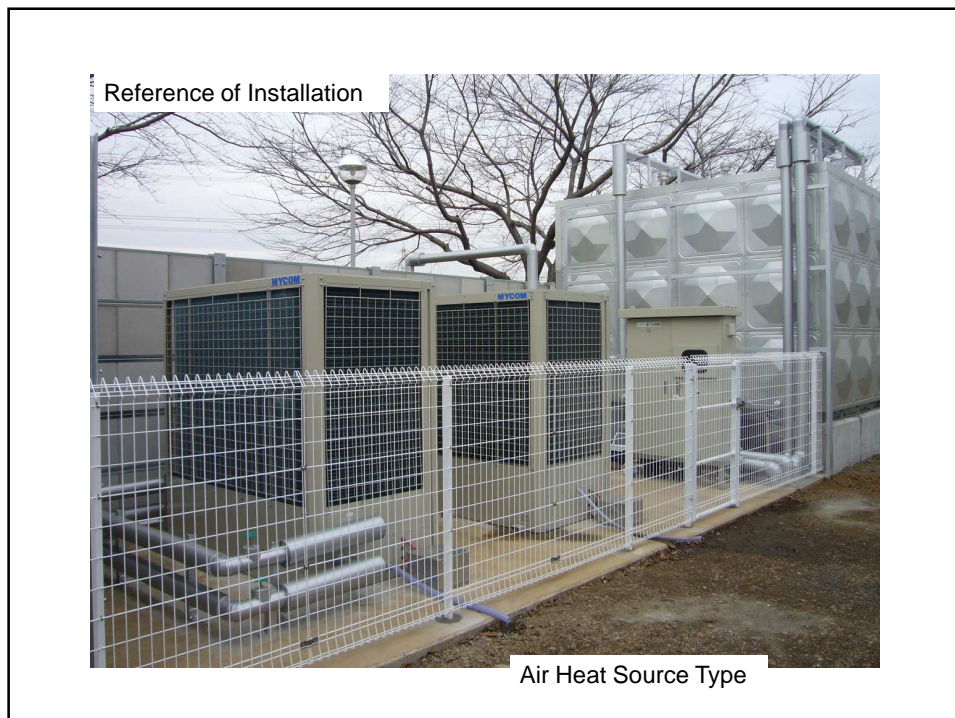
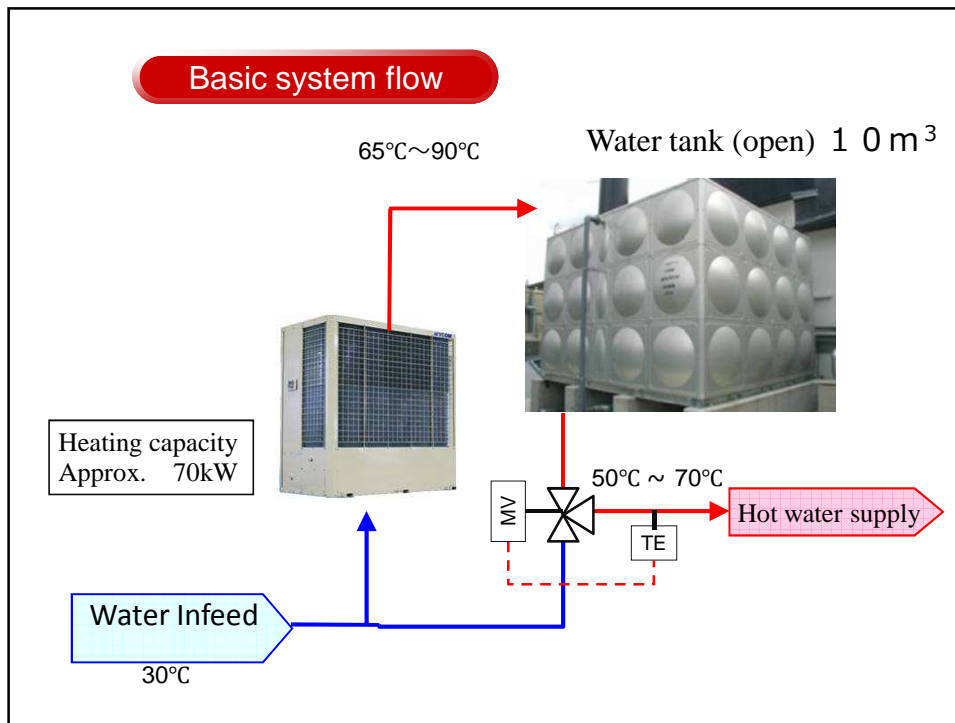
Small Impact on GWP

CO2 COMPRESSOR MYCOM C2HT

Model: C2HT

Type: Semi Hermetic Reciprocating Compressor





Reference of Installation



Reference of Installation



**Thank you very much for
your attention.**



NATURE IS WHAT WE DESIGN FOR !

