



CO₂ SUPERCRITICAL HEAT PUMP

heatCO₂m

Water heat source



The MAYEKAWA heatCO₂m

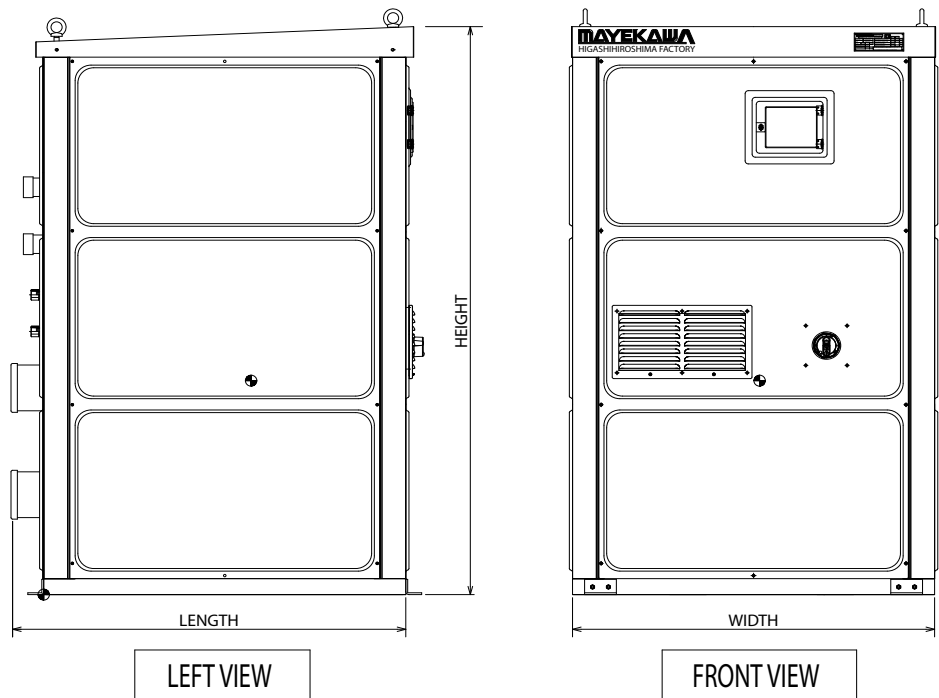
is a heat pump system that generates hot water by recovering heat energy from any waste heat source. It uses CO₂, a natural refrigerant, instead of chemical refrigerants normally used in other heat pump systems.

The heatCO₂m is one of MAYEKAWA's contributions for the protection of the global environment. Producing heat with the heatCO₂m is clean & safe process, the energy losses by this system are kept to a minimum and no additional energy is needed to produce the heat which means there are no NO_x or CO₂ gases discharged into the atmosphere. The overall heatCO₂m CO₂ footprint is very small.

The heatCO₂m is best suited for medium to large scale facilities. It can efficiently produce high temperature hot water for both industrial and commercial use.

Per day the heatCO₂m has the capacity to produce up to 22000 L of hot water at an inlet temperature of 15 °C and an outlet temperature of 90 °C.

MAYEKAWA compressors are developed using MAYEKAWA's large knowledge and experience. The heatCO₂m is equipped with a very efficient high pressure reciprocating compressor designed for use with CO₂.



WEIGHT (kg)	WIDTH (mm)	LENGHT (mm)	HEIGHT (mm)
1060	1140	1293	1919

Range of Use

ITEM	UNIT	OPERATING CONDITION		
Heat Exchanger	-	Water heater	Water cooler	
Type	-	-	Brine Cooling	Water Cooling
Fluid	-	Water	Brine	Brine or Water
Inlet Temperature	°C	5 to 50 ¹⁾	-5 to 37	10 to 37
Outlet Temperature	°C	65 / 90	-9 to 32	5 to 32
Inlet Pressure	barG	1.5 to 4.9		
Flow Rate	L/min	8 to 35	100 to 300	

1) Upper limit of inlet temperature condition depends on flow rate of both water heat exchanger side and temperature condition

Performance Chart

65 °C HOT WATER SUPPLY TEMPERATURE							
Heat Source °C		Capacity (kW)	Inlet water Temperature				
Inlet	outlet		10 °C	15 °C	20 °C	25 °C	30 °C
37	32	Heating	119.7	115.8	-	-	-
		Cooling	103.5	94.5	-	-	-
		Power	22.6	23.2	-	-	-
22	17	Heating	104.4	101.2	98.0	94.0	-
		Cooling	82.5	78.5	74.8	69.8	-
		Power	24.0	24.8	25.6	26.4	-
12	7	Heating	87.5	84.8	81.9	78.7	75.5
		Cooling	66.5	63.2	59.7	56.1	52.4
		Power	22.9	23.5	24.1	24.7	25.2
-5	-9	Heating	51.4	49.9	48.0	46.3	-
		Cooling	35.0	33.4	31.6	29.7	-
		Power	17.8	17.9	18.0	18.1	-

90 °C HOT WATER SUPPLY TEMPERATURE							
Heat Source °C		Capacity (kW)	Inlet water Temperature				
Inlet	outlet		10 °C	20 °C	30 °C	40 °C	50 °C
37	32	Heating	110.0	103.0	95.0	82.7	60.6
		Cooling	86.2	79.5	71.0	58.8	36.6
		Power	25.7	25.8	25.9	26.0	26.1
22	17	Heating	97.7	92.3	85.8	77.1	65.9
		Cooling	72.6	67.0	60.2	51.7	40.1
		Power	27.5	27.6	27.7	27.8	27.9
12	7	Heating	83.2	78.6	72.8	65.9	-
		Cooling	59.9	55.1	49.3	42.1	-
		Power	25.4	25.5	25.6	25.7	-
-5	-9	Heating	52.2	48.8	44.8	-	-
		Cooling	35.6	28.2	28.2	-	-
		Power	18.0	18.3	18.3	-	-

*This unit has the upper limit of the amount of inlet water and the min. limit of chilled water to protect heat exchangers.

*The values above are simulation values when the difference temperature between inlet water and outlet water without the upper limit of the amount of inlet water.

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- 8 production plants



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