



**“Water heat source CO2 Heat
Pump”**

**For energy saving technology
- SAKE Brewing -**

13 December 2023

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Heat Pump & Thermal Storage Technology Center of Japan

We are



Heat Pump & Thermal Storage Technology Center of Japan

HPTCJ Activities



- ◆ **Foundation** 1986
- ◆ **Activities** Public Dissemination/Promotion
Technical Support
International Activities
- ◆ **Membership** 99 companies / organizations
(As of 2023)



**Public Dissemination
/Promotion**



Technical Support



International Activities

HAKUTSURU SAKE BREWING CO.,LTD.

Heat Recovery Heat Pump Technology in JAPAN



日本醇良清酒
堂錄商標

金冠

白鶴

芳醇無比

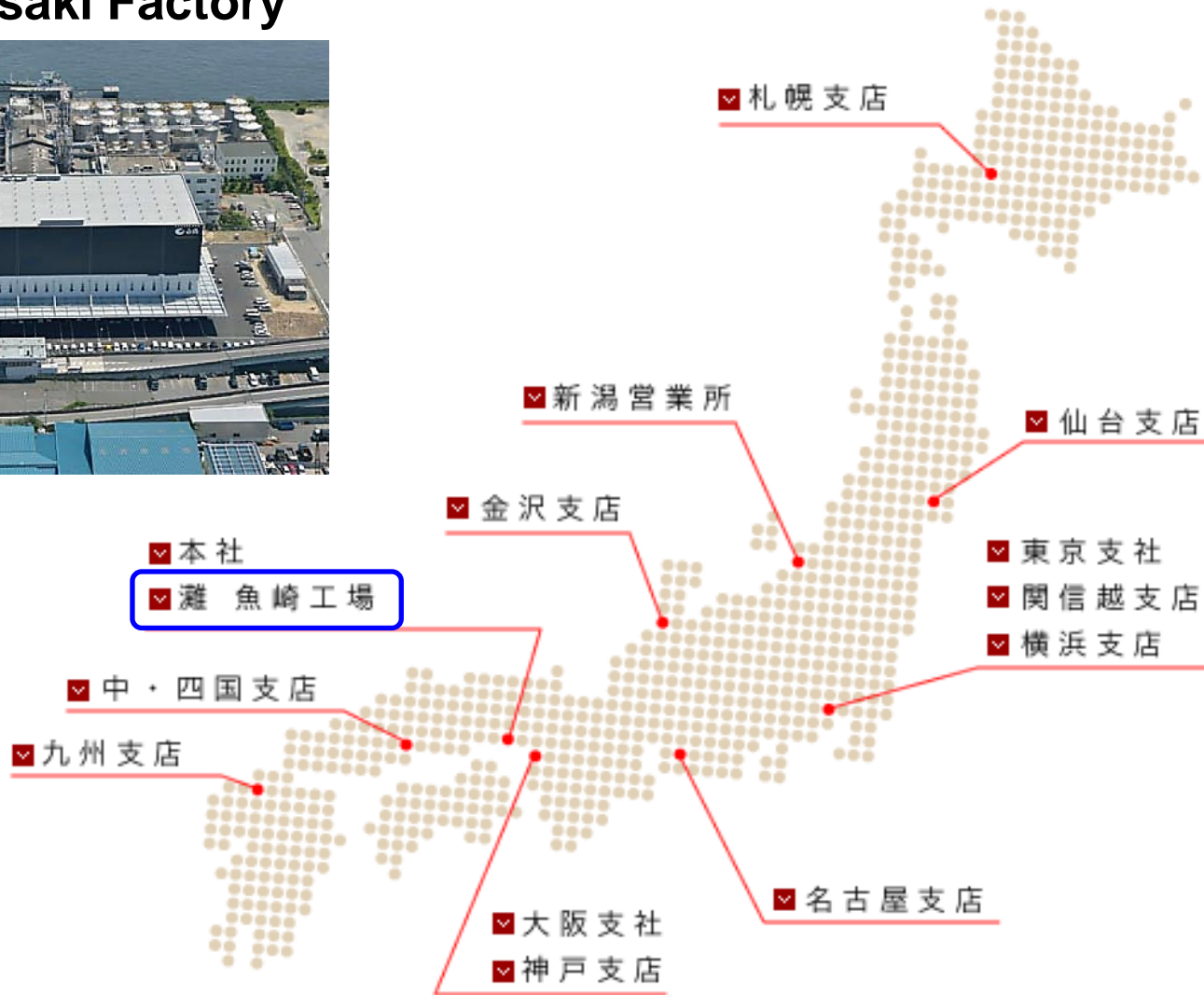
自成一家

白鶴酒造

Welcome to
Hakutsuru Sake



Nada Uosaki Factory



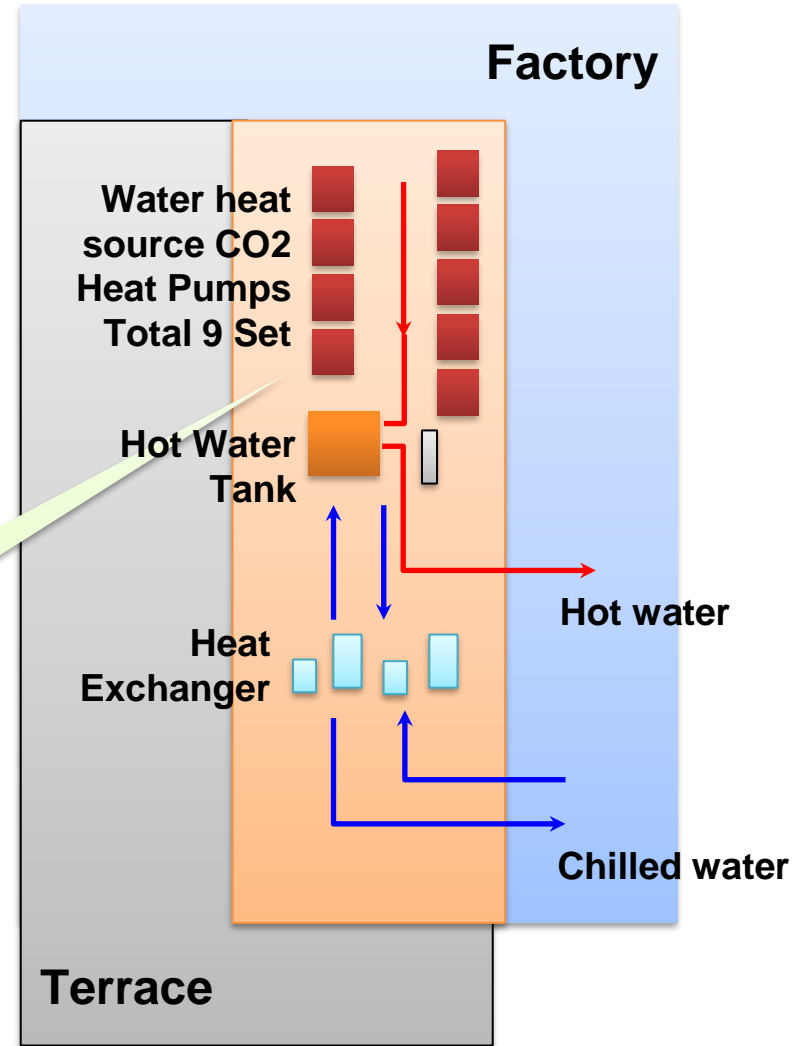
Nada Uosaki Factory



Layout

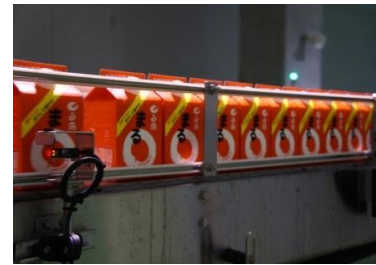


Water heat source CO2 Heat Pumps



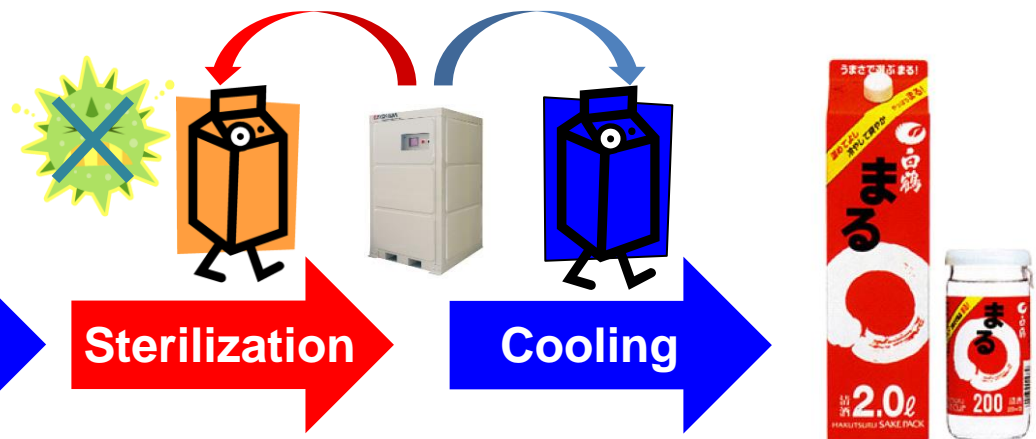
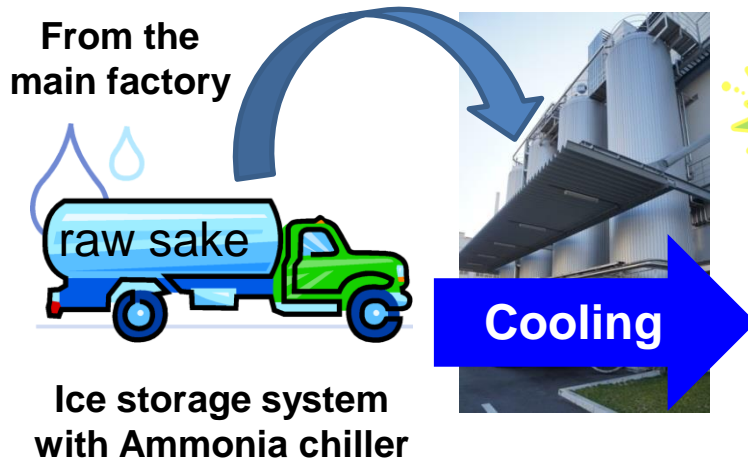
Layout

Facility Overview



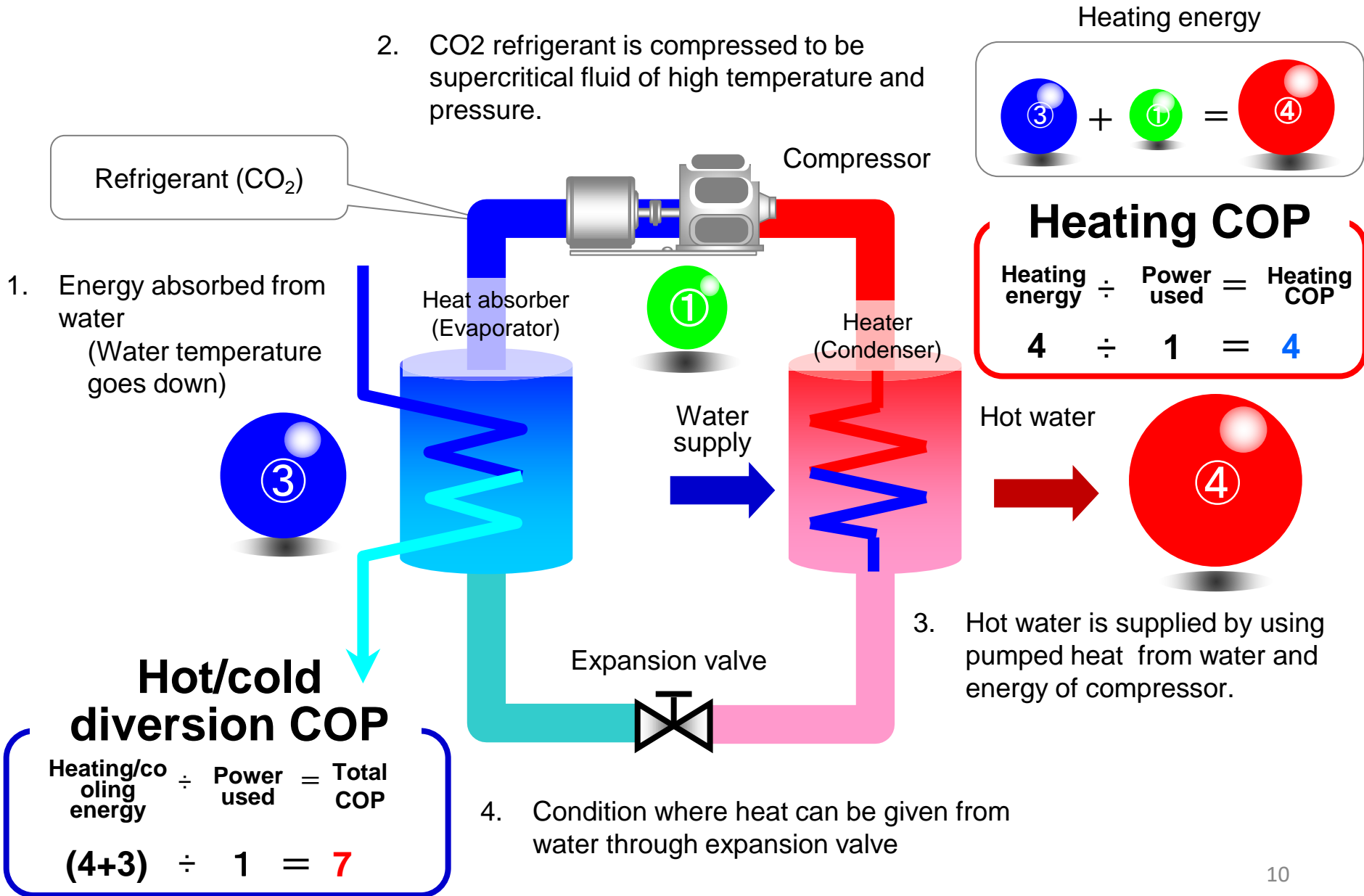
Usage of the building : Sake Brewing Factory
 Total floor area : 24,163m²
 Constructed : 2012 (Newly build)

Ice Storage System	
Ammonia Chiller	188kW × 2 Units
Ice Storage Tank	44.6m ²
Water heat source CO2 Heat Pumps	Heating capacity 74.9kW Cooling capacity 54.5kW × 1 Unit



Water heat source CO2 Heat Pumps

What is the Heat Pump?



General Characteristics of Heating Equipment

Item	Boiler	Water Source CO2 Heat pump	HFC Heat Pump	Remark
Instant Heating	○	△	△	Depends on requirements
Cooling	×	○	△	
Environment	×	○	×	CO2 Discharge GWP
Initial Cost	○	×	△	
Running Cost	△	○	○	Depends on fuel cost
Supply temp100°C and above	○	×	×	
Hot Water disinfection	○	○	×	80°C and above
Legionella Measures	○	○	×	60°C and above

※Heat pump comparison is for Mayekawa Products

Heat Pump Technology in Japan

Energy conservation and CO2 reduction by
“**Natural refrigerant CO2**” + “**Heat pump technology**”

Air heat source



*Greatest possible
in the industry!*

**Hot water of
65 to 90°C**

Water heat source



*First in the
industry!*

**Hot water of
65 to 90°C
+
Cold water**

Air heat source

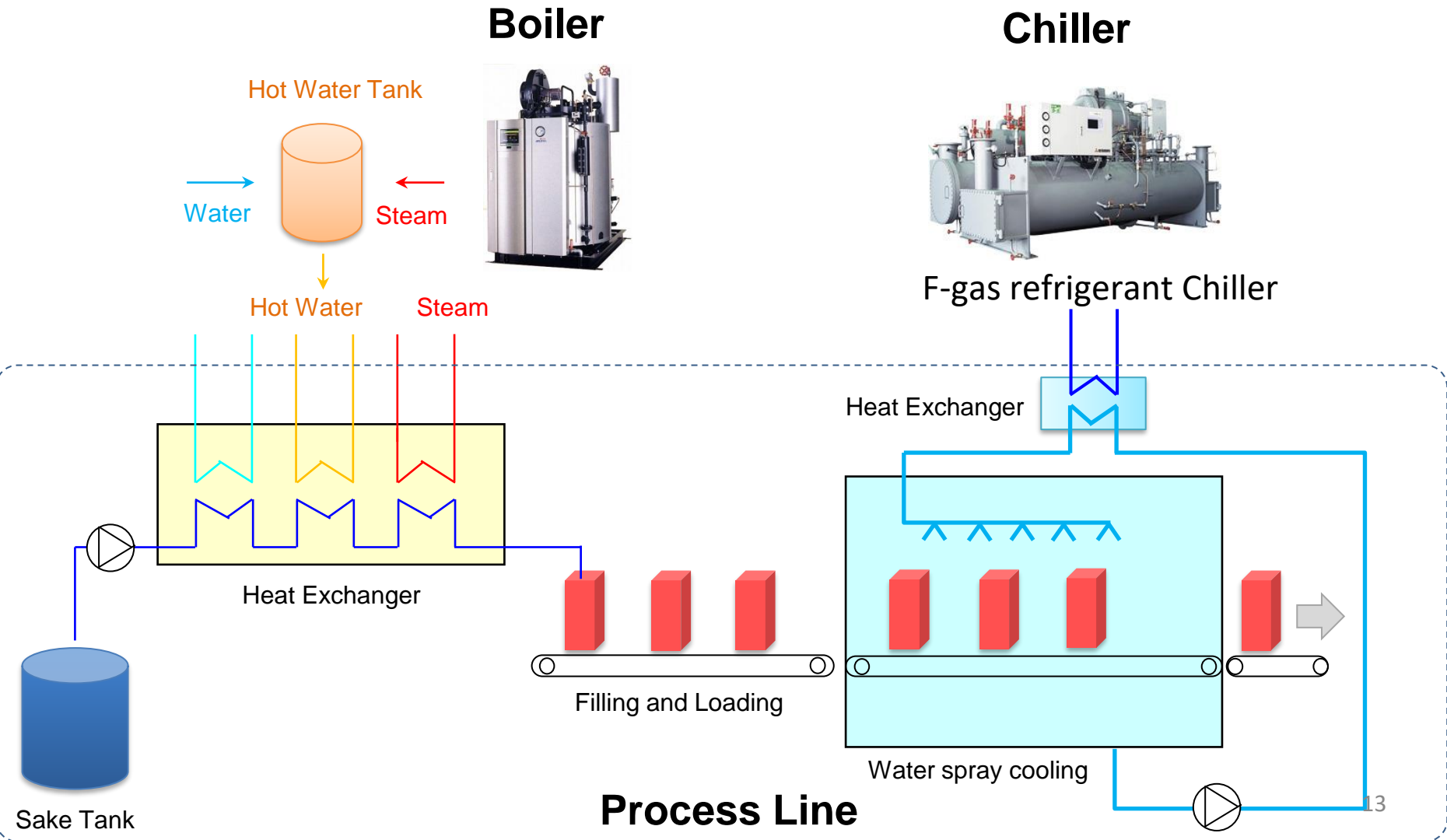


*First in the
industry!*

**Hot air of
80 to 120°C
+
Cold water**

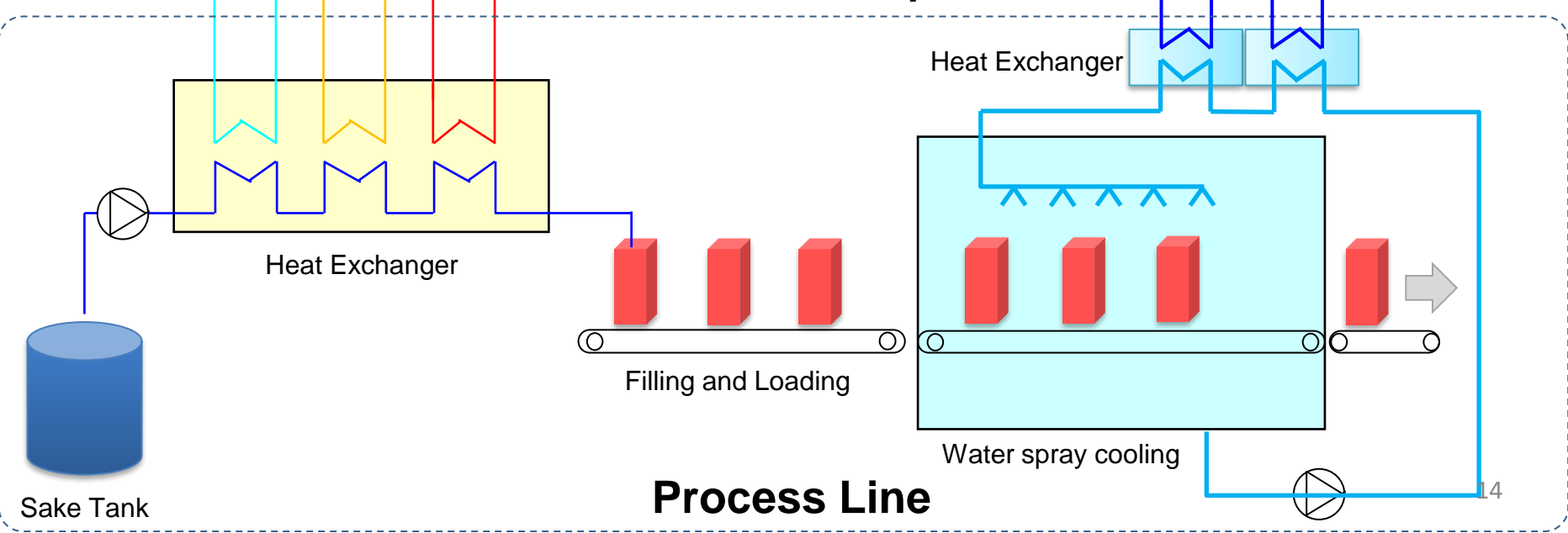
Conventional system

Outline of heat source system

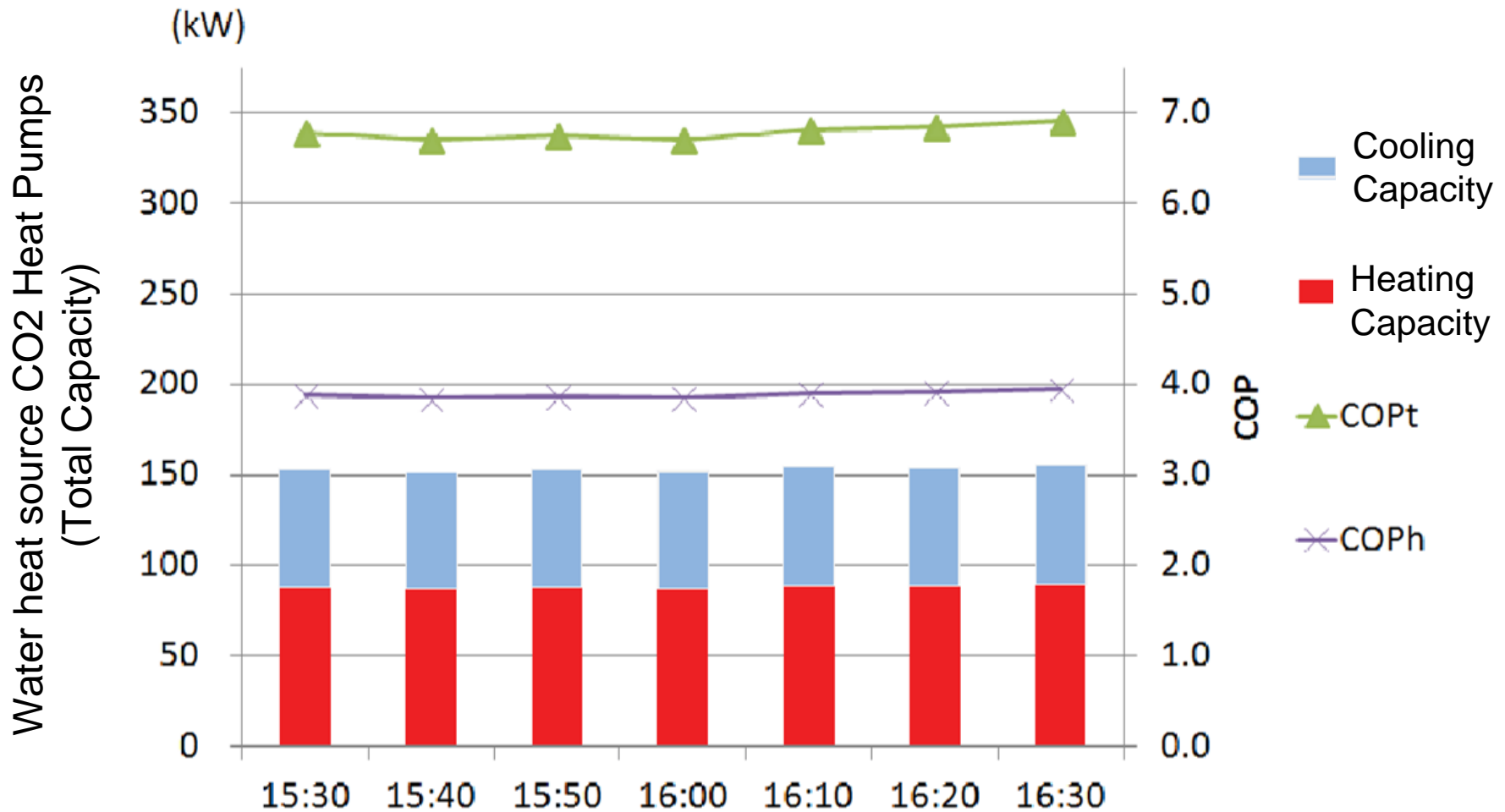


Proposed system

Energy Saving System using Heat Recovery Heat Pumps



Stability of capacity and efficiency in actual operation



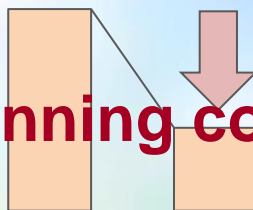
Running cost result

CO2 reduction



-34%

Running cost



-24%

Energy saving



32%

※ Compared to conventional system



Water heat source CO2 Heat Pumps

Ministry of Economy, Trade and Industry Agency for Natural Resources and Energy Secretary Award in 2015



Tatsumi of Tokyo branch manager at that time(2015)

Summary

CO2 heat pumps are an effective technology for industrial sectors that require large amounts of heating and cooling, such as food and beverage plants.

1. This is one of the technologies that can contribute to carbon neutrality towards 2050.
1. This equipment can save energy and reduce CO2 emissions at the same time.
1. Heat recovery technology achieves high efficiency and reduces running costs.



**Thank you
for your attention!**

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