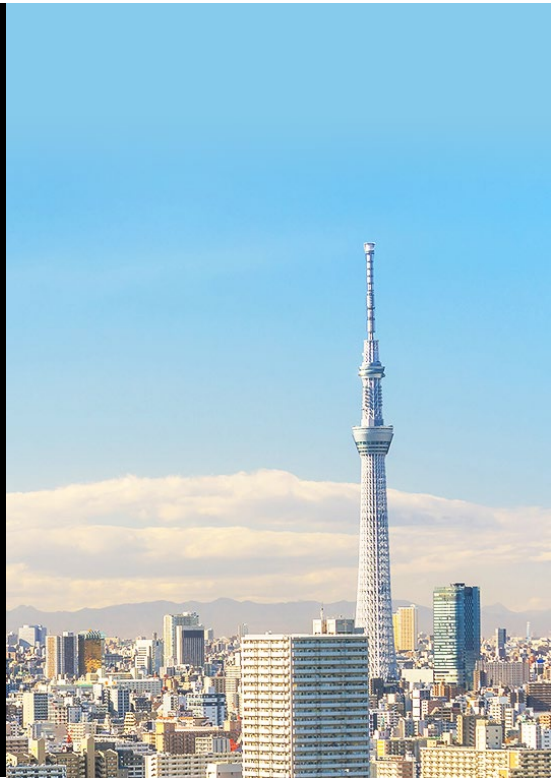
iTOMIC CO_2 HeatPump

Case Study



Installations

Japan and oversea case study list

Itomic CO_2 Heat Pump water heaters have been adopted world-wide

For the details, click the Thumbnail.

Garden Hotel Shanghai (China)

A second house (China)

Comfort Hotel Himeji (Japan)

Chicken processing company (Taiwan)

Beer Factory (China)

Cattle barn on ranch (Japan)

Kanwan LPC (Korea)

American school (Japan)

Dalian Futures Center (China)

Nightingale Apartment (Australia)

Yarra's Edge (Australia)

Brown Brothers winery (Australia)

Garden Hotel Shanghai (China)

Hotel DHW

ITOMIC

Hotels

Garden Hotel Shanghai

NEDO Japan, joint with the Chinese government, installed Itomic CO_2 heat pumps in this prestigious hotel, in order to disseminate the advanced energy-saving technology as a pilot case.

Garden Hotel Shanghai (China)

Hotel DHW

Products

Units : CO_2 Heat pump water heater
Model: CHP-3000U
Number : 4 units




Cost saving

Before: 172,713 yuan/yr
After: 90,592 yuan/yr
Saved: 82,121 yuan/yr
(data of 2014)

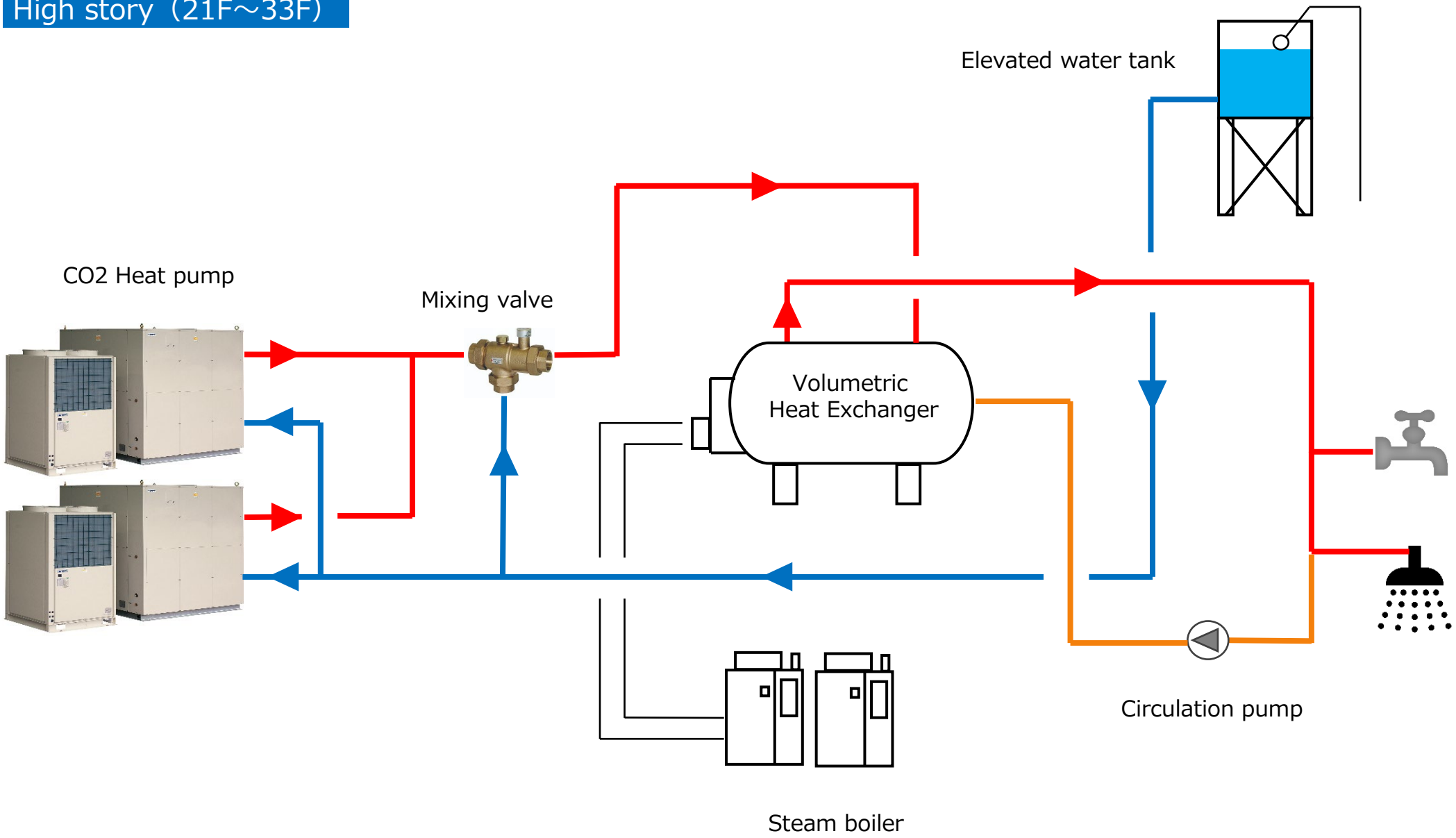
Annual cost Reduction

Approx.
47.5%

Garden Hotel Shanghai (China)

Hotel DHW

High story (21F～33F)



A second house（China）

Villas　Heating

ITOMIC

Villas

A second house in Northern China

Itomic CO_2 Heat pumps were adopted in this vast 3,000m^2 accommodation and recreational facility as a floor heating purpose. A stable heating even in the severely cold weather, together with a safe and clean operation due to non-combustion system of the product, was acclaimed highly by the owner.

A second house（China）

Villas　Heating

Products

Units：　CO_2 Heat pump water heater

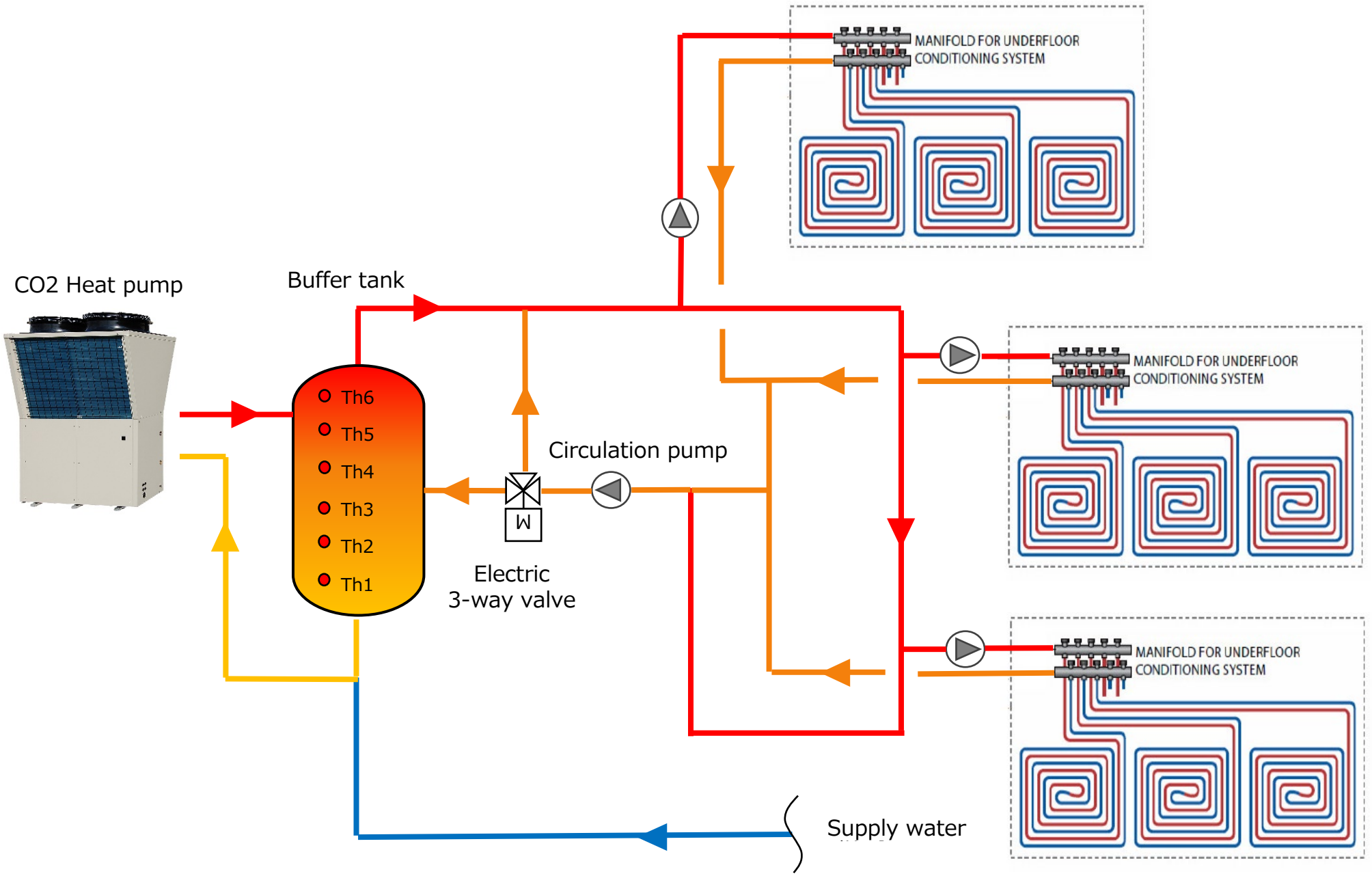
Model：CHP-80Y2

Numbers：5 units

Ambient temperature in a winter time is very low in the Liaoning Province, so a chlorofluorocarbon heat pump cannot meet the heating demand. Instead, Itomic CO_2 heat pumps were introduced and they are now operating well down to −20℃ ambient. With an anti-freeze heaters built inside the units, operation is well kept even when an unexpectedly low temperature hits the region.

A second house（China）

Villas Heating



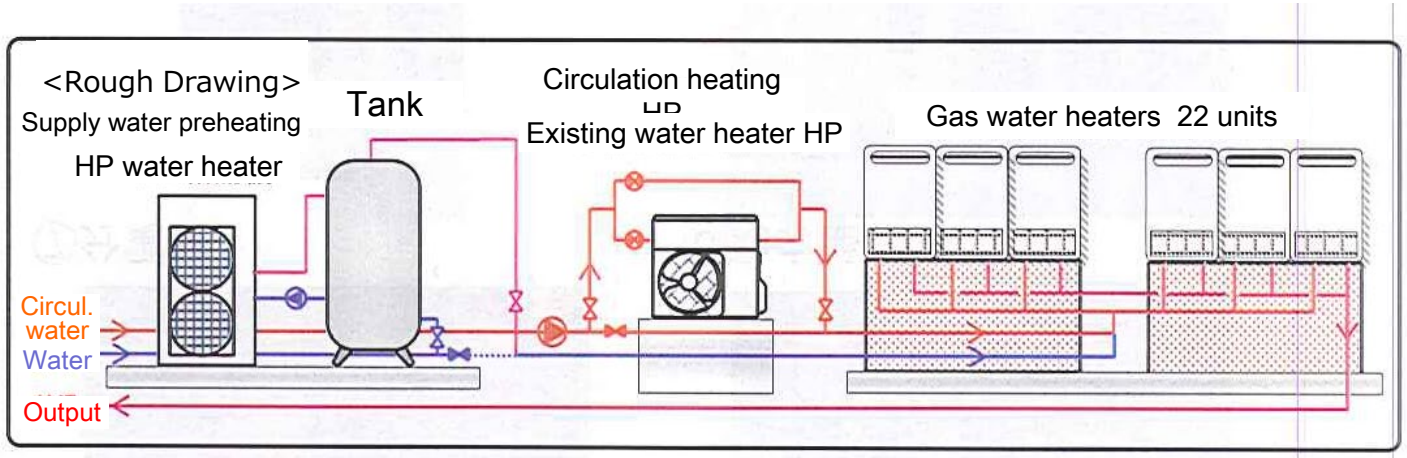
Hotels

Comfort Hotel Himeji

This hotel chain holds approx.170,000 rooms around the world and 51 hotels throughout Japan. They adopted Itomic CO_2 heat pump (12kW) as the guest room's hot water preheating in order to cut the total energy cost. They are successful in reducing the gas expenditure in the limited installation space. Their two other hotels also adopted our CO_2 heat pumps.

Comfort Hotel Himeji (japan)

Hotel | Pre-heating



Products

Units : CO_2 Heat pump (Independent unit)

Model : CHP-12H, SPU-1

Numbers : 1 unit each

Cost calculation

■Outcomes（Surveyed for 13days）

《Gas meter values》

Date	Time	Indicator	Difference
Jan 30	12:40	102,916.41	—
Feb 6	12:20	103,509.25	592.84
Feb 13	12:00	104,262.24	1,345.83

Gas amount for 13days **1,252m³** (96.3m³/day)

《Previous year's value》

	Feb, 2012
Outcome [m³]	3,606

Gas for 13days

1,616m³ (124.3m³/day)

● Electric cost of heat pump water heater（Actual value）

Consumed electricity : 998kwh（Daytime : 487kwh, Nighttime : 511kwh）

Electricity cost : 487kwh×￥15.85/kwh+511kwh×￥11.69/kwh＝￥**13,693**/(13days)

● Reduction on gas cost by the adoption of heat pump (Actual value)

(1,616m3 − 1,252m3) × ￥104.44/m3 = ￥**38,016**/(13days)

● Cost saving by heat pump installation（Actual value）

￥13,693 − ￥38,016 = ▲**￥24,323**/(13days)

Reduction effect

Before : ￥168,775 /13days

After : ￥144,452/13days

Reduction : ￥24,323/13days

Tot. initial cost: ￥2,800,000

Est. Annual reduction:

￥682,915

Collection of investment

Approx.

4.1

years

Industry use

Chicken processing company in Taiwan

Under the famous frozen food brand, this company processes 7million chickens annually, and sells domestically and exports to the Southeast Asian countries. A large amount of hot water is consumed during the process, so our CO_2 heat pumps have been adopted as a combination usage with the existing boiler in order to reduce the total energy cost.

Chicken processing company (Taiwan)

Industry | Hybrid system

Products

Units： CO_2 Heat pump water heater

Modes：CHP-80Y2

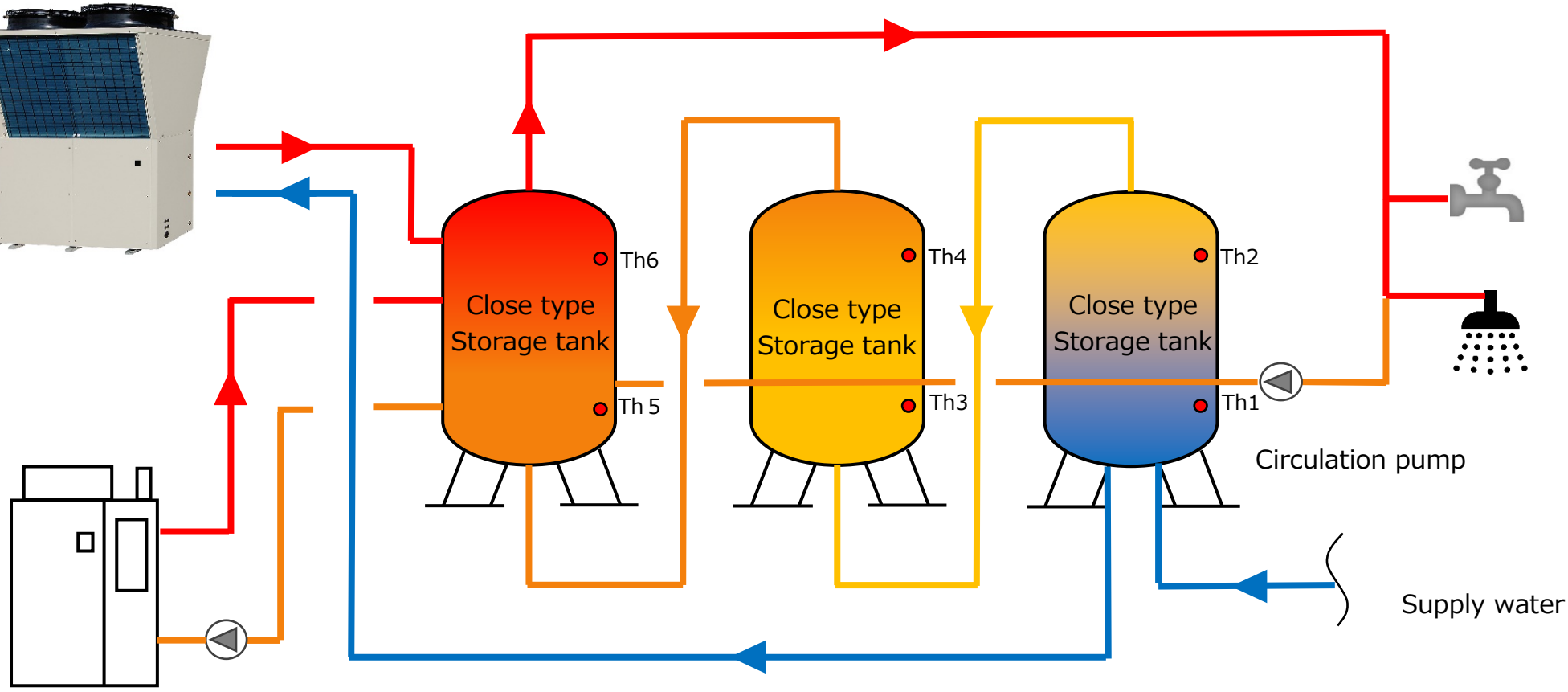
Numbers：1 unit

Tons of hot water is consumed in this facility as cleaning, washing, and sterilizing purpose during the chicken processing. By the newly adopted hybrid system (an originally set heavy oil boiler is combined with a CO_2 heat pump), hot water is supplied first by the CO_2 heat pump. This way, the drastic energy cost reduction has been achieved. The facility management is also easier due to the non-combustion feature of the product.

Chicken processing company (Taiwan)

Industry | Hybrid system

CO2 Heat pump



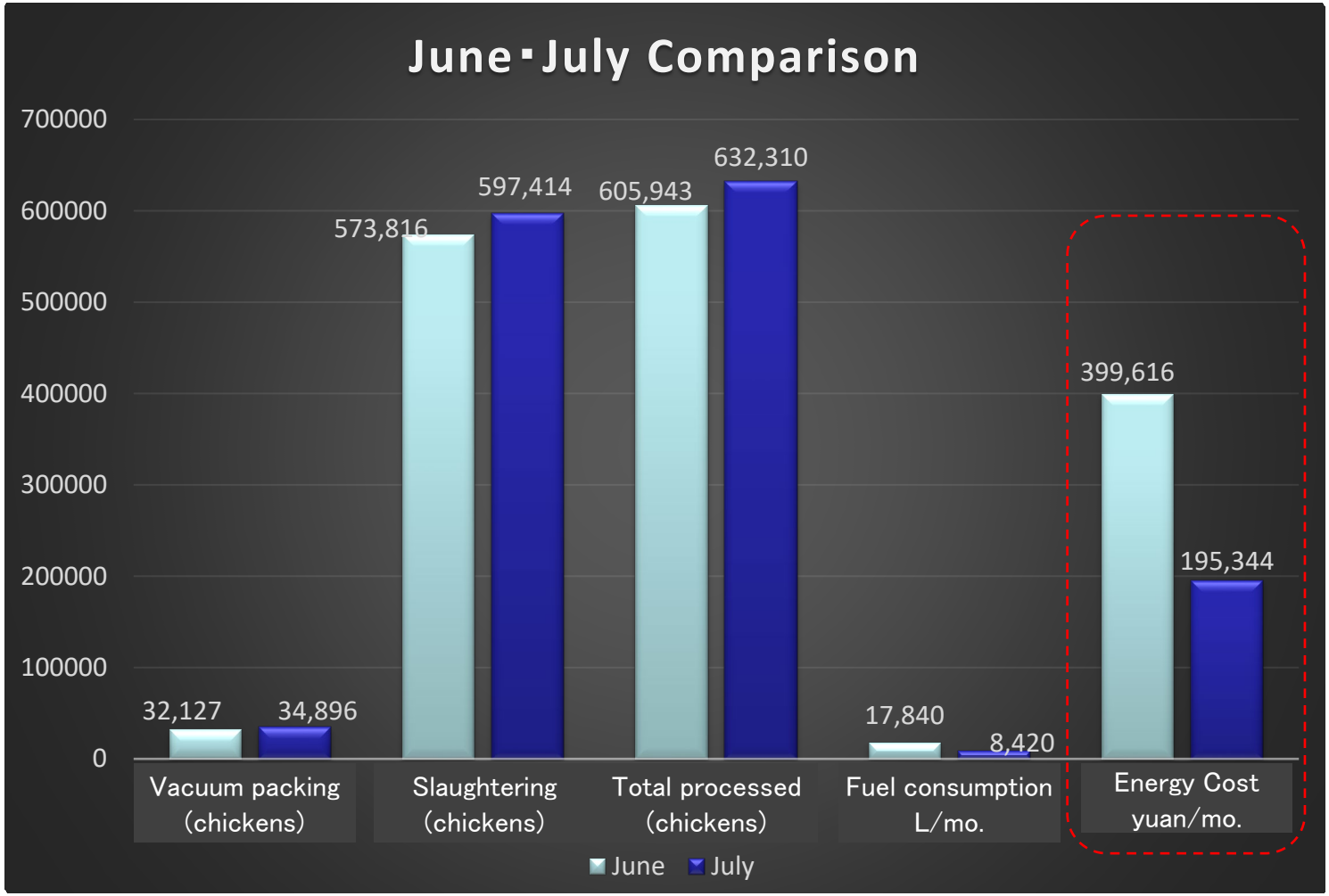
Chicken processing company (Taiwan)

Industry | Hybrid system

Comparison

■ Actual measurement: Number of processed chickens and energy cost (June～July)

※ CO_2 Heat pump starts operation from July



Reduction effect

Before: 399,616 yuan/mo.

After: 195,344 yuan/mo.

Reduction : 204,272 yuan/mo.

Annual reduction (calculation) :

2,405,138 yuan/year

Annual Running cost Reduction rate

Approx **51.1%** Reduction

Factory

Beer Factory (Budweiser) in Wuhan, China

This beer giant holds 14 factories in China, among which “Budweiser Wuhan International Brewing Company” has the largest production volume.
One 80Y2 model has been adopted, aiming at energy cost reduction on the production line and improve-ment of the factory environment.

Beer factory (China)

Factory | Temperature rising

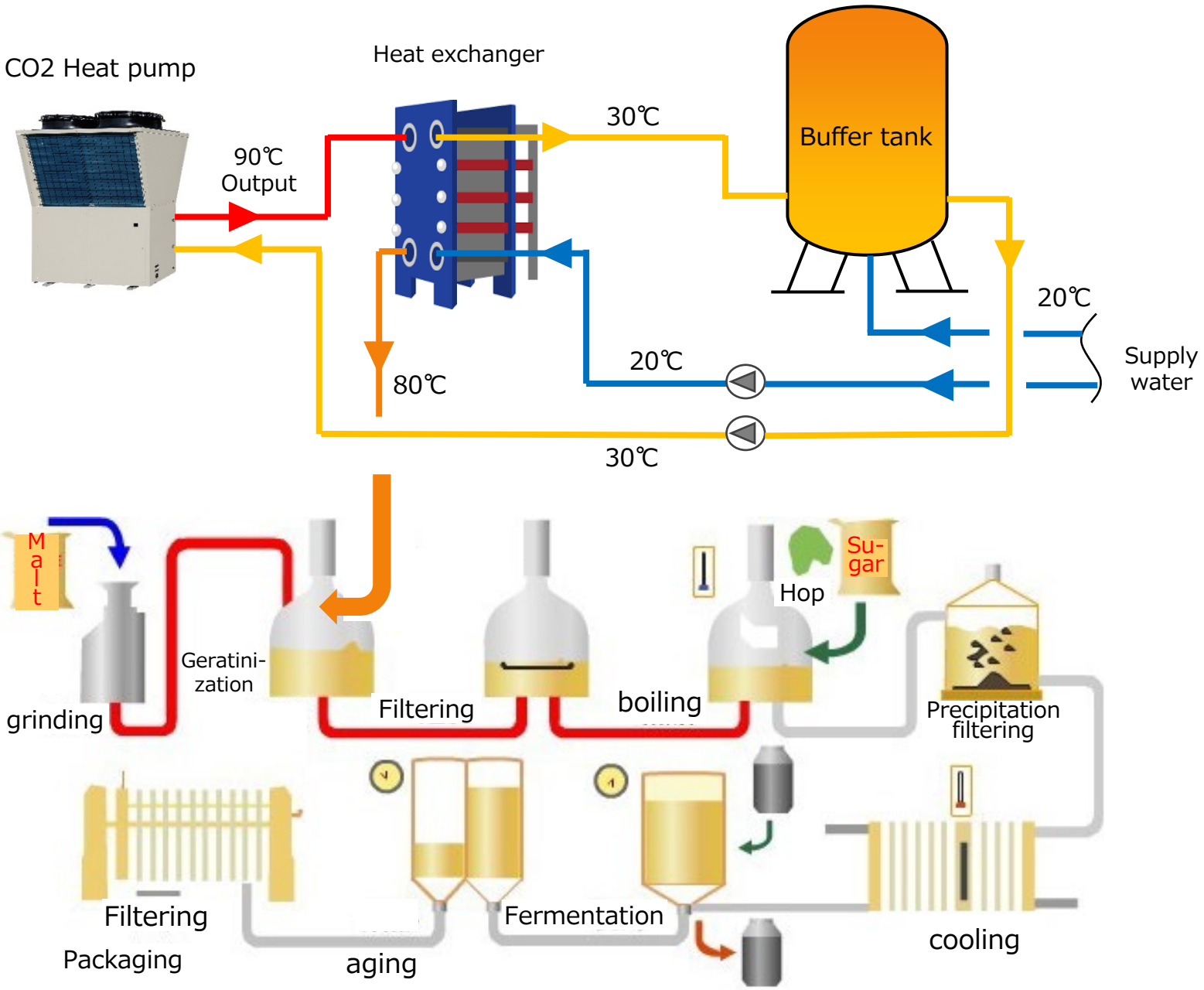
Products

Model : CHP-80Y2

Numbers : 1 unit

A large amount of hot water is added to malts during the saccharification process (Turning starch into sugar.) The supply water temperature to the heat pump is strictly controlled at below 35℃ so the stable efficiency is constantly kept.

At the same time, the heat pump works well in reducing the summertime indoor temperature, sometimes as high as 40℃, as it discharges cool air during the operation.



Cattle barn on ranch (japan)

Industry Cleaning

ITOMIC

Industry

Cattle barn on ranch

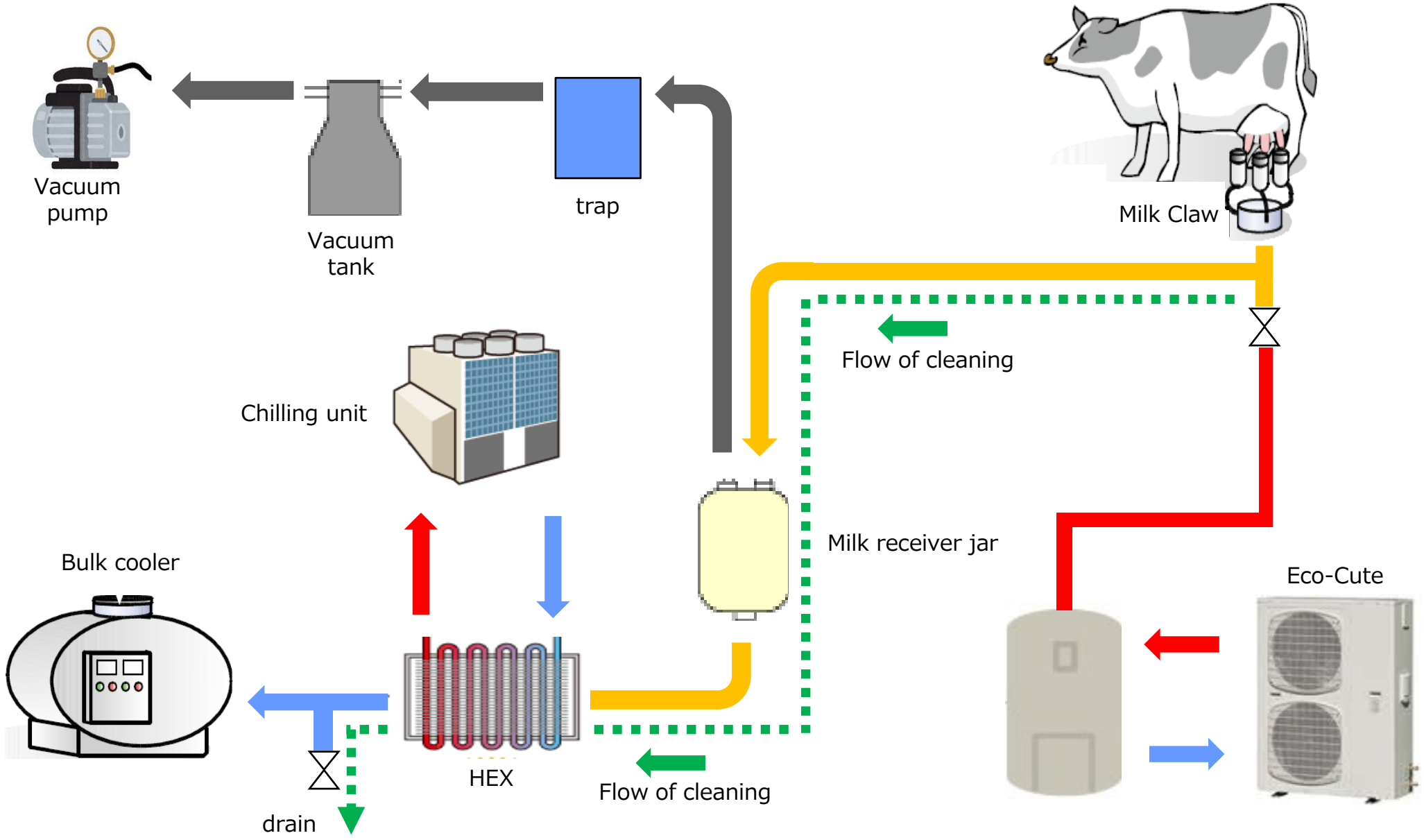
One unit of CHP-12H was installed in this standard cow barn in northern Japan, where the main energy source used to be an oil boiler. The owner's feedback is high for energy expenditure reduction, low emission of CO_2, and other cost performance.

Products

Model : CHP-12H

Numbers : 1 unit

Dairy: cow barn



Cattle barn on ranch (japan)

Dairy: cow barn

Place : Nakashibetsu, Hokkaido

No. of cows : 190

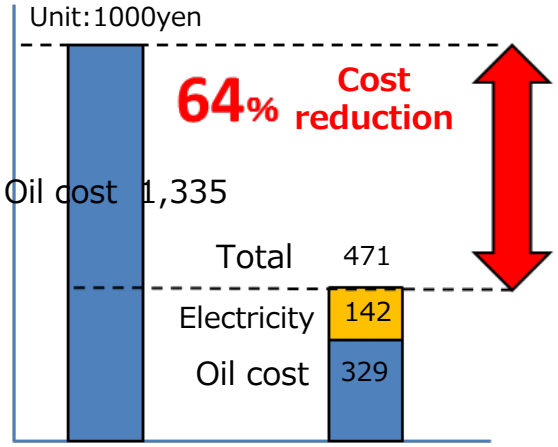
Production volume : 1,902 t (2015)

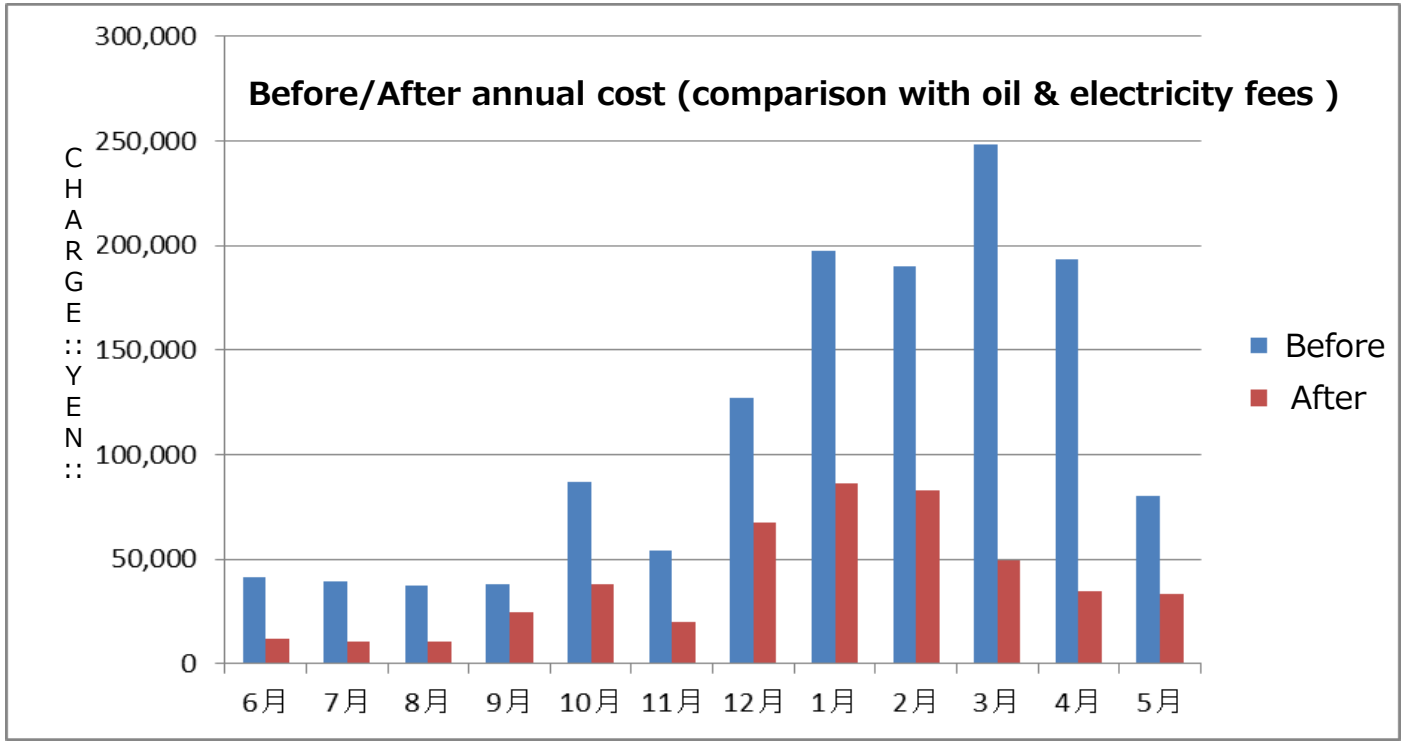
Eco-Cute installation : May, 2013

Previous energy source : Oil boiler

Present energy source : Oil＋Eco-Cute

Before/After comparison of annual cost





Reduction effect

Before: 1,335,373yen/year

After: Oil：329,878yen/year
Electricity：141,993yen/yr

Reduction amount：

863,502 yen /year

Annual running cost reduction rate

Approx. 64.0% Reduction

Kanwang LPC (Korea)

Industry | Cleaning

Industry plant

Kanwang LPC

1,300 pigs are processed in this plant, with the required hot water per pig for washing, carcass dressing, and etc. is approximately 350L. The old facility did not work well as at some areas steam and water was mixed to supply hot water, eventually the running cost hiked against the owners' will. After an Eco-Cute was adopted, the hybrid system –a steam boiler with a CO2 heat pump - replaced the old one, well contributing to the total cost reduction.

Products

Product : CO_2 Heat pump water heater

Model : CHP-80Y2

Numbers : 2

School

American School in Japan

This school provides a uni-fied elementary-lower-upper secondary school program, with the total of 1,700 students. It owns a 50m heated swimming pool in the premises, which became the major cost issue as the pool water was heated and circulated by oil boilers and the energy cost hiked as the facility gained ages. Itomic planned the total refurbish-ment including the construc-tion and replacement of the boilers with Eco-Cutes. The proposal was selected as the “Act on the Improvement of Energy Consumption Perfor-mance of Buildings” by the Ministry of Land, Transport, Infrastructure, and Tourism.

American School (Japan)

School | Pool water Heating

Products

Units : CO_2 Heat pump water heater

Model : CHP-70H

Numbers : 4 units

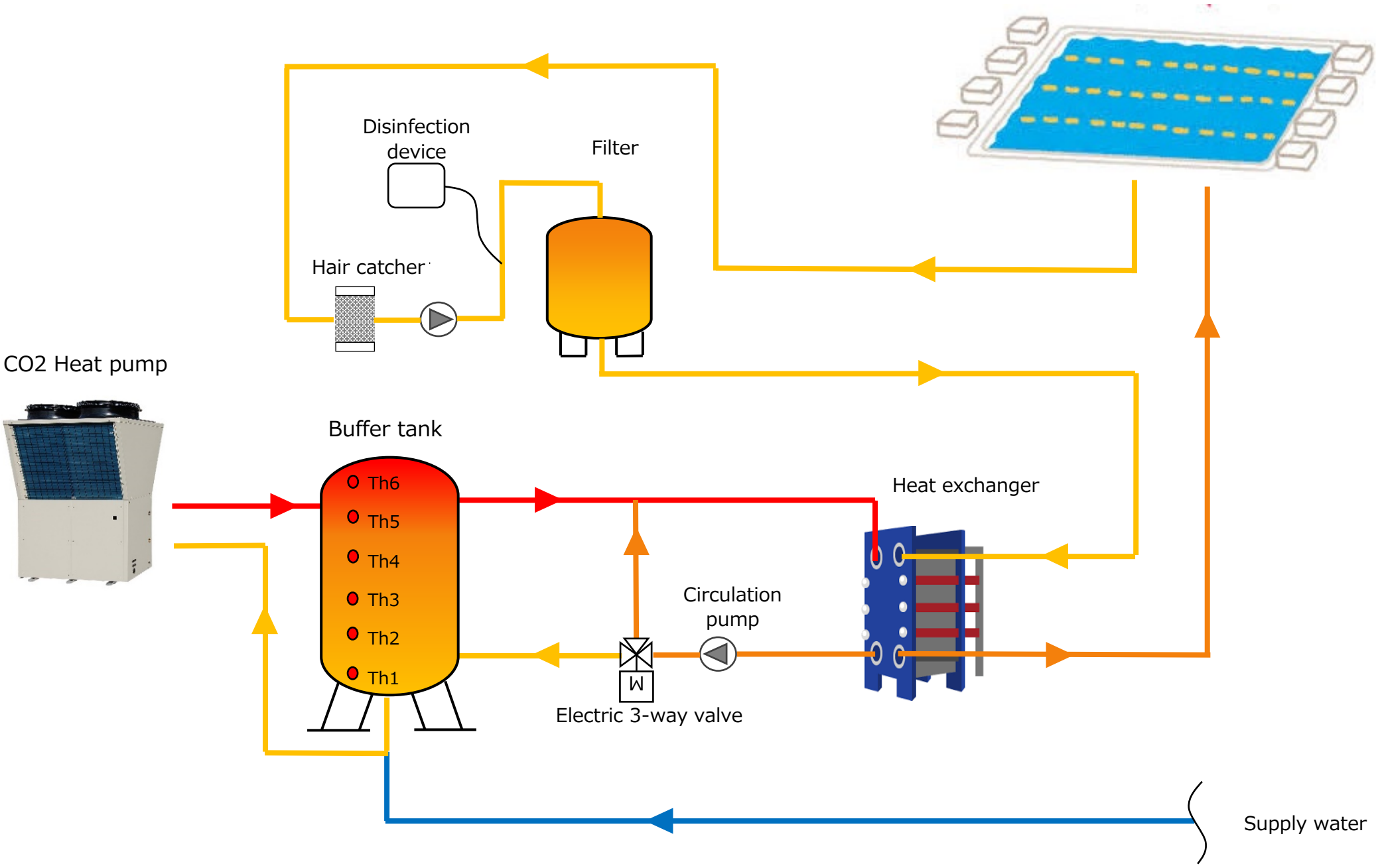
4 heat pumps on the roof, a circulation tank on the ground floor, and a heat exchanger in the machine room on B1, were all installed by Itomic.

A bypass was set with a 3-way valve between the heat exchanger and the tank, reducing the mixture of the tank water. Thus the performance of the heat pump was kept well, contributing to the total running cost reduction.

Years have passed since the adoption of the CO2 heat pumps and the related equipment, but the good reputation for the high performance is still spoken.

American School (Japan)

School | Pool water Heating



Dalian Futures Center (China)

Office building | General hot water

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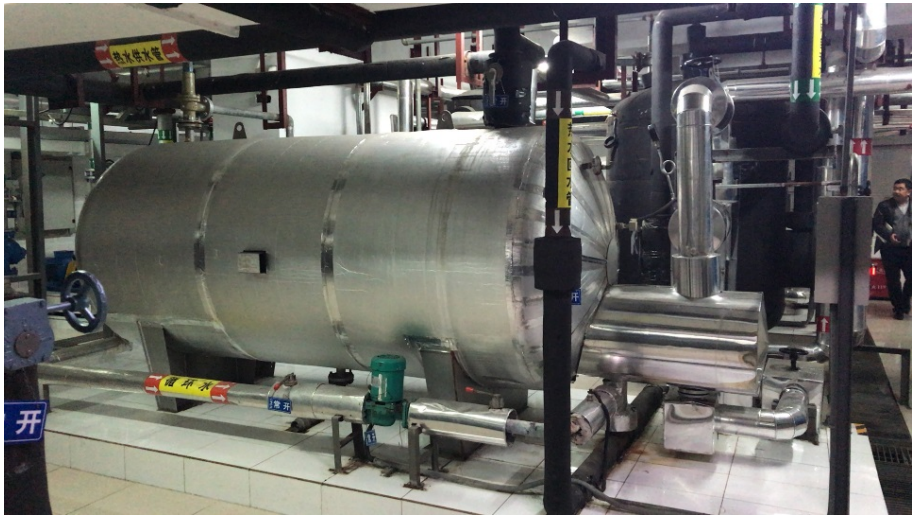
Office building

Dalian Futures Center in China

In order to contribute to pollution control method, the steam supply by boilers to the area of the Xinghai market in the city of Dalian was stopped. As a replace-ment, Itomic CO_2 heat pump was adopted, being highly praised its cost performance and low impact on the environment. Installed on the 2nd floor of the office building, hot water is supplied to the kitchen dish washers and the showers for the employee sports gym .

Dalian Futures Center (China)

Office building | General hot water



Products

Units : CO_2 Heat pump water heater
Model : CHP-80Y2
Numbers : 2 units

In this premises, 5 m^3 steam tank × 2 units are reused as hot water storage tanks. 13m^3 of hot water a day is supposed to be consumed in 90℃ output conversion. This is an amount which a unit of CHP-80Y2 capacity meets, but another unit was set as a back-up. Approximately 320,000 yuan as an annual energy cost was spent t even in summertime, but now the 70% of it is planned to be reduced by the installation of Eco-Cute.

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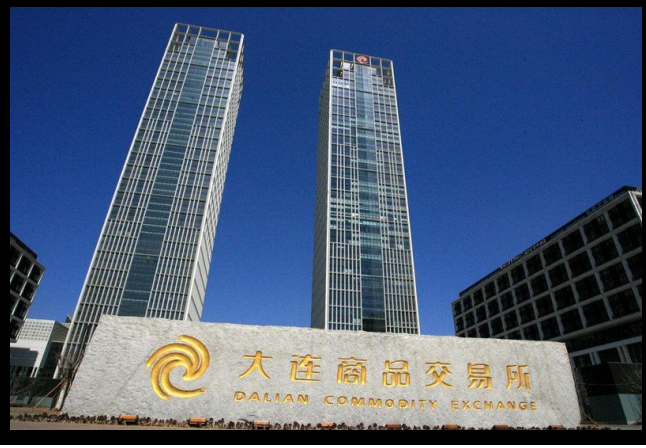
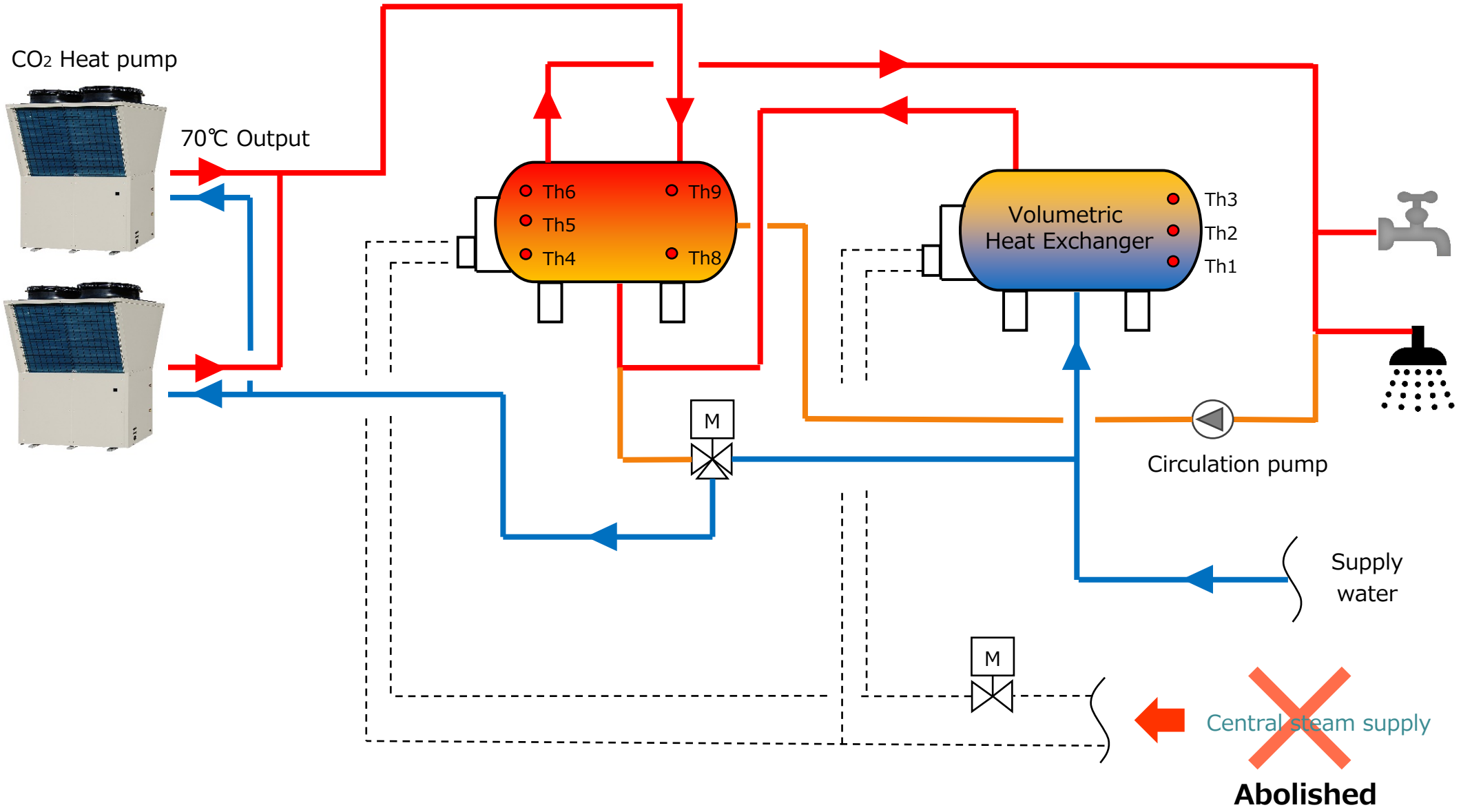


Dalian Futures Center (China)

Office building | General hot water



Nightingale Apartment (Australia)

Apartment

hot water supply・heating

Apartment

Nightingale Apartment

The constant population growth and cost increase of houses in main cities of Australia are now creating the need of affordable and ecological multi-dwelling complexes.
2 units of Itomic CO2 heat pumps were adopted for this notable Eco-apartment, which is promoting sustainability, affordability, and contribution to the community environment.

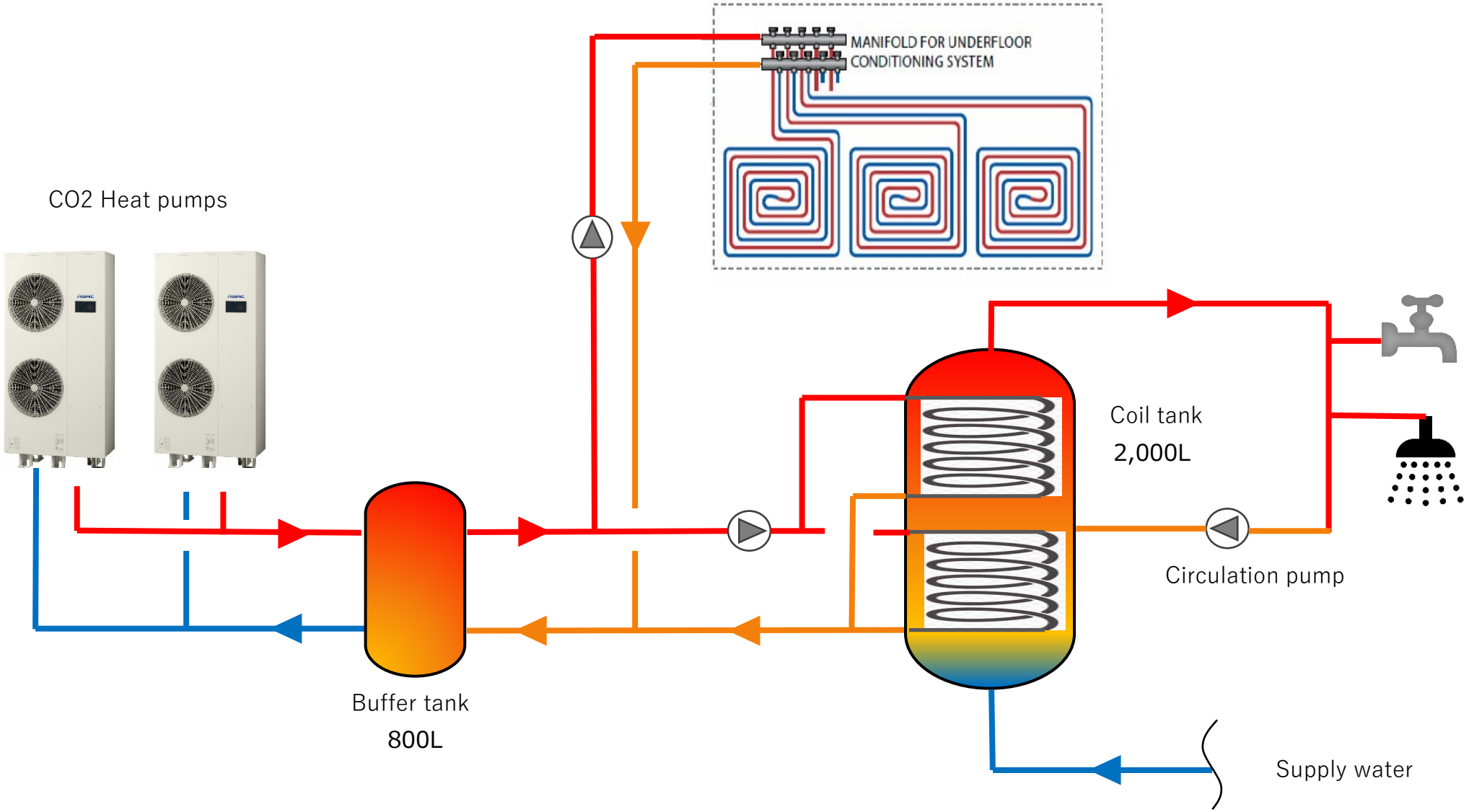
Products

Unit : CO_2 Heat pump water heater
Model : CHP-15H
Numbers : 2

Nightingale Apartment (Australia)

Apartment

hot water supply・heating



Apartment

Yarra's Edge

Having gained a reputation as one of the city's most unique residential developments, Yarra's Edge offers 175 apartments throughout its 32 floors in Melbourne.

Despite rave reviews, the building needed to improve its energy efficiency and reliability of hot water heating system. A hybrid system was introduced, and Itomic CHP-15H was installed with boilers, thus reducing the overall energy cost and enhancing the stability of water heating system.

Yarra's Edge (Australia)

Apartment | General hot water

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Products

Unit : CO_2 Heat pump water heater

Model : CHP-15H

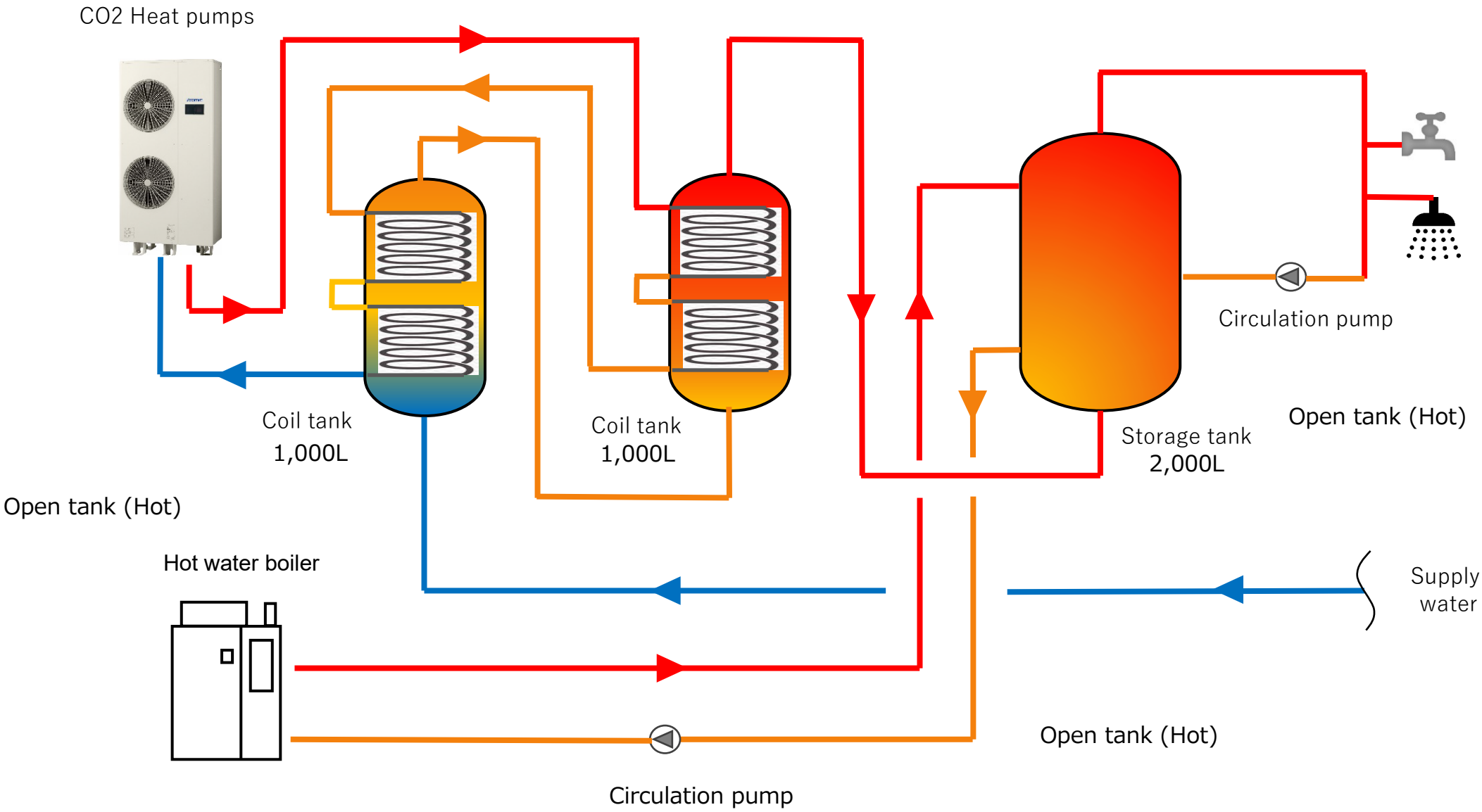
Numbers : 1

A hybrid system features condensing boilers, Itomic Eco-Cute, and twin coil storage tanks. The heat pump provides hot water for peak morning use, and the accompanying boilers recharge the tanks when needed during the day, ready for the evening, another peak load period. Eco-Cute takes advantage of the off-peak electricity tariff, together, the inbuilt timers also shut the boiler off during the night, allowing for great economic and sustainable efficiency.

Yarra's Edge (Australia)

Apartment

General hot water



Industry

Brown Brothers Winery

This vineyard remains one of Australia's leading wine companies, with experience in crafting wine since 1885, harvesting 18,000ton and produces more than 100 kinds a year. A CO2 heat pump was adopted to heat water to the specific variable temperatures required for producing their vintage wines, resulting in the drastic energy cost reduction.

Products

Unit : CO_2 Heat pump water heater

Model : CHP-80Y

Numbers : 1

CO_2 Heat pump water heaters Installations

Sales of All Over the World **4000 units**





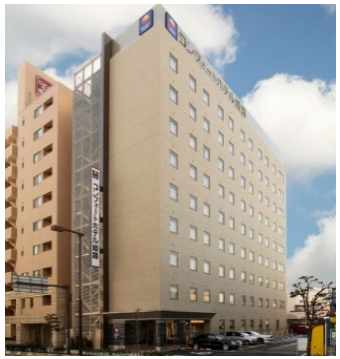























ITOMIC
Innovative hot water solutions