Introduction of Panasonic CO_2 refrigeration system

Panasonic Corporation
Refrigeration and Air-Conditioning Devices Business Division

【New Model 】 Outdoor Small Size CO_2 Refrigeration Unit

● CO_2 Refrigeration Unit (2HP) Spec.

MODEL		OCU−CR200VF
Rated Output		1.6 kW
Rated Electricity (primary)		3Ph 200V 50Hz / 60Hz
Refrigerant		R744 (carbon dioxide)
Ambient Temperature		-15℃ ～ +43℃
Evaporating Temperature		-45℃ ～ -5℃
Designed Pressure		High:12MPa / Low: 8MPa
Airtight Testing Pressure		High: 8MPa / Low: 8MPa
Compressor	Type	2-stage compression mechanism (High pressure in the compressor case)
	Drive System	DC Inverter
Dimensions (W x D x H)		900 x 350 x 930 mm
Weight		67 kg

【New Model 】 Outdoor Medium Size CO_2 Refrigeration Unit

● CO_2 Refrigeration Unit (10 HP) Spec.

MODEL		OCU−CR1001VF
Rated Output		7.3 kW
Rated Electricity (primary)		3Ph 200V 50 / 60Hz
Refrigerant		R744 (carbon dioxide)
Ambient Temperature		-15℃ ～ +43℃
Evaporating Temperature		-45℃ ～ -5℃
Designed Pressure		High:12MPa / Low: 8MPa
Airtight Testing Pressure		High: 8MPa / Low: 8MPa
Compressor	Type	2-stage compression mechanism (Intermediate pressure in the compressor case)
	Drive System	DC Inverter
Dimensions (W x D x H)		890 x 890 x 1856 mm
Weight		310 kg

【New Model 】 Outdoor Medium Size CO_2 Refrigeration Unit

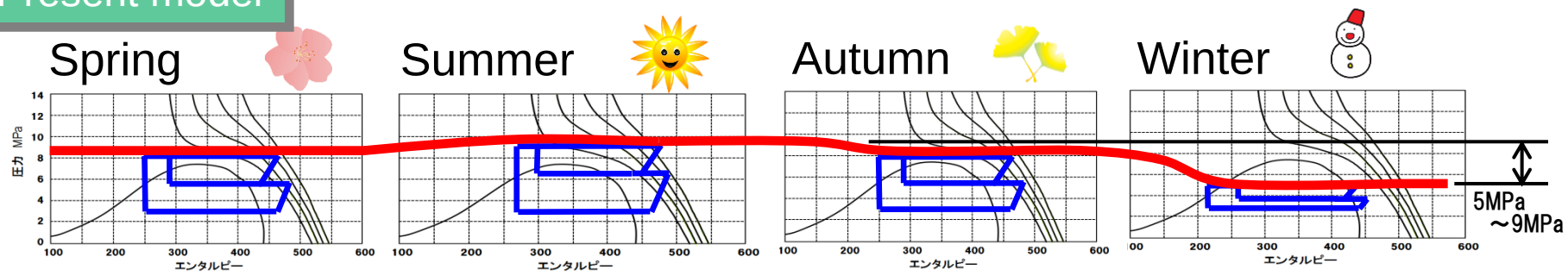
● CO_2 Refrigeration Unit (10 HP Side Flow) Spec.

MODEL		OCU−CR1000VF
Rated Output		7.3 kW
Rated Electricity (primary)		3Ph 200V 50 / 60Hz
Refrigerant		R744 (carbon dioxide)
Ambient Temperature		-15℃ ～ +43℃
Evaporating Temperature		-20℃ ～ -5℃
Designed Pressure		High:12MPa / Low: 8MPa
Airtight Testing Pressure		High: 8MPa / Low: 8MPa
Compressor	Type	2-stage compression mechanism (Intermediate pressure in the compressor case)
	Drive System	DC Inverter
Dimensions (W x D x H)		1350 x 586 x 1260 mm
Weight		265 kg

Solutions -Development of Pressure adjust control

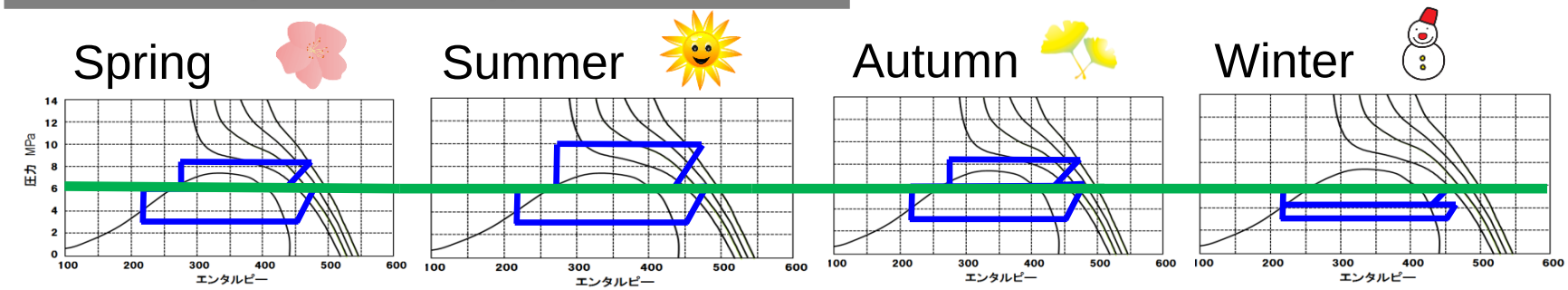
Comparison of the annual operating pressure behavior

Present model



- Pressure to showcase fluctuate 5MPa～9MPa with the season.
- Airtight examination pressure of the construction plumbing 12MPa.

Pressure adjust control type【New model】

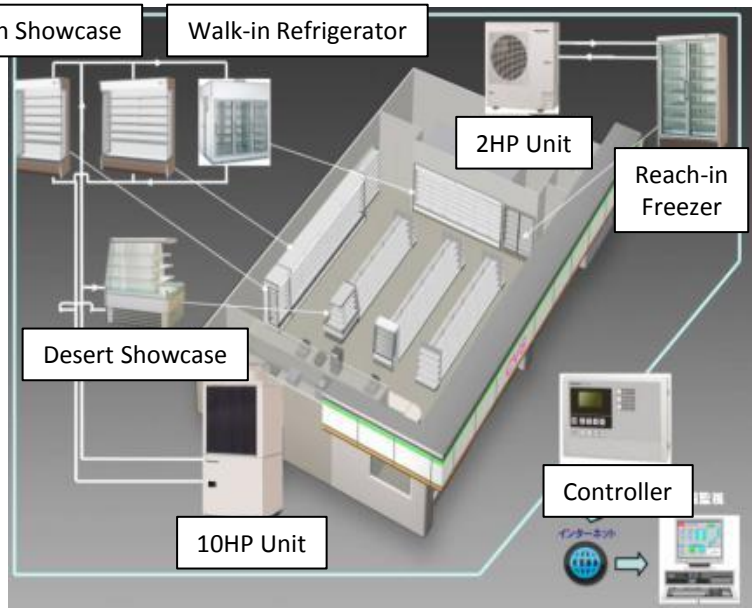


- Pressure to showcase is controlled constant about 6MPa in all season.
- The necessary refrigerant quantity in a refrigerating cycle is stable in all season.
- Airtight examination pressure of the construction plumbing 8MPa.

CO_2 refrigeration system covers environmentally friendly small format stores

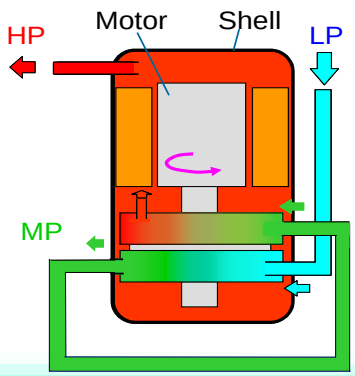
Convenience Store, Sales Floor Area: 150m²

Outdoor Unit	Showcase
10HP (Refrigerator)	Open Showcase **(Total width 28 feet)** Desert Showcase Walk-in Refrigerator (6 or 7 doors)
2HP (Freezer)	Reach-in Freezer (2 or 3 doors)

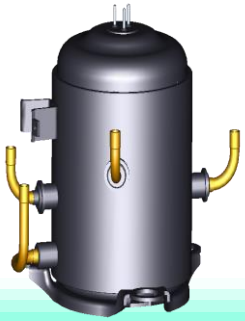


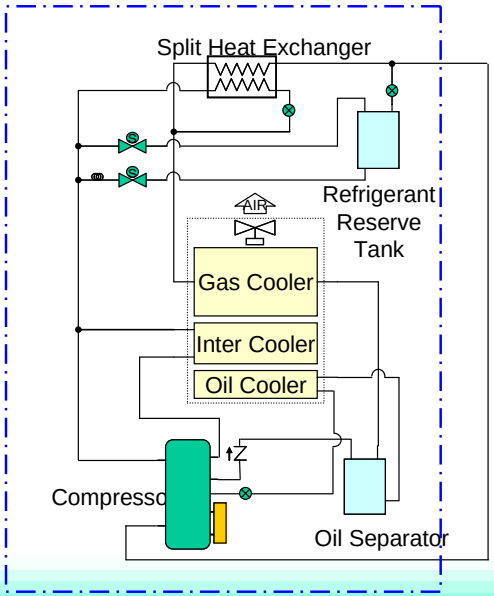
◆ Key Technologies

Compressor Mechanism (HP Shell type)

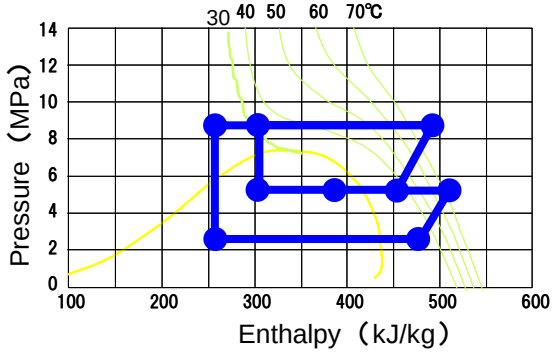


2HP



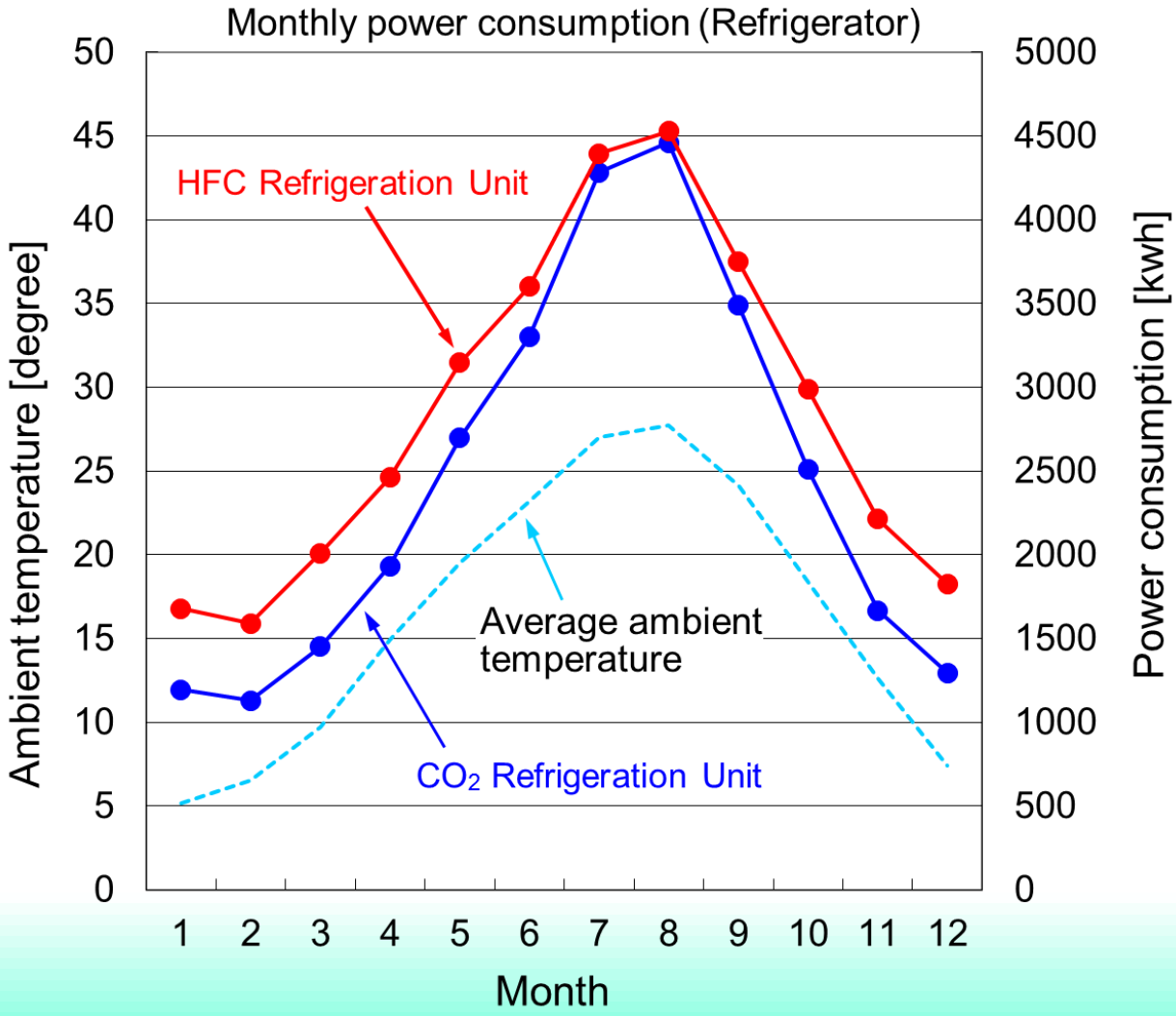


Split Cycle



Benefit – Reduce Energy Consumption

The actual installed example in the Kyushu region

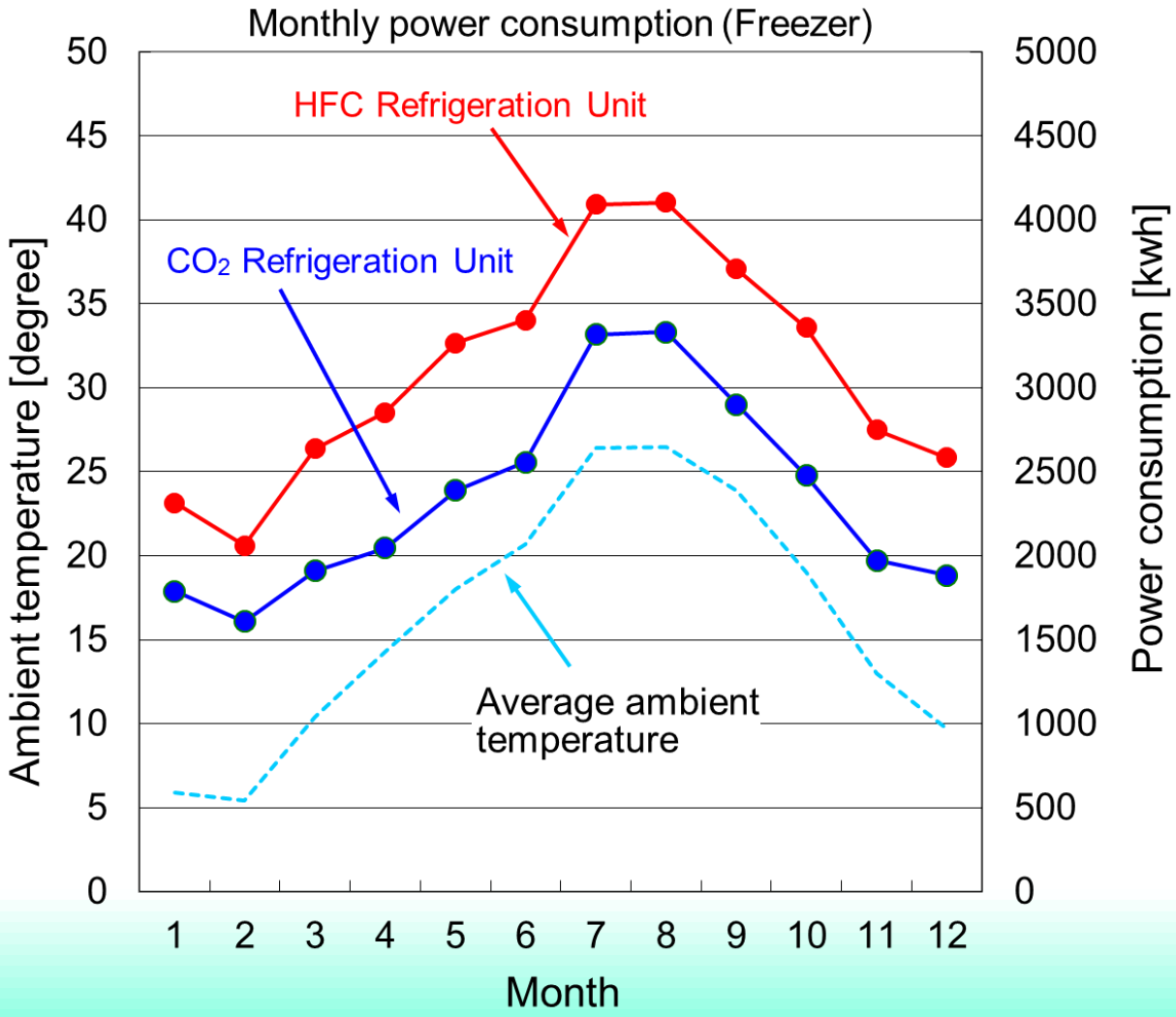


Efficiency 16.2% better

* 12.9%-18.2%,
6 stores on Average

Benefit – Reduce Energy Consumption

The actual installed example in the Kansai region



Efficiency

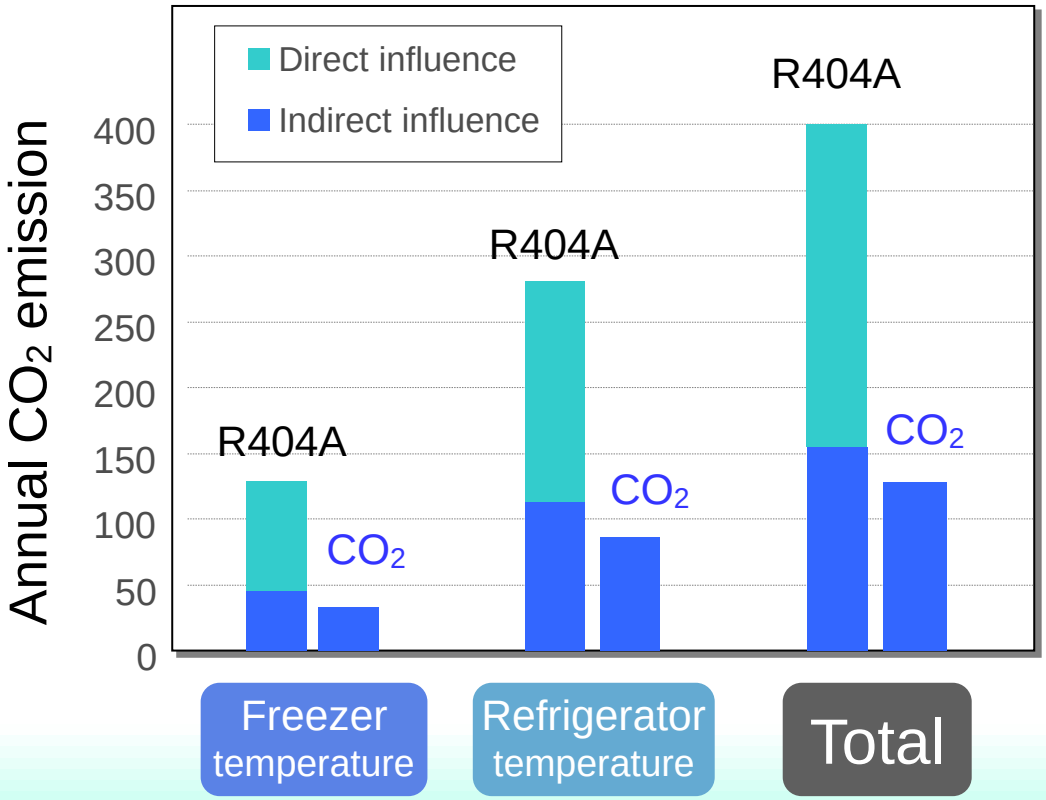
25.4% better

* 17.4%-32.2%,
6 stores on Average

Benefit – Reduce CO_2 Emission

Direct influence of CO_2 refrigerant 'almost zero'

Comparison of R404A and CO_2 Refrigeration Unit



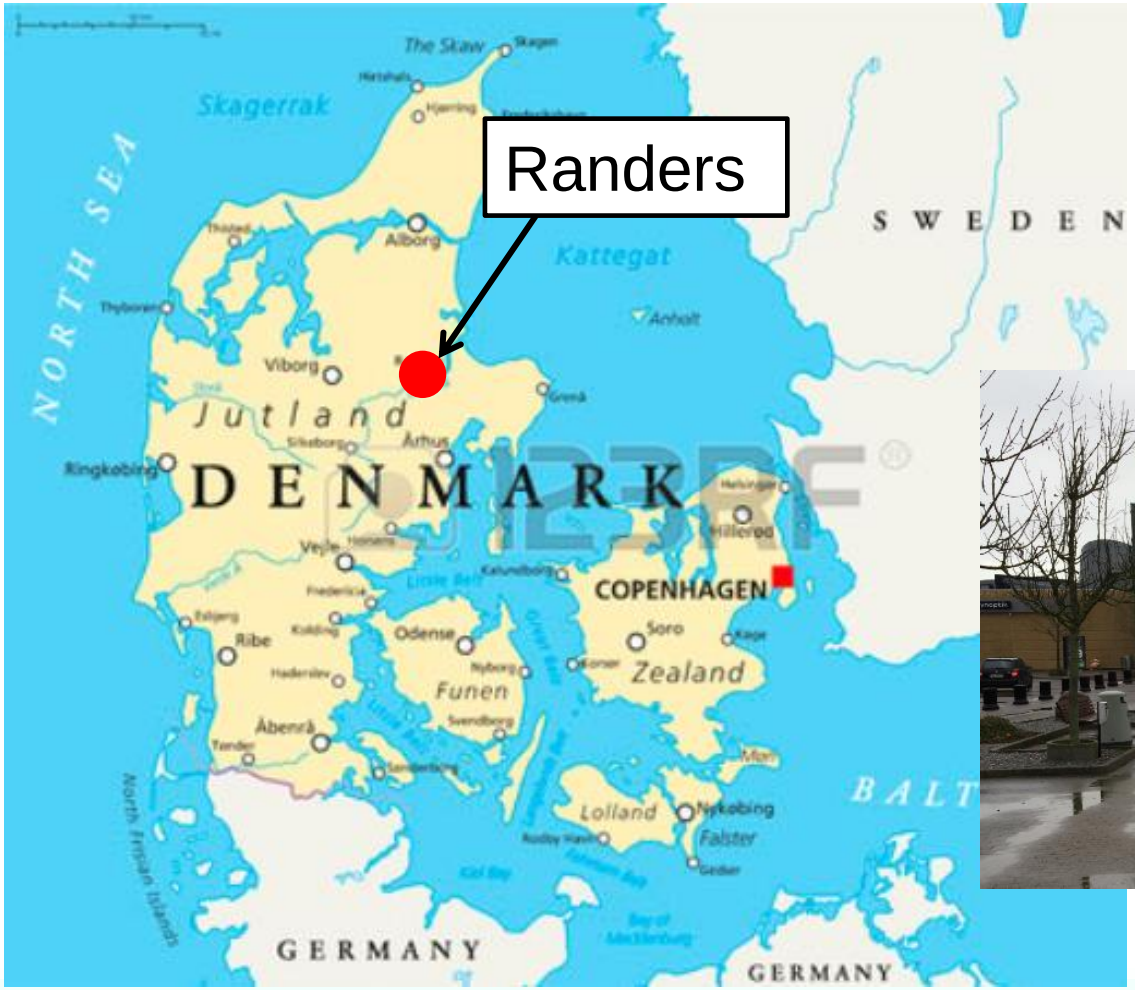
Freezer Temperature **71%**

Refrigerator Temperature **65%**

Annual CO_2 emission

67% reduction

Field Test performed in Denmark



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Field Test performed in Denmark

Installation

Freezer

Size room	4.0m x 4.5m x 2.4m

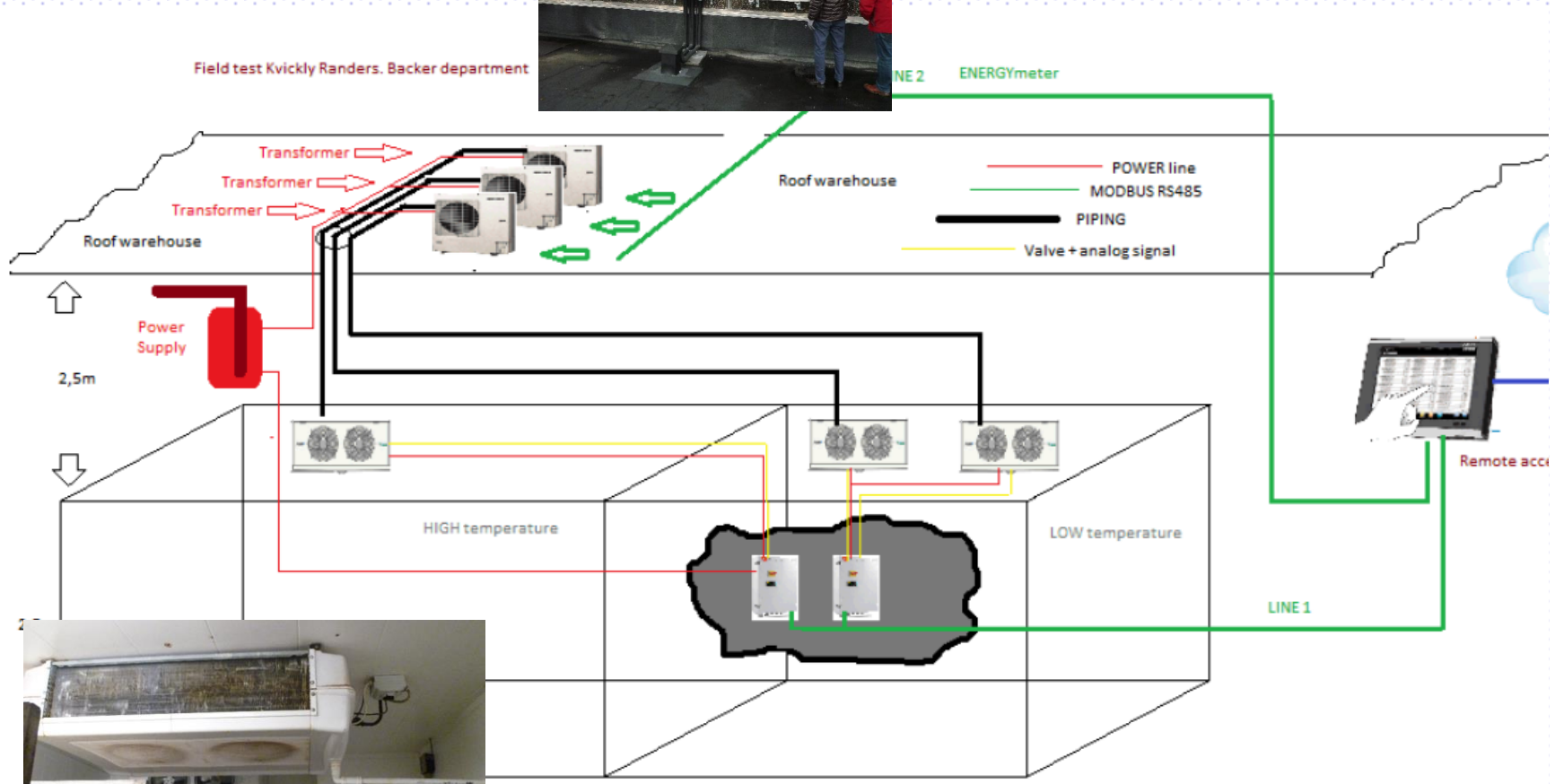
Freezer for low temperature.
Capacity need 2 x 2HP units.

Cold Room

Size room	4.0m x 4.5m x 2.4m

Cold room for medium temperature.
Capacity needed 1 x 2HP unit.

Field Test performed in Denmark



Field Test performed in Denmark


Panasonic