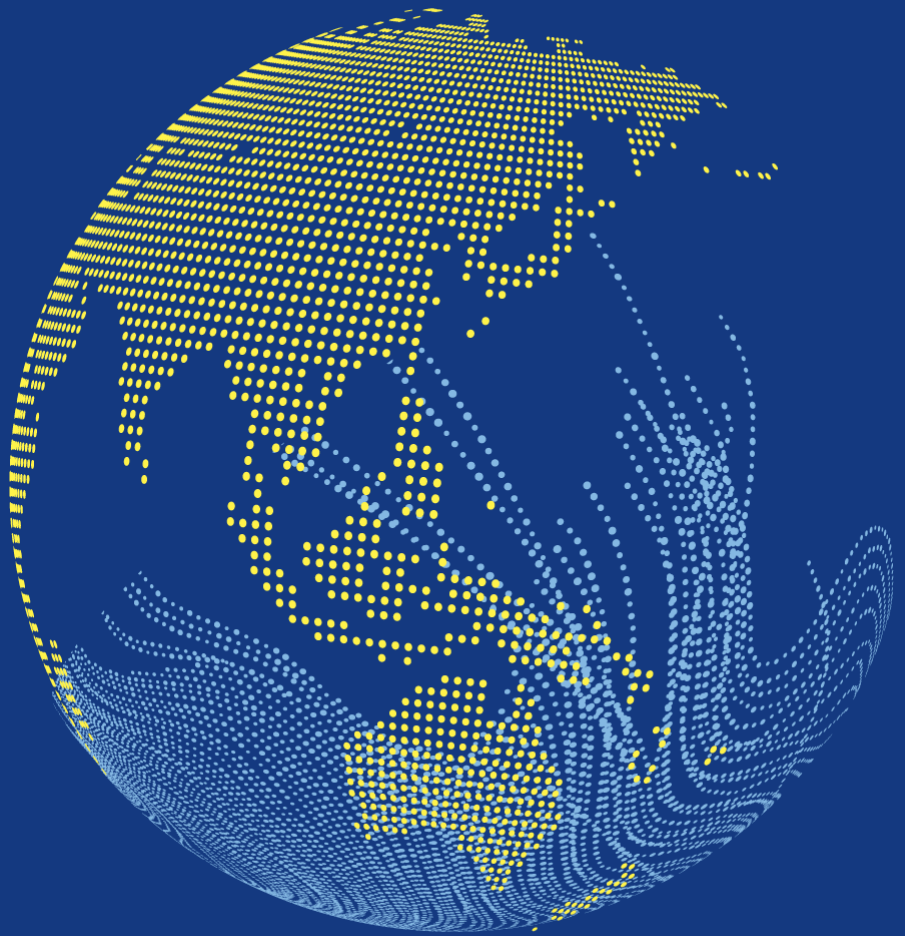
ATMOsphere JAPAN

Business Case for Natural Refrigerants



12/02/2019

TOKYO

An Approach for Introducing Equipment Using Natural Refrigerant at Co-ops

Japanese Consumers' Co-operative Union (JCCU)

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About Co-op and JCCU

What is Co-op?

- Consumer' cooperative. Established by the "Consumer Cooperatives Act" (under the jurisdiction of Ministry of Health, Labour and Welfare (MHLW))
- Mostly "Regional purchase co-ops" which run retail outlets and home delivery. Others include university based co-ops, institutional (workplace based) co-ops, medical co-ops, and such.
- Every co-op is a local organization, and it ranges widely in size from massive to small

Overview of regional purchase co-ops (2017)

- Total number of union members: approx. 22 million
- Subscriber household rate: approx. 38% (national average)
- Combined turnover: approx. JPY 2.8 trillion
- Food retail market share: approx. 2.7% (estimate)
- Number of retail outlets: 967 stores

What is JCCU?

- Japanese Consumers' Cooperative Union. Co-ops across Japan join in this National Federation (established in March, 1951)
- Number of member co-ops: 324
- JCCU is a different corporate body with regional co-ops which collaborate loosely within JCCU (not a hierarchical relationship).

Major activities of JCCU

- Develops and wholesales "CO-OP products" as a private brand
- Promotes social activities such as environment, welfare, and consumer education
- Supports various activities of member co-ops
- Implements activities as an "industry association" of co-ops (such as policy, PR, external affairs, international affairs, and joint activities with other organizations)

Background of introducing natural refrigerant equipment

International movement (The Montreal Protocol, the Kyoto Protocol)

- Production of specified fluorocarbons (HCFC) will be terminated by 2020 (The Montreal Protocol: 1987)
- Alternative fluorocarbons (HFC) are specified as greenhouse gas that is to be reduced (The Kyoto Protocol: 1997)
- Countries internationally agreed that alternative fluorocarbons (HFC) are to be reduced in stages (The Kigali Amendment: 2016)

Domestic movement (Enforced the Act on Rational Use and Proper Management of Fluorocarbons and offer subsidies)

- Management and inspection are made obligatory by enforcing the Act on Rational Use and Proper Management of Fluorocarbons => Effective to encourage changeover to natural refrigerants
- Government subsidies for installation of natural refrigerant equipment (to refrigerated warehouse or retail outlets)

Movement of other progressive distribution companies

- LAWSON => Over 3,500 stores are expected to install CO2-refrigerant equipment no later than the end of February 2019. (ATMOsphere Asia 2018)
- AEON => Natural refrigerant declaration; Natural refrigerant equipment is to be installed in all of new stores. (ATMOsphere Asia 2016)

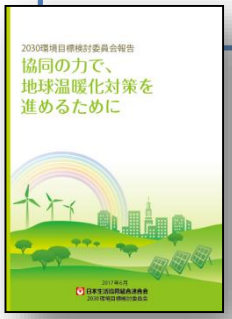
Develop a plan of reducing the total amounts of greenhouse gas within co-ops

- Goal: at the time of 2020, the total amounts of CO2 emission are to be reduced by 15% compared with FY2005 (the rate of reduction in FY2017 was approx. 20%)
- Goal: at the time of 2030, the total amounts of CO2 emission are to be reduced by 40% compared with FY2013 (Will be started from FY2021) => Although CFC is not specified as reduction-target gas in this plan, co-ops work on equipping natural refrigerants; and the rate of installation is considered as KPI. This is because the scope has a chance to be expanded in the future, and the approach could lead to energy saving.

<Supplementary information> A road map for the reduction plan of greenhouse gas by 2030

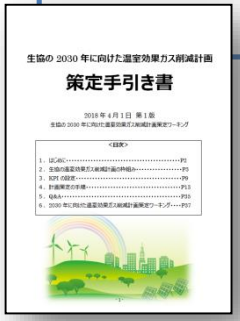
FY2016

Determined goals in "2030 Environmental Goal Exploratory Committee"
2030: the total amounts of CO2 emission are to be reduced by 40% compared with the reference year (the ref. year: 2013)
(2050: Will be reduced by 90%)



FY2017

Developed a reduction plan for seven co-ops being ahead of other co-ops.
Based on knowledge obtained when making the plan, prepared a planning guide (a plan for across-the-country co-ops is to be developed next).



FY2018

Developed a plan for across-the-country co-ops.
Conducted seminars for nationwide planning based on the guide.
Across-the-country co-ops launch actions for planning.

FY2019

JCCU aggregates the plans developed by across-the-country co-ops
Take the actual result of emission amount in FY2018 into consideration
Also aggregates reporting of 5 KPIs

5 KPIs
(1) Rate of energy-saving
(2) Rate of introduction of renewable energy
(3) Emission amount by turnover
(4) Rate of introduction of next-generation vehicles
(5) Rate of installation of natural refrigerant equipment

FY2021

"2030 Plan" will be started

FY2030

Review the plan every three years
Review the possibilities for expanding the scope in which CFC refrigerants are also specified as target of CO2 emission amount reduction.
***From the perspective of implementing an energy-saving measure and reducing the effects on the environment, installation of natural refrigerants is still recommended.**

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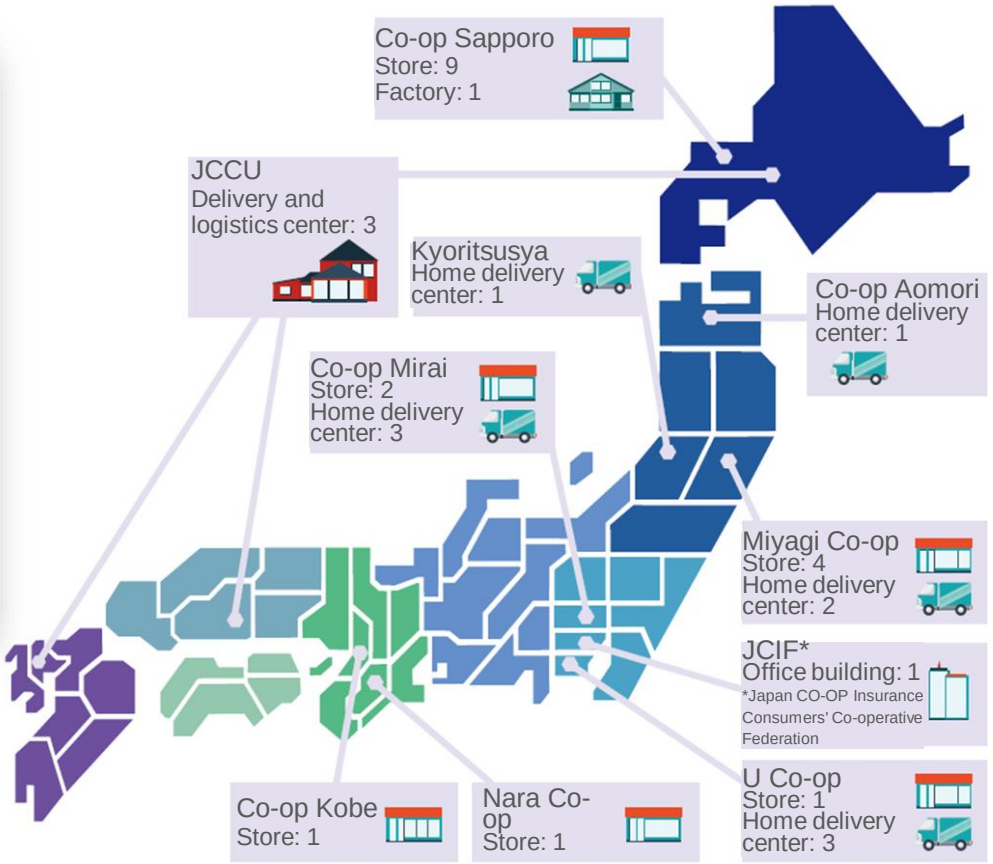
Introduction situation of natural refrigerant equipment (as of FY2016)

(Plan) Install natural refrigerant equipment in 33 places in total

Stores (CO2 refrigerators)	18
Home delivery centers (CO2 refrigerators)	10
Delivery and logistics centers (Ammonia / CO2 refrigerators)	3
Factories (Ammonia / CO2 refrigerators)	1
Office buildings (Water-refrigerant adsorption refrigerators)	1

- Took advantage of subsidies for almost all installation
- Introduced natural refrigerant to new stores than refurbished stores

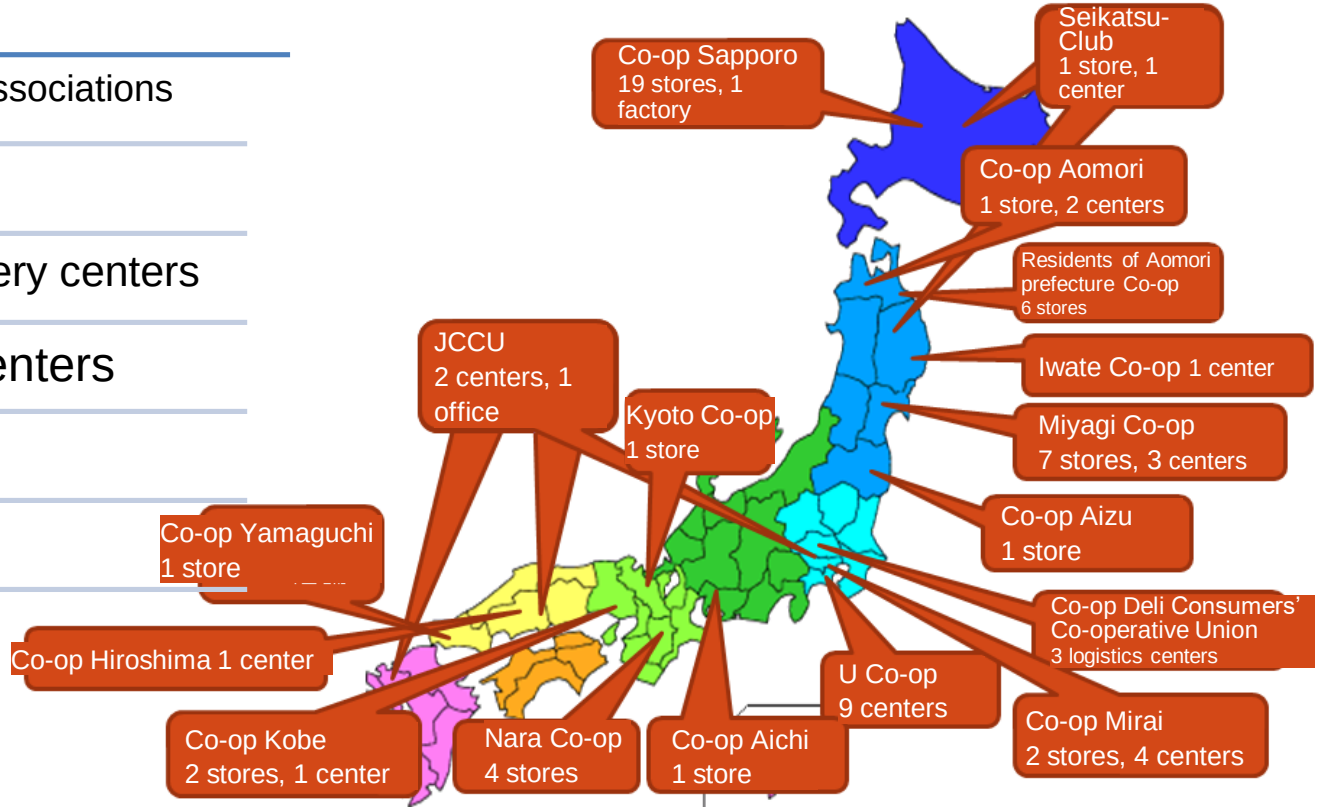


Figures are referred from "Accelerate Japan" vol.8

Introduction situation of natural refrigerant equipment (as of February 12, 2018)

Installed at 75 places in total

- 17 Co-ops and associations
- 47 Stores
- 21 Home delivery centers
- 5 Logistics centers
- 1 Factory
- 1 Office



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*For numbers, data provided by Panasonic Commercial Equipment Systems Co.,Ltd. is referred.

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Introduction examples (stores and logistics centers)

Introduction example for stores (Co-op Mirai)

CO2 refrigerant showcases in Fuchu-Kotobukicho Branch store of Co-op

CO2 refrigerators installed on the rooftop

Introduction example for logistics facilities (JCCU, CX-Cargo Corporation)

Onomichi Refrigerated Distribution Center in Hiroshima

Ammonia / CO2 refrigerators of Onomichi Refrigerated Distribution Center

Issues and activities we will work on from now

Issues when expanding introduction (based on hearing from members as of 2016)

- Expensive cost (initial cost and maintenance cost)
- Unavailability of subsidies (Construction period as a condition of application is limited. The scope of target is expected to be limited only to logistics facilities in the future.)
- Construction period is too long (it takes 4 to 5days so that only new stores can be equipped)
- Concerns about safety and noise

Activities we will work on from now

- Offer a platform to exchange information among co-ops
- Encourage installation of natural refrigerant equipment along with efforts to reduce greenhouse gas

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Thank you for listening.