

Aeon's activities to expand the installation of natural refrigerants

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Aeon Co., Ltd.

Corporate Citizenship Dept.

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1. Aeon Group Overview

- Establishment : September 1926
- Capital : ¥220.07 billion
- Operating revenue : ¥6395.1 billion
- Number of Group company : around 300
- Number of stores/locations : 18,008

The number of stores and offices, including consolidated subsidiaries and equity-method affiliates (End of FY2013)

General Merchandise Store	611
Supermarket	1,977
Discount Store	353
Home Center	122
Convenience Store	4,581
Specialty Store	3,853
Drugstore	3,559
Other Retail Store	783
Financial Service	641
Service Business	1,519
Other Business	9
Total 18,008 stores/locations	

* Including affiliated companies

12 business in
13 countries



GMS(総合スーパー)事業



SM(スーパーマーケット)事業



DS(ディスカウントストア)事業



小型店事業



ドラッグ・ファーマシー事業



総合金融事業



ディベロッパー事業



サービス事業



専門店事業



エコマース事業

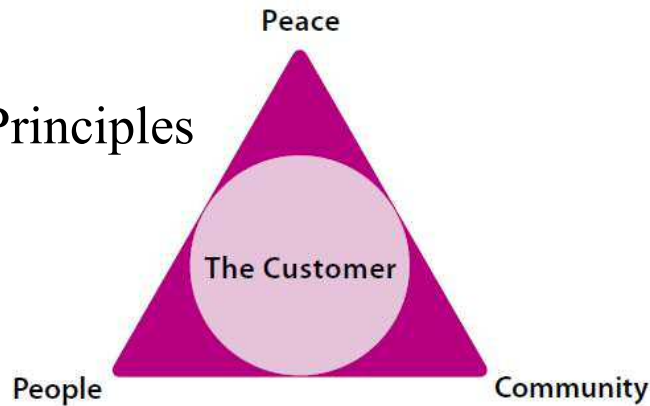


アセアン事業



中国事業

Aeon Basic Principles



Aeon abides by the unchanging principles of “pursuing peace, respecting humanity and contributing to local communities, always with the customer’s point of view as its core.”

The "Aeon Commitment" was established to help us implement these principles and to guide us in our practice of the Customer-First philosophy

Aeon Sustainability Principle

Aeon aims to realize a sustainable society with stakeholders based on our basic principle of “pursuing peace, respecting humanity and contributing to local communities, centered on customers.”

With “realization of a low-carbon society”, “conservation of biodiversity”, “effective use of resources”, and “dealing with social matters” as pillars, we will think globally and act locally.



2. Aeon Declaration on Natural Refrigerants

- Aeon Declaration on Natural Refrigerants was publicly committed to contribute to the low carbon society in Nov 2011.
- We will introduce facilities with natural refrigerants(CO2) at all our new stores while converting to natural refrigerants at about 3,500 existing stores overtime.



GMS
General Merchandising Store



Supermarket



Small Supermarket



Convenience Store
私たちが大切にしています
私たちはイオンです

3. Installation of facilities with CO2 refrigerants

CO2 refrigerant installation at Aeon group supermarkets



Year	Store Name	Area	Descriptions
2009	Max Valu Rokugodotemae	1426㎡	Energy saving & CO2 reduction
2010	Max Valu Ogoritanabatadori	2192㎡	
2011	Max Valu Aeon Town Himeji	2400㎡	

Energy saving effect was confirmed, so installation expansion was viable.

▶ Energy saving: about 10%

▶ CO2 reduction: about 50%

3. Installation of facilities with CO2 refrigerants

Format	Store	Name	Descriptions
Supermarket	Max Valu Shinfunabashi	1900m ²	Installed as a part of the project of HCFC alternative by the Ministry of Economy, Trade and Industry
	Max Valu Hamakitanakase	2193m ²	
	Max Valu Kasugaisakashita	2229m ²	
	Max Valu Amagasakikinrakuji	1509m ²	
	Max Valu Shinmiyakojima	1800m ²	

▶ Energy saving: about 20% ▶ CO2 reduction: about 50%

CVS	Ministop Yachiyo Industrial Park	107m ²	Energy Saving: about 30%* (*Freezer cases of Ministop)
DS	Acolle Takashimadaira	338m ²	

Safety, Stability, Energy saving (=reduction of operating cost) and CO2 reduction were confirmed.

4. Introduction to large GMS in 2013

【AEON Mall Makuhari New City

※Opened on Dec. 12, 2013



■ Outline of the AEON Mall

- Site area: about 192,000m²
- Floor space: about 128,000m²

■ Outline of the AEON GMS

- Direct operation area: about 21,500m²
- Food section area: about 5,200m²

■ CO2 refrigerants data of at this store

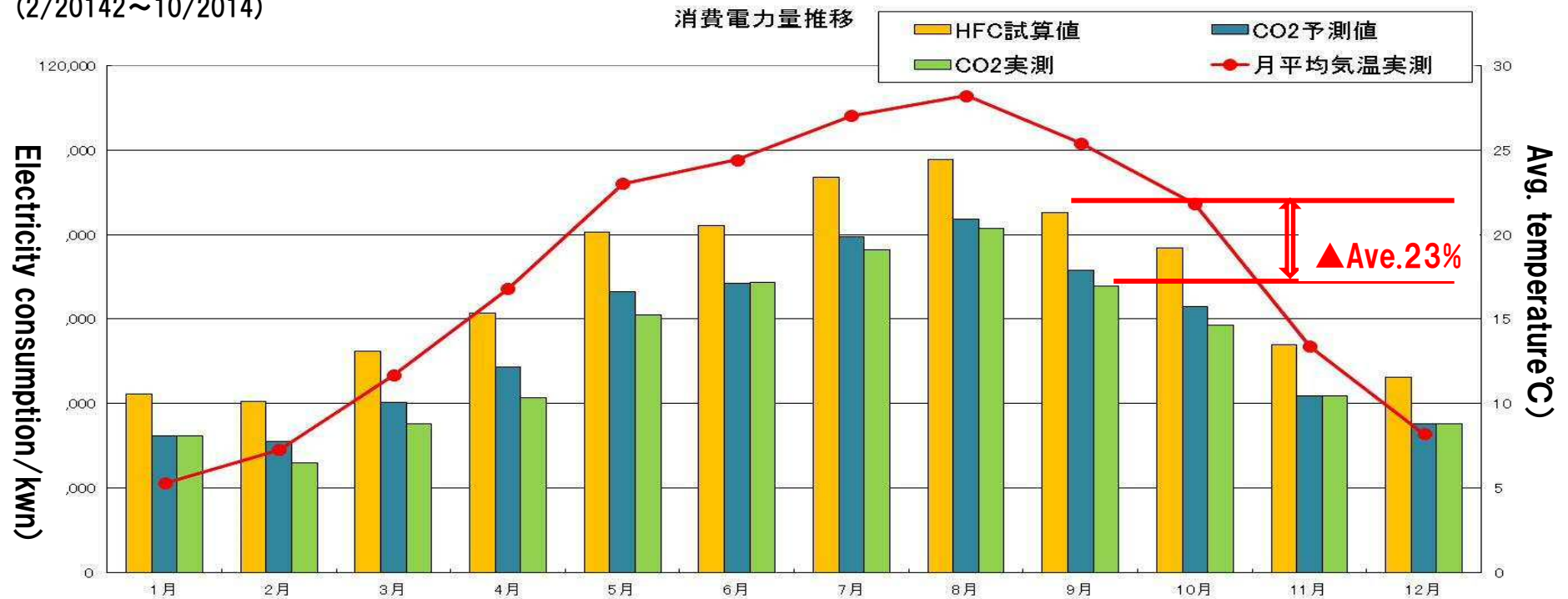
- # installed: 20 systems
- # of refrigeration with CO2 refrigerant: 44 cases (/Total 182 cases)
- Estimated Energy saving effect: about 20% compared to HFC refrigerant
- Estimated GHG emissions reduction: 813 CO₂-t
- Indirect CO₂ reduction: 60 CO₂-t/ Direct GHG reduction: 753 CO₂-t

AEON Corporate Citizenship 4. The result of CO2 refrigerant installation

Aeon Makuhari New City GMS (Opened in Dec. 2013)

Energy saving effect of refrigerator with CO2 refrigerant

(CO2 refrigerant: Actual number
HFC refrigerant : Estimated number of 404A
Comparison data with 20 refrigerator systems
(2/2014~10/2014)



month	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月	年間
CO2/HFC*	77%	64%	67%	68%	76%	84%	82%	83%	79%	76%	77%	76%	77%

8 *Corrected based on the actual temperature

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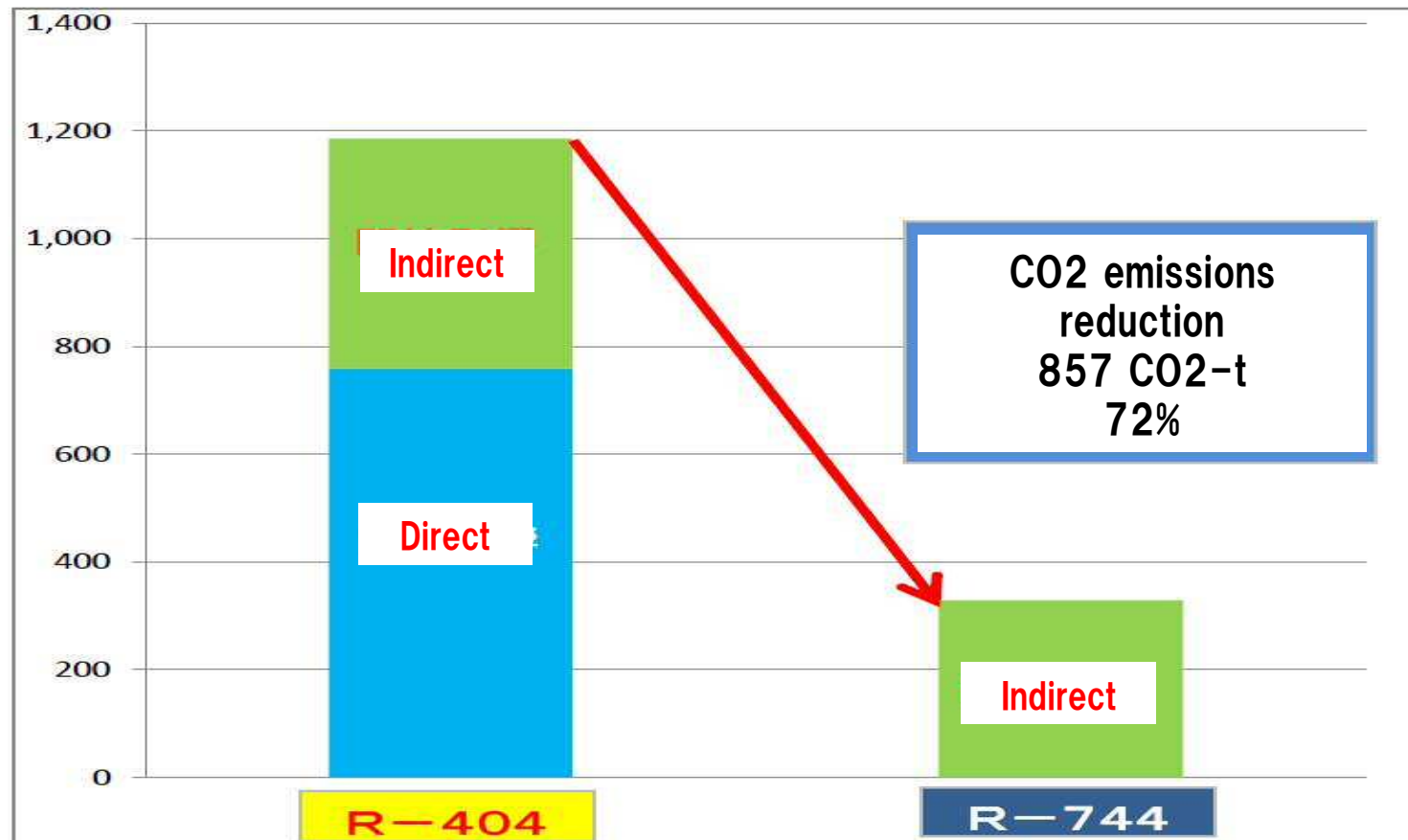
AEON Corporate Citizenship CO2 reduction effects of Aeon Makuhari New City GMS

- Comparison data with 20 refrigerator systems (2/2014~10/2014) -

Potential number for Global warming with CO2 refrigerant is almost equal to 0.

GHG reduced by 20% as total of direct and indirect emissions

*Direct emissions: Global warming effect by Refrigerant leakage



Direct emissions: annual electricity consumption (kwh) * Emission factor 0.000525 CO2-t/kwh

Indirect emissions: sealed refrigerant amount * GWP 3920 / 1000

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5. Issues regarding expanding the installation

Strict regulation and cost are the major issues

Issues	Possible Measures (example)
Regulation and Cost issues (High Pressure Gas Safety Act)	
<p>CO2 is required to be treated as propane, though it is an inactive gas.</p> <ul style="list-style-type: none"> - Smaller size: the Act <u>is not applicable</u> <p>The installation number of refrigeration unit will increase.</p> <ul style="list-style-type: none"> - Desired size: the Act <u>is applicable</u> <p>The spec for active gas is required. => resulting in high cost</p>	<ul style="list-style-type: none"> • Trim weight of high intensity steel pipes with the collaboration of manufactures. • As for freezer cases, saving energy effect was confirmed by 20-30%. The reduction of operating cost can be the driver to increase the number of stores with natural refrigerant freezer cases.
Technological issues	
<p>Noise control (for the installation in urban areas)</p>	<p>Improve the soundproof technique</p>

6. The direction to solve the obstacles

(1) Solve the obstacles with the collaboration of stakeholders

(2) Demand to the government

1. The policy to encourage manufactures' and installation suppliers' technological innovation to shift toward natural refrigerants.

2. Easing of regulations and preferential treatment to encourage technological development

(3) Correspondence to revised Freon law

Establishment of the regime



Thank you for your attention

