

Aeon's activities to expand the installation of natural refrigerants

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Aeon Co., Ltd.

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Outline

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1. About Aeon (As of Feb. 29, 2013)

- Foundation : 1926
- Sales amount: ¥5,685 billion
- Number of company: 2 2 7
- Number of store: 598

General Merchandise Store	1,708		
Supermarket & SUPERCENTER		2	6
Discount Store		1	5 2
Home Center		1	2 3
convenience store	4 ,	4	6 2
Specialty Store	3 ,	6	6 4
Others		5	6 2
Financial Services		5	2 7
Service	1 ,	3	9 4
合計	13 ,	21	7



Number of customers:
4 million / day

2. 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.

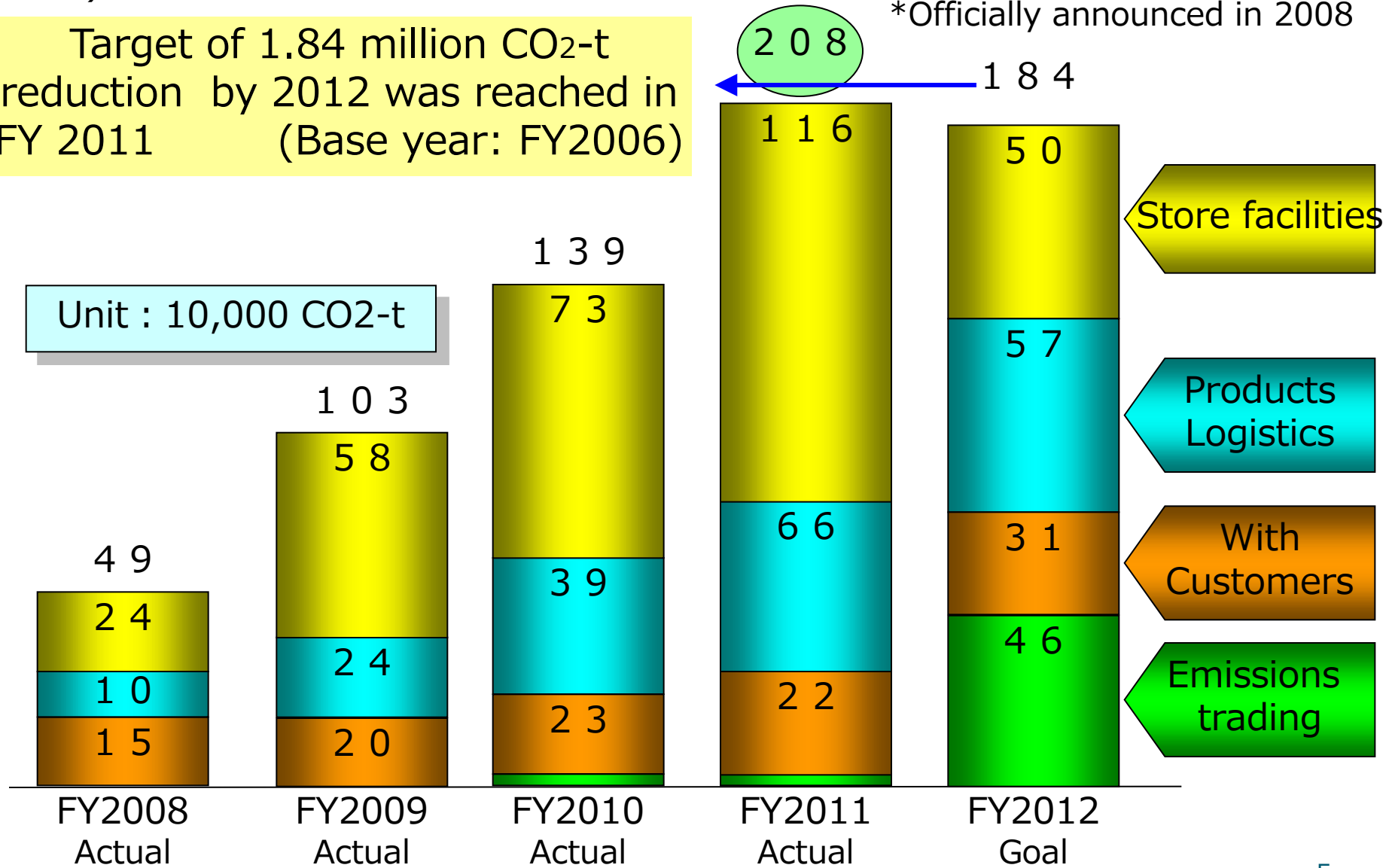


2. Aeon declaration on preventing global warming

(2008*)

Target of 1.84 million CO₂-t reduction by 2012 was reached in FY 2011 (Base year: FY2006)

*Officially announced in 2008



4 . 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



CVS

Convenience Store

5. Installation of facilities with CO2 refrigerants

CO2 refrigerant installation at Aeon group supermarkets



Year	Store Name	Area	Descriptions
2009	Max Valu Rokugodotemae	1426 m ²	Safety Stability Energy saving CO2 reduction
2010	Max Valu Ogoritanabatadori	2192 m ²	
2011	Max Valu Aeon Town Himeji	2400 m ²	

Repeated verification
to accelerate introduction

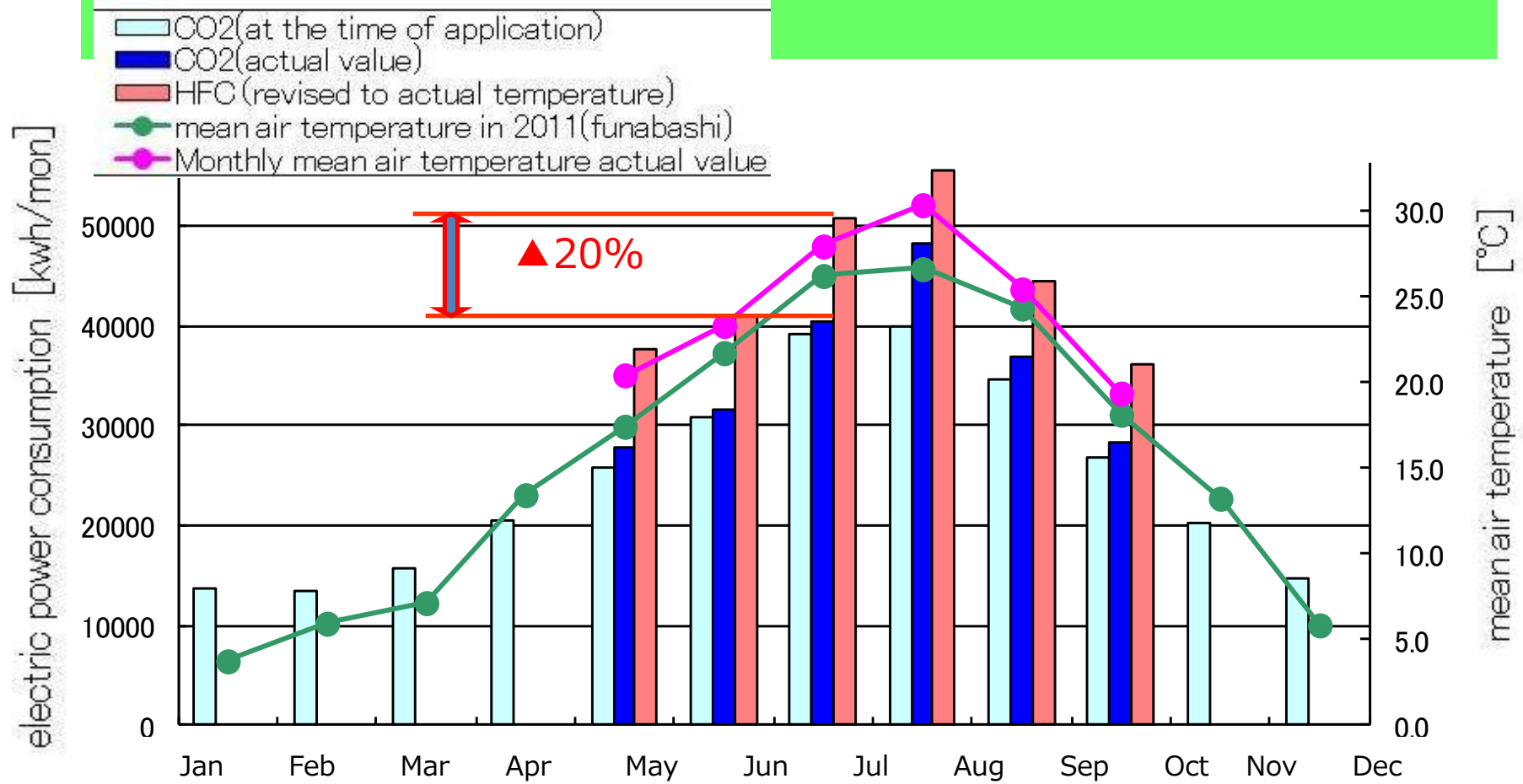


Safety & Stability
Energy saving: about 10%
CO2 reduction: about 50%

5. Installation of facilities with CO2 refrigerants

Form at	Store Name	Area	Year	Descriptions
Supermarket	Max Valu Shinfunabashi	1900m ²	2013	Installed as a part of the project of HCFC alternative by the Ministry of Economy, Trade and Industry
	Max Valu Hamakitanakase	2193m ²	2012	
	Max Valu Kasugaisakashita	2229m ²	2012	
	Max Valu Amagasakikinrakuji	1509m ²	2012	
	Max Valu Shinmiyakojima	1800m ²	2012	
CVS	Ministop Yachiyo Industrial Park	107m ²		Energy Saving: about 30%* (*Freezer cases of Ministop)
DS	Acolle Takashimadaira	338m ²		

MV Shin-Funabashi(April 2013 Open)
 Inspect of energy saving effect in high temperature and humidity Progress of electric power consumption (May-Oct)



	Jun	Jul	Aug	Sep	Ave
CO2(actual value)/HFC (revised to actual temperature)	77%	80%	87%	83%	82%

6. Installation to large G M S

【Aeon Mall Makuhari Shintoshin
※Open: Dec. 20, 2013】

■ Outline of the SC

- Ground floor area: about 192,000m²
- Total floor area: about 128,000m²
- Food section area: about 5,200m²



■ Installation of Natural refrigerants to Aeon Makuhari Shintoshin (Store area)

- Number of installation : 20 systems, 144 cases with CO₂ refrigerants (Total 182 cases)
- Energy saving : About 20% reduction (Compared to cases with HFC refrigerants)
- CO₂ reduction : Total 813t /Indirect effect 60CO₂-t /Direct emissions 753Co₂- t

7. Issues regarding expanding the installation

Strict regulation and cost are the major issues

Issues	Possible Measures (example)
<p>Regulation and Cost issues (High Pressure Gas Safety Act)</p>	
<p>CO₂ is required to be treated as propane, though it is an inactive gas.</p> <p>-Smaller size: the Act <u>is not applicable</u></p> <p>The installation number of refrigeration unit will increase.</p> <p>- Desired size: the Act <u>is applicable</u></p> <p>The spec for active gas is required.</p> <p>=> 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.
<p>Technological issues</p>	
<p>Noise control (for the installation in urban areas)</p>	<p>Improve the soundproof technique</p>

8 . The direction to solve the obstacles

- (1) Solve the obstacles with the collaboration of stakeholders
- (2) Ask the government to show the clear direction on natural refrigerants
 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) Increase the awareness of the detrimental effects of Freon to take appropriate measures for it.

