

<< ATMOSphere Asia 2017 >>

LAWSON's Efforts for Non-Freon



6-Sep-2017 LAWSON, INC.

As of end-February 2017

Company name	Lawson, Inc.
Head office	Osaki 1-chome, Shinagawa-ku, Tokyo 141-8643 Japan
President and CEO, Representative Director	Sadanobu Takemasu
Date established	April 15,1975
Capital	58,506.644 million Yen
Employees	9,403
Business activities	Franchise chain development of "Lawson", "Lawson Store 100" and "Natural Lawson"
Total net sales	2,158 billion yen <FY2016>
Number of stores	13,111 (Japan)
Operating regions	47 prefectures of Japan, cities of Shanghai, Chongqing, Dalian, Beijing and Wuhan in China, Indonesia ,Hawaii in USA, Thailand, Philippines

stores operated by Lawson Store100, Inc., Lawson Okinawa, Inc., Lawson Minamikyushu, Inc. and Lawson Kochi, Inc.

- <Group Companies>** ■ Consolidated Subsidiary ◆ Affiliated Company
- Lawson Sanin, Inc. ■ Lawson Store 100, Inc. ■ SEIJO ISHII, Inc. ■ Lawson(China)Holdings, Inc
 - Shanghai Lawson, Inc. ■ Chongqing Lawson, Inc. ■ Dalian Lawson, Inc.
 - 浙江羅森百貨有限公司 ■ Saha Lawson Co., Ltd. ■ Lawson USA Hawaii, Inc.
 - Lawson HMV Entertainment, inc. ■ UNITED CINEMAS, inc. ■ Lawson ATM Networks, Inc
 - Lawson Travel, Inc. ■ Best Practice Inc. ■ Lawson Will, Inc. ■ Lawson Digital Innovation, inc.
 - ◆ Lawson Okinawa, Inc. ◆ Lawson Minamikyusyu, Inc. ◆ Lawson Kochi, Inc.

1.Natural Refrigerant (CO₂) Technology

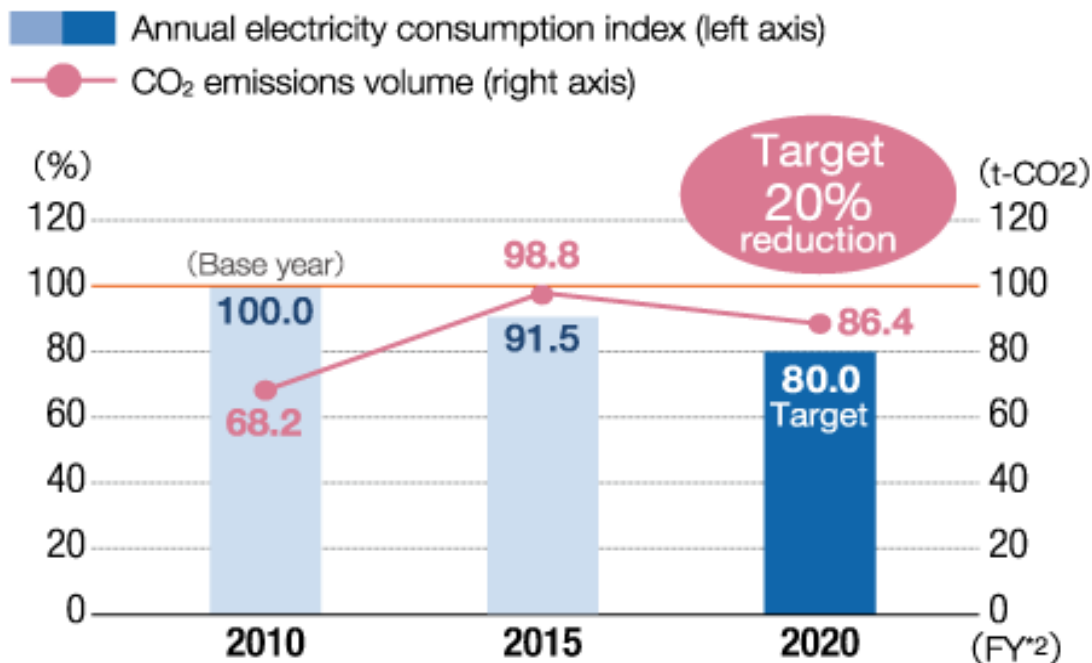
2.Expansion into overseas of Natural Refrigerant (CO₂) Technology

■ Action for “Energy Conservation”

■ Activities for “Energy Conservation”

“**Lawson Group Environmental Policy**” to contribute in sustainable society and acknowledges energy conservation actions as part of the company mission. So we aim for “**20% energy saving in each store by 2020 from 2010 levels**” . To reduce store energy consumption, we actively adopt energy saving equipment such as **CO2 refrigeration system**, e t c .

■ Electricity Consumption (Index) and CO₂ Emissions per Store



Targets to
fiscal 2020

Reduction of
per-store electricity
consumption by
20% compared
with fiscal 2010.

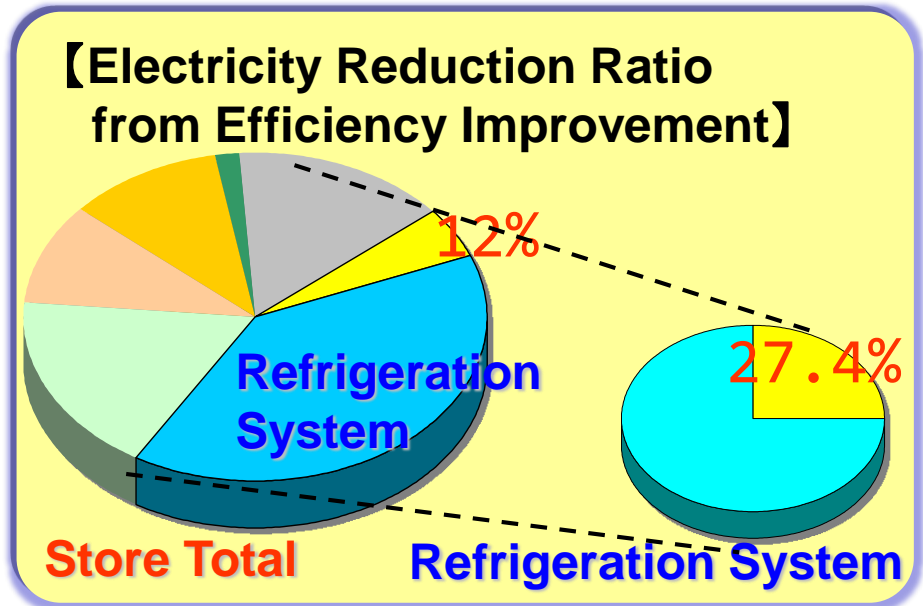
Advantages of CO₂ Refrigeration System

[Impact by CO₂ System]

Electricity Consumption Reduction :

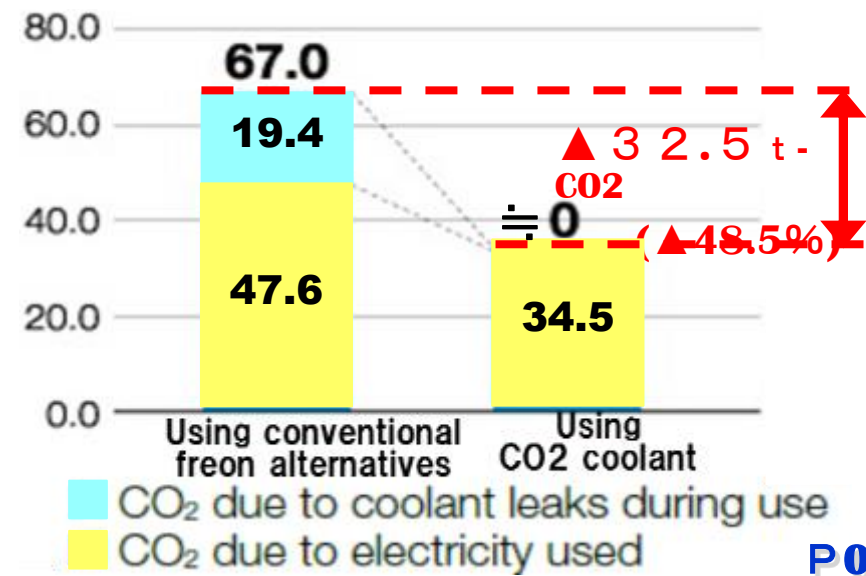
The Total Energy Save: 27.4%
(in Refrigeration System)

4%



22,920 kWh/Store/Year
in addition

CO₂ emissions reduced using CO₂ coolant



[Advantages of CO₂ System]

Low GWP Refrigerant :

CO₂ Equivalent

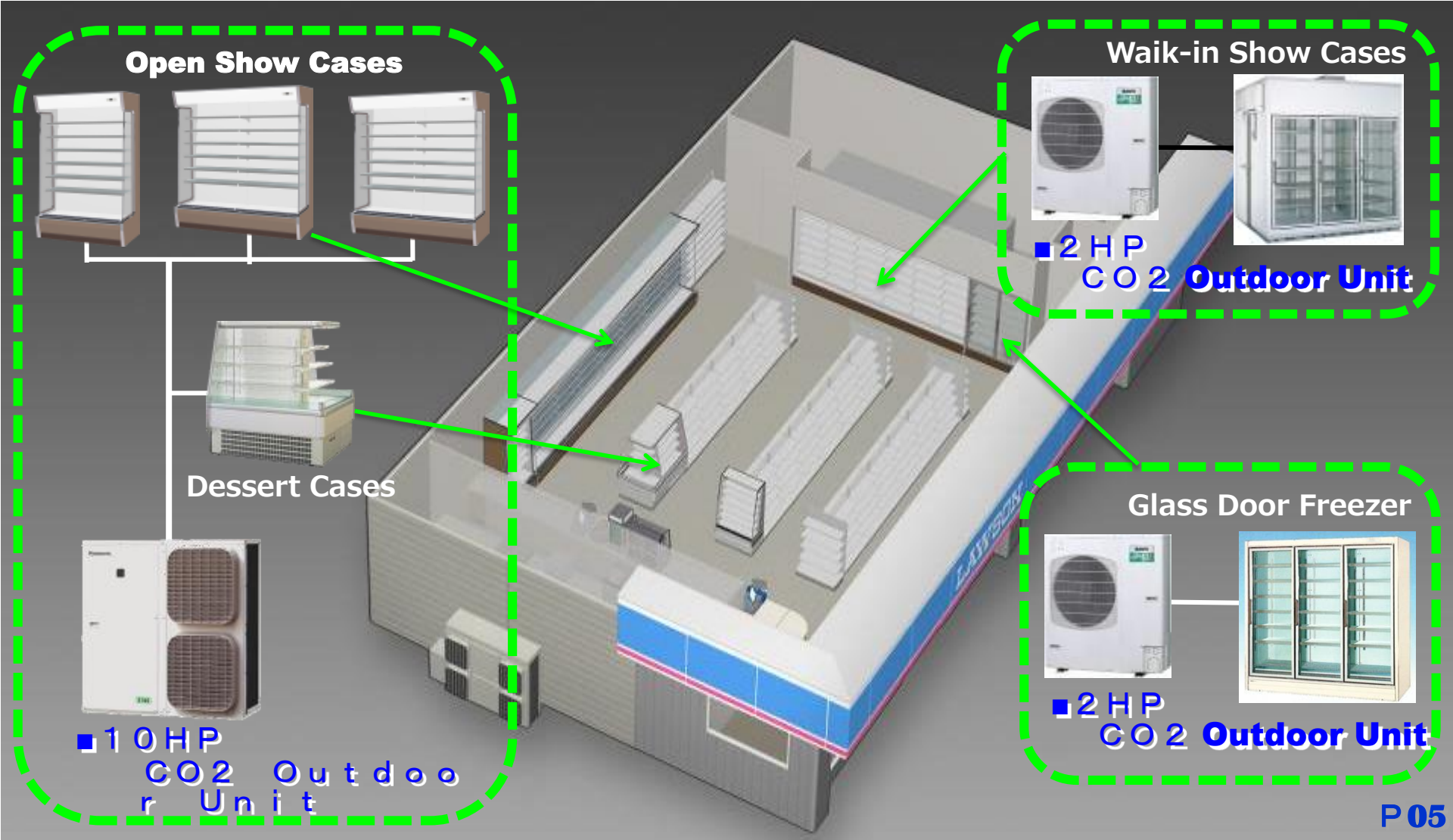
19.4 ton-CO₂/Store/Year
(Minimum 1/4000 Compared with HFCs)

Japanese proven CO₂ technology (Lawson&Panasonic) for CVS

Outdoor units for Refrigerators and Freezers were replaced by Panasonic CO₂ Units (10HP and 2HP)



The Total Energy Save: **27.4%**



CO₂ Refrigeration System Installation Result



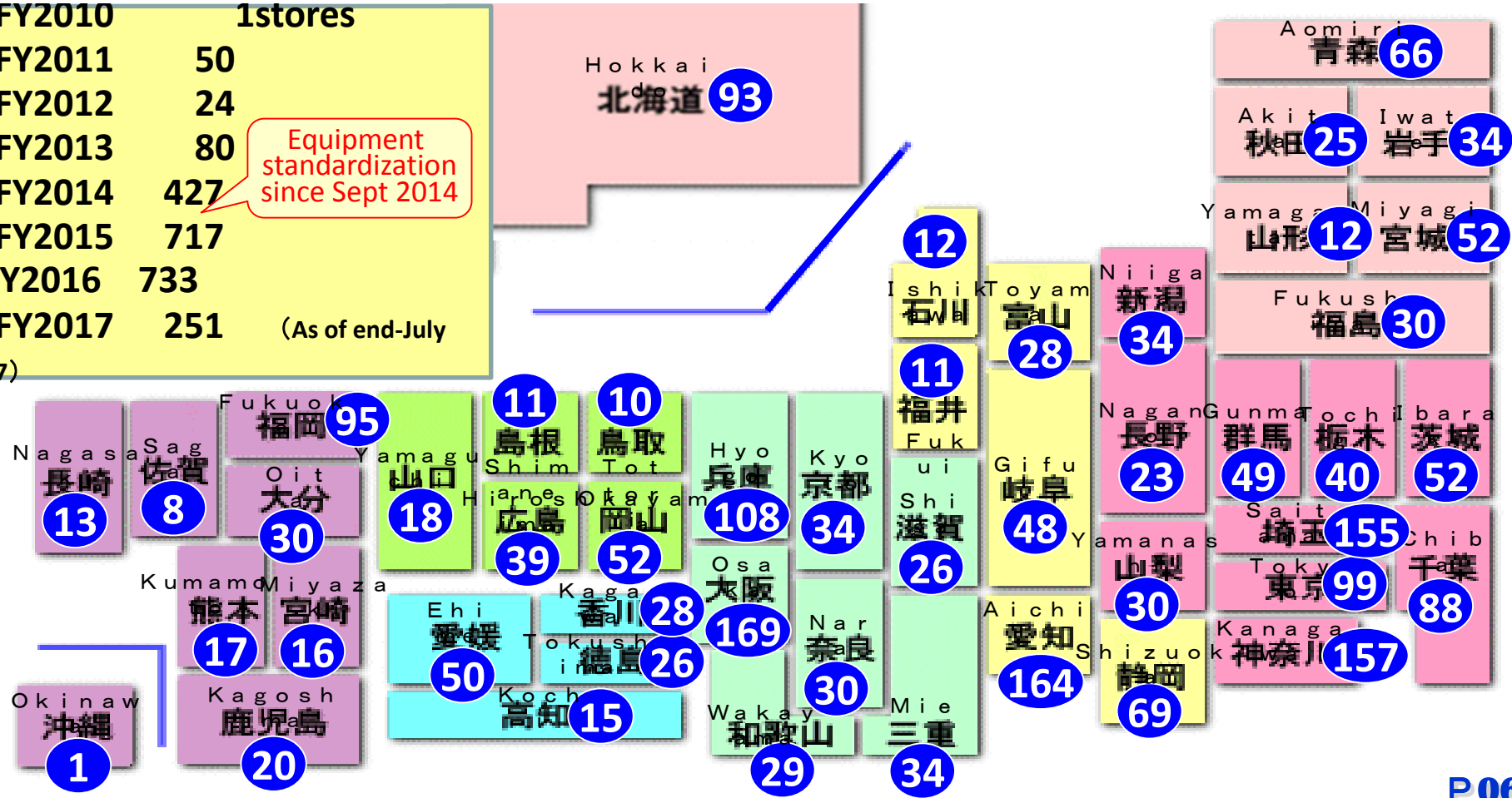
Installation in 2,283 Stores in 47 Prefectures (End of July, 2017)

⇒ Expect to install to 3,500 stores by 2019.
(Plan to introduce 700 stores annually)

2,283 stores installed CO₂ Refrigeration System

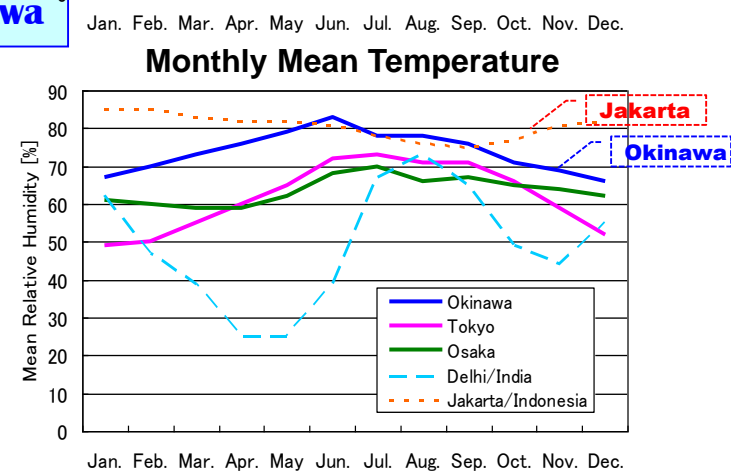
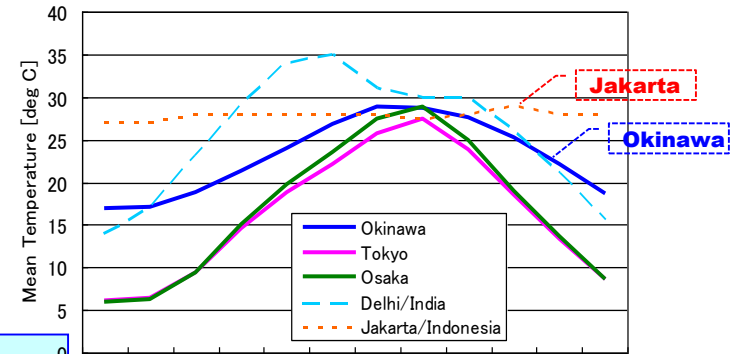
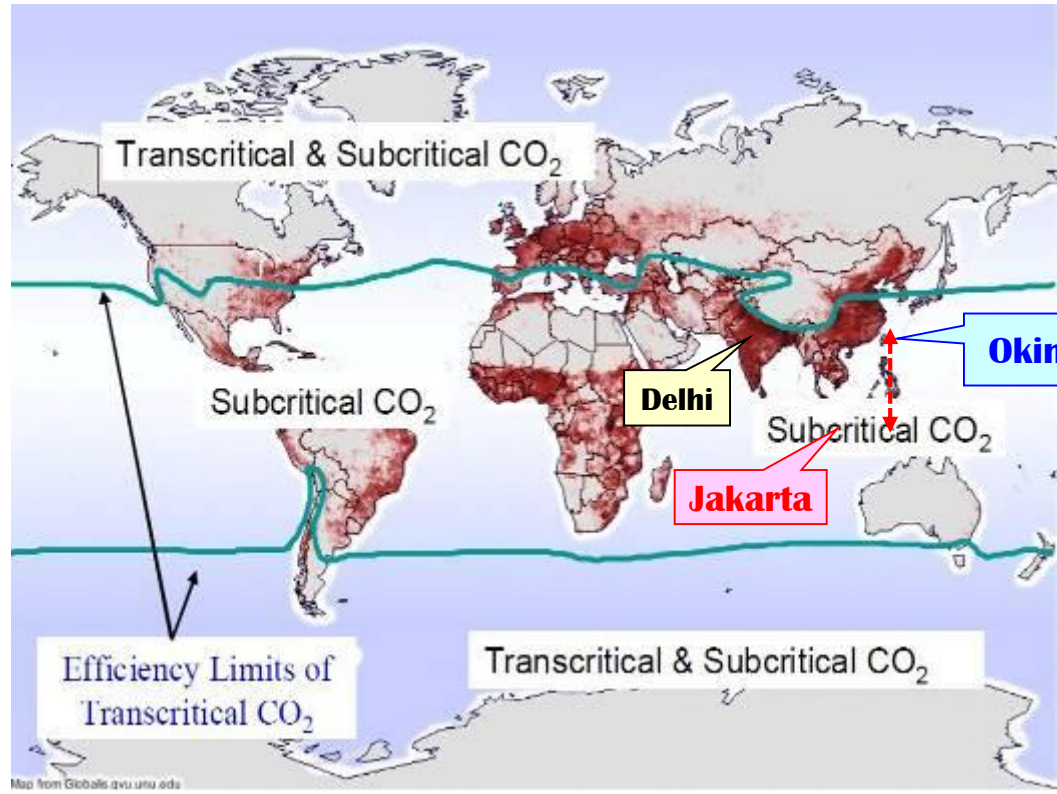
FY2010	1 stores
FY2011	50
FY2012	24
FY2013	80
FY2014	427
FY2015	717
FY2016	733
FY2017	251 (As of end-July 2017)

Equipment standardization since Sept 2014



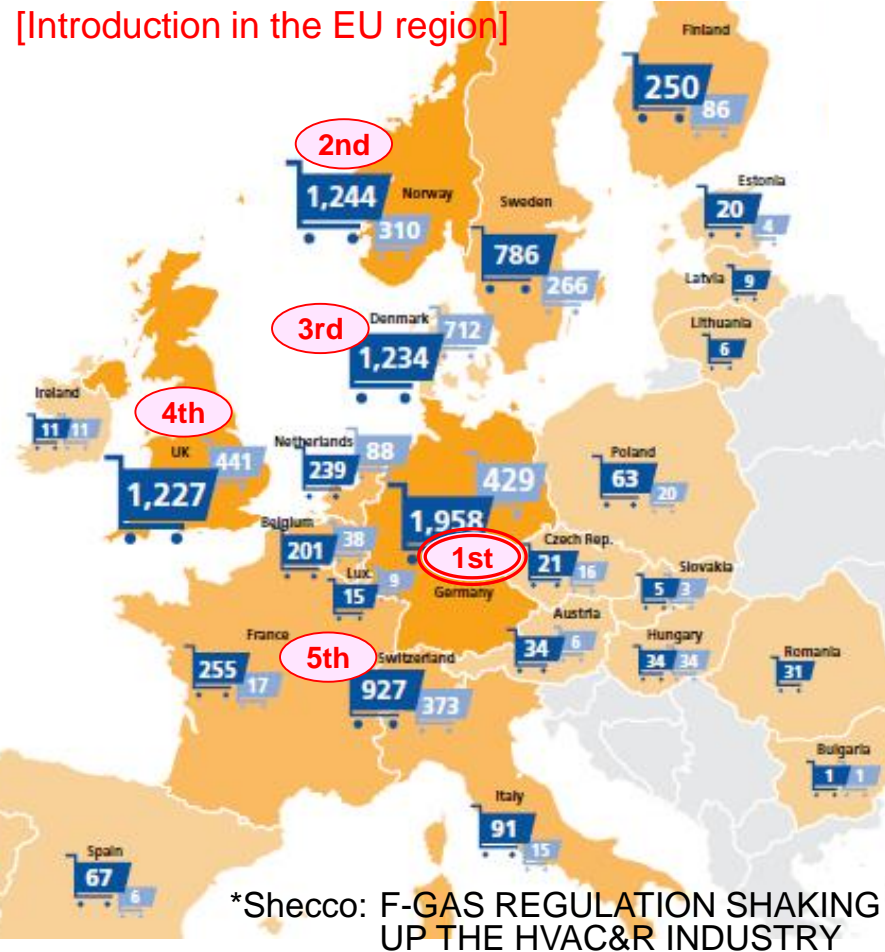
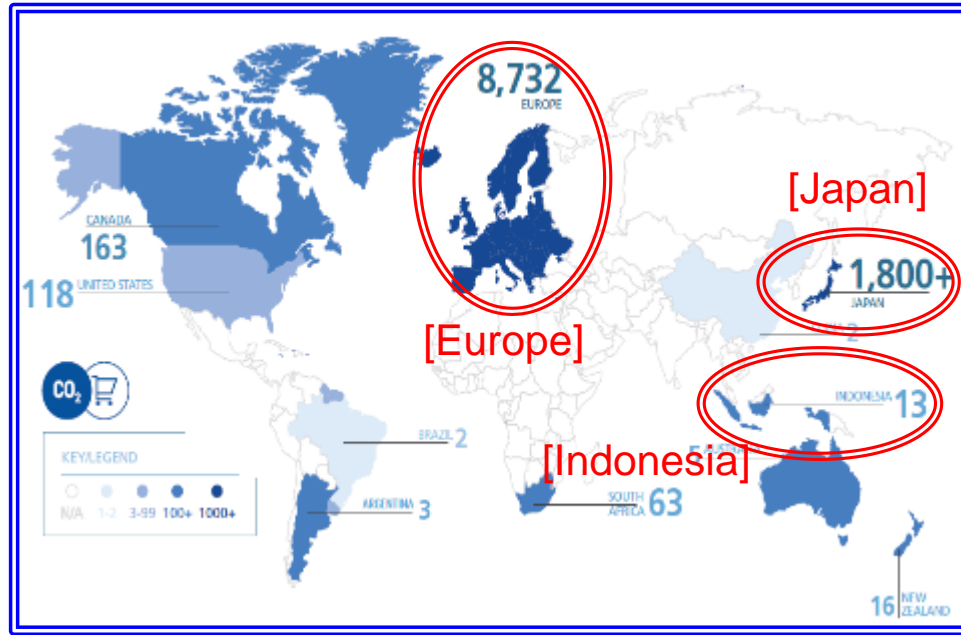
Validation-Annual Electricity Reduction Compared with R404A

CO₂ refrigeration system efficiency is relatively low at high outdoor temperature compared with conventional refrigerant systems. Power consumption measurement had be done to verify how much efficient CO₂ system is, **in sub-tropical climate.**



Introduction of natural refrigerant in the world

[Introduction of the CO2 systems (Trans-critical) in the world]



Introduction of CO2 systems in Europe
 2013: 2,885 stores
 ↓
 2016: 8,732 stores
 * Germany was ranked top in place of Denmark.

Rank	Country	Stores
1	Germany	1,958
2	Norway	1,244
3	Denmark	1,234
4	UK	1,227
5	Switzerland	927

*Shecco: F-GAS REGULATION SHAKING UP THE HVAC&R INDUSTRY

LAWSON aims at the world's No. 1 retail company through the non-freon efforts.

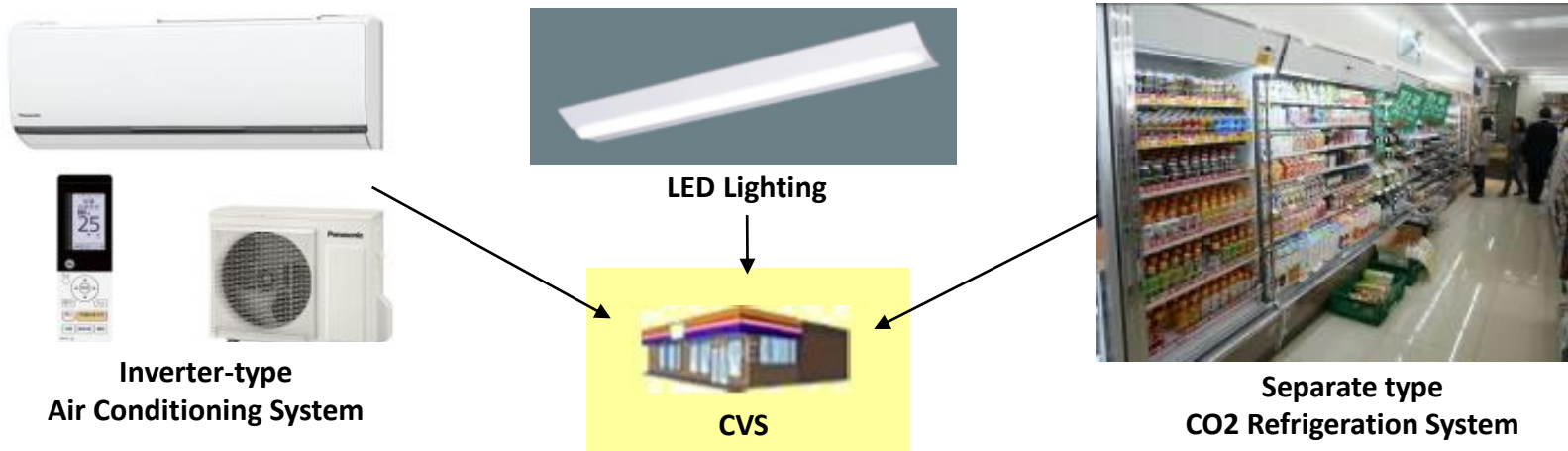
1. Natural Refrigerant (CO₂) Technology

2. Expansion into overseas of Natural Refrigerant (CO₂) Technology

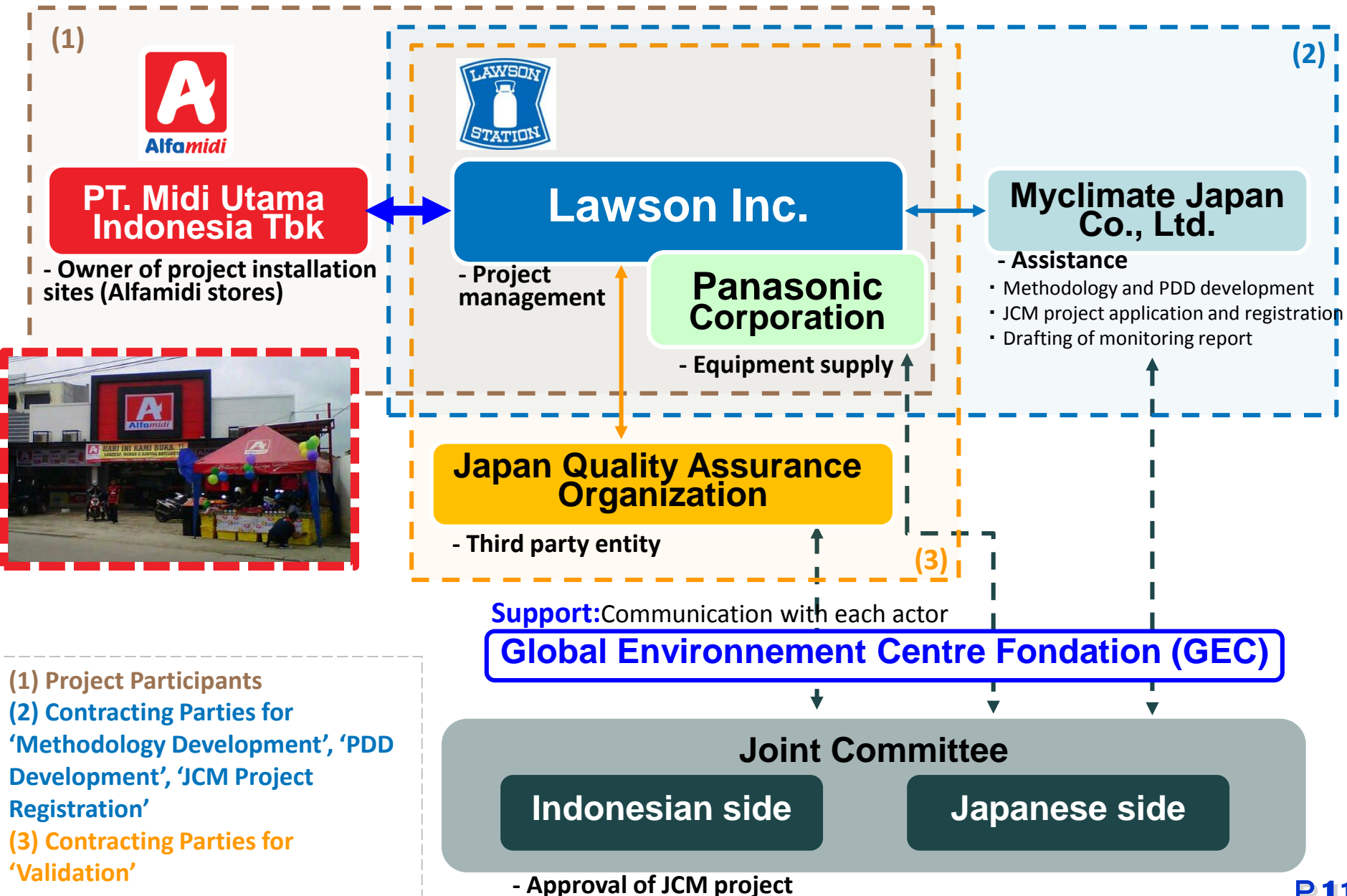
Object

We accept adoption of a project equipment subsidiary business by utilizing the JCM system of Ministry of the Environment in FY2013, the “CVS Energy Saving Project in Indonesia” started. (December 2013)

- (1) **Inverter-type air conditioning system** ← Methodology: ID_AM004
(newly installed or installed to replace existing air conditioning system)
- (2) **LED lighting** ← Methodology: ID_AM005
(newly installed or installed to replace existing fluorescent lighting)
- (3) **Separate type CO2 refrigeration system** ← Methodology: ID_AM008
(newly installed or installed to replace existing built-in type refrigeration system)



JCM Project implementation structure



- (1) Project Participants
- (2) Contracting Parties for 'Methodology Development', 'PDD Development', 'JCM Project Registration'
- (3) Contracting Parties for 'Validation'

Installation in Jakarta, Indonesia

The project covers a total of **12 grocery stores owned by PT. MIDI UTAMA INDONESIA Tbk** located in Jakarta capital and its surrounding districts.

No.	Stores	Start of Operation
1	Alfamidi Raden Saleh 3	21-Feb-2014
2	Alfamidi Kebagusan 2	10-Mar-2014
3	Alfamidi Surya Darma	20-Mar-2015
4	Alfamidi Meruyung	10-Feb-2015
5	Alfamidi Tebet Timur Dalam	15-Mar-2015
6	Alfamidi Palmerah Utara	18-Mar-2015
7	Alfamidi Matraman Raya	20-Mar-2015
8	Alfamidi Raya Tengah	21-Mar-2015
9	Alfamidi Muncang	21-Mar-2015
10	Alfamidi Ceger Raya 2	19-Mar-2015
11	Alfamidi Sawangan 3	24-Feb-2015
12	Alfamidi Kampung Asem	18-Mar-2015

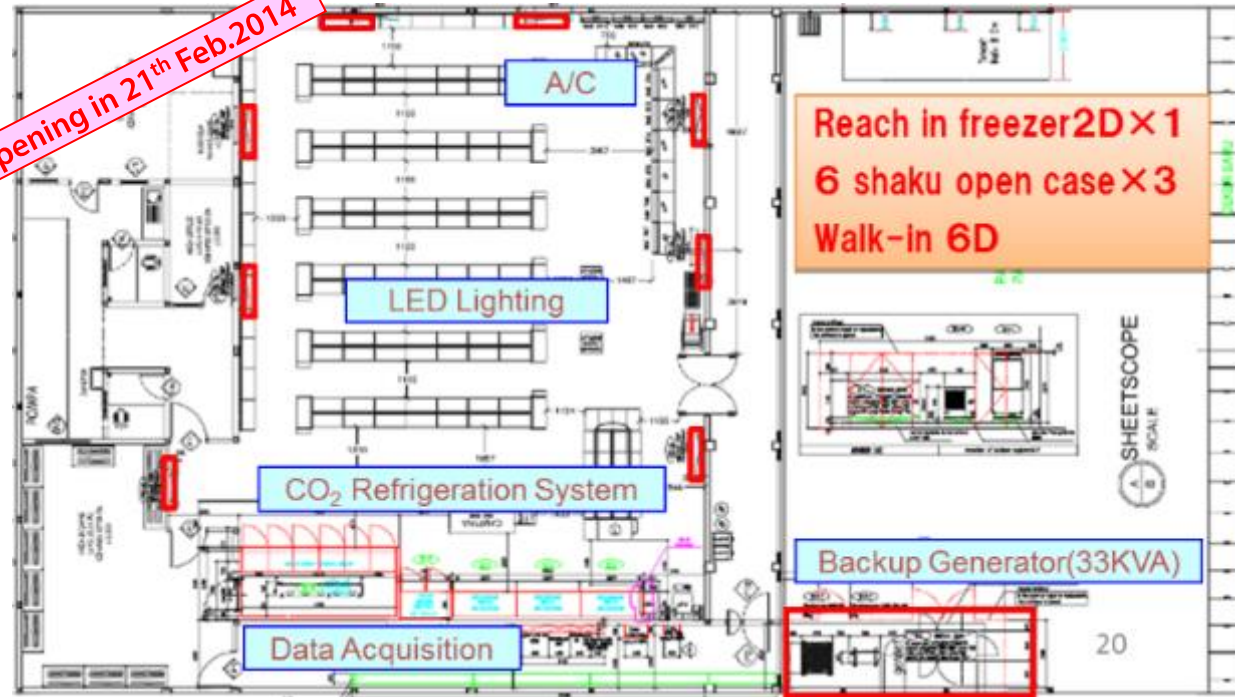


Project implementation (1)

Alfamidi RADEN SALEH

- Sales Floor: 238m²
- Equipment:
 - CO₂ Refrigeration System
 - A/C(Inverter)
 - LED lighting
 - Data Acquisition

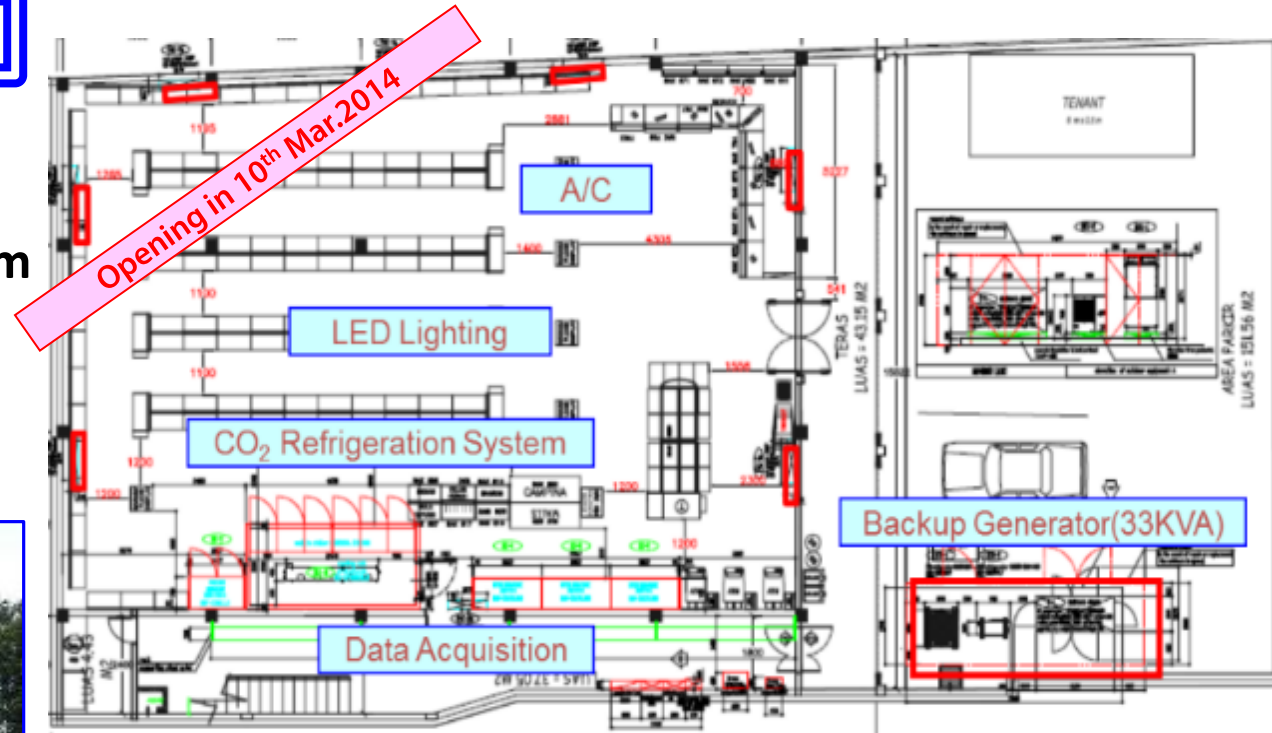
Opening in 21th Feb.2014



Project implementation (2)

Alfamidi KEBAGUSAN

- Sales Floor: 258m²
- Equipment:
 - CO₂ Refrigeration System
 - A/C(Inverter)
 - LED lighting
 - Data Acquisition

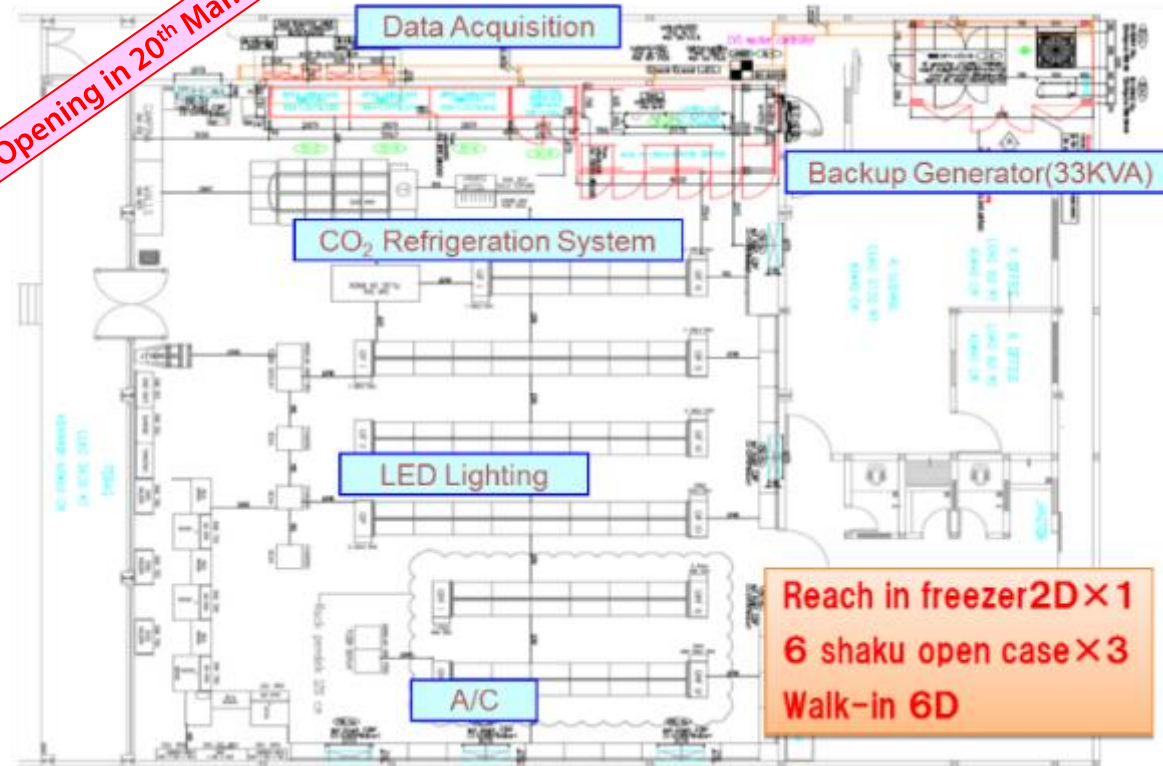


Project implementation (3)

Alfamidi SURYA DARMA

- Sales Floor: 254m²
- Equipment:
 - CO₂ Refrigeration System
 - A/C(Inverter)
 - LED lighting
 - Data Acquisition

Opening in 20th Mar.2015



Awareness Activities

Enlightenment activities of "Convenience store energy saving project" implemented by JCM project

<Details>

- (1) Preparing teaching materials on monitoring and organizing seminars
- (2) Awareness-raising through application of stickers and posters by local counterpart



<<JCM Project Sticker Design>>

This poster promotes the store as an "Energy Saving Store" that utilizes the Financing Programme for JCM Model Project by the Ministry of the Environment, Japan. It details the Basic Concept of the Joint Crediting Mechanism (JCM) and lists three key energy-saving technologies:

- Refrigeration system using natural refrigerant (CO2):** Replaces R22 with R134a, saving 23% energy.
- Air-conditioner with the "econavi" and "inverter":** Saves 50% energy.
- LED Lighting and Energy saving concept:** Saves 30-50% energy.

The poster also features images of the store's interior with the installed technologies and logos for Alfamidi and Lawson.



<<Application of Stickers>>



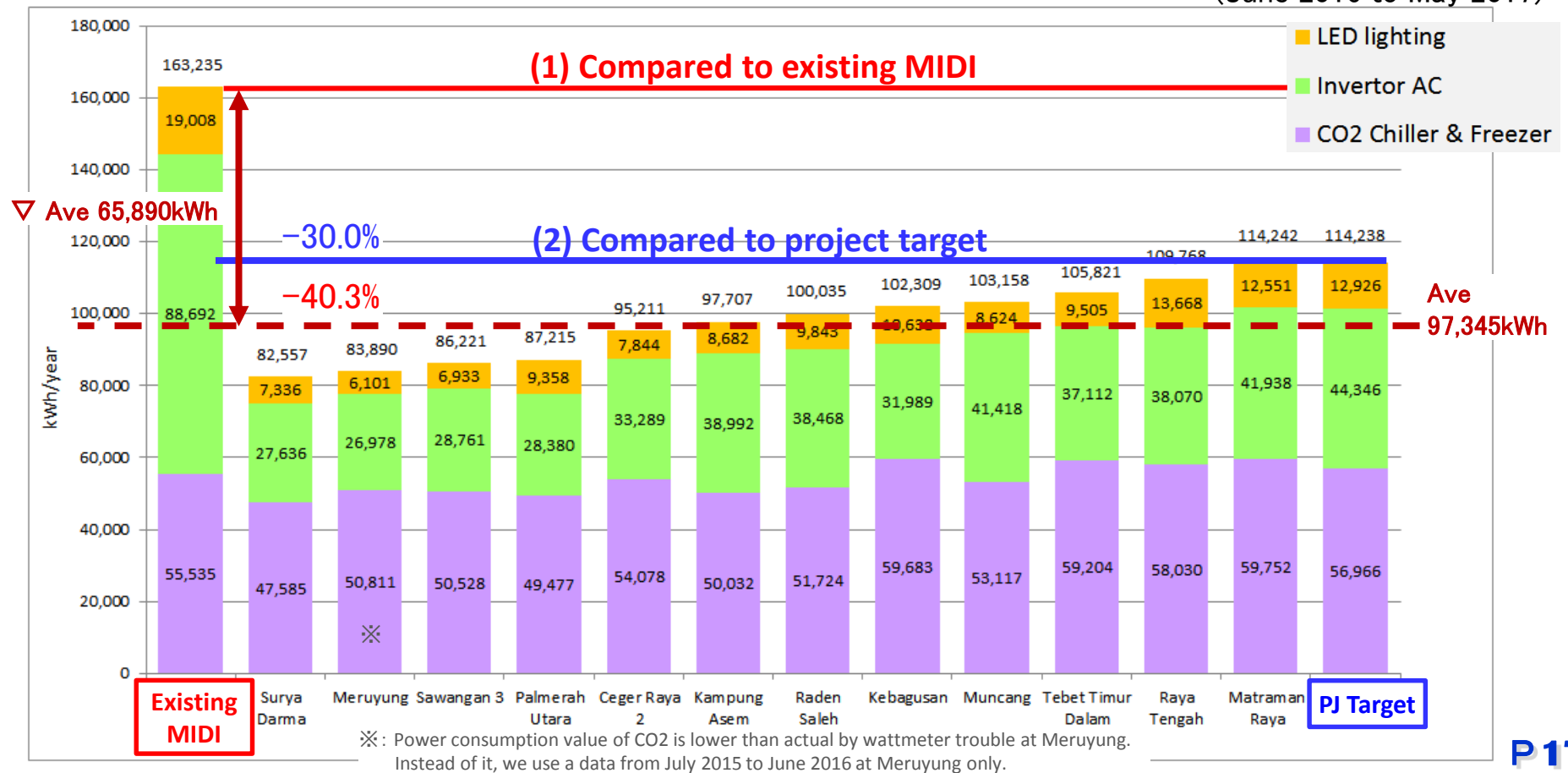
<<Application of Posters>>

<<Awareness-raising Poster (English)>>

Yearly total power consumption

- (1) All 12 stores attained the target based on yearly total power consumption of existing MIDI store. (Achieved -40.3%)
 - (2) The average of all 12 stores attained the project target. (blue line)
- ⇒ Total reduction of 12 stores are 790,000kWh/year.
 (Comparison with existing MIDI / only Meruyung uses a data from July 2015 to June 2016)

(June 2016 to May 2017)



(1) Training of Installation Technician

- Training session on installation (invitation to Japan)

(2) Installation Cost

- Adjustment of cost covered by local counterpart: Difference in currency value

(3) Procurement of Target Equipment

- Local procurement unavailable because target equipment is under demonstration
test phase ⇒ Export from Japan is necessary

(4) Others

- Adverse effects on equipment due to voltage instability (Wattmeter, VPN router, Modem)
- Trouble of monitoring data collection due to Internet line instability (3times/month)
- Increase cost by installing a generator against power failure (US\$ 20,000/1 store)

It is necessary to solve various problems in order to continue and spread the JCM business. First of all, we aim to issue credits, which is the objective of this project.



Result and Further Development of the Project

1) Benefit

- Energy saving 20%
- Increasing average sales 15%
- Ambience store to be more comfort



Yohanes Santoso
Operation Director
PT. Midi Utama Indonesia Tbk

2) Prospect of the business related with the project

- Increase of ecology stores up to 12 stores

3) Barrier against spreading energy saving technologies including CO₂ refrigeration

- Lack of spare parts provided
- CO₂ refrigeration must be imported and very expensive
- Government support for environmental projects has not been optimal yet such as tax incentives for the use of CO₂ equipment

Thank you very much!

URL : http://lawson.jp/en/csr/energy_saving/stores/