

Industrial Infrastructure Business Strategies

May 29, 2015
Fuji Electric Co., Ltd.
Industrial Infrastructure Business Group

■ Business Overview

■ Market Trends

■ Business Targets

■ Priority Measures

Business Overview

Provide **lifecycle services** for increasing energy efficiency during production and stabilizing facility operation

◆ Industrial Plant

Energy saving solutions combining electricity and heat



[equipment]

- Drive control systems (Motors for plants)
- Instrumentation systems
- Air-conditioning facilities
- Power supply facilities

Factory energy management system (FEMS)
(Model factory: Fuji Electric's Yamanashi Factory)

Principal customer industries

- Steelmaking
- Chemicals
- Automobiles
- Electricity
- Railway

◆ Transmission and Distribution

Power supply facilities providing stable supplies of energy



Power grid substations
(Large-capacity transformers)



Industrial substations
(Power receiving and distribution substation equipment)



Industrial power supplies
(Large-capacity rectifiers)
(No. 2 global share)

◆ Industrial and Instrumentation Equipment

Instrumentation equipment that helps protect the environment and ensure safe and secure facility operation



Measuring instruments
(Gas analyzer)
(Share leader in Japan)



Monitoring and control system



Radiation measurement equipment
(Personal dosimeter)
(Top share in Japan)

◆ Equipment Construction

Equipment construction services supporting industrial infrastructure

Market Trends

Rising capital investment in Japan's manufacturing industry

- Increase in investment in material industries (steelmaking and chemicals) and assembly and processing industries (automobiles and electrical equipment), 20% rise in investment among 3 major steelmakers expected
- Expansion in replacement and rationalization investments that had been postponed

● Capital Investment Trends at Major Companies (Capital of ¥1.0 Billion or More)

Sector	Year-on-Year Increase in Capital Investment (%)			Capital Investment Forecast for FY2015 (Trillions of Yen)
	FY2013	FY2014	FY2015	
Manufacturing	-0.8	+2.6	+4.7	9.0
Steelmaking	-22.8	-4.3	+2.4	0.6
Chemicals	-11.7	+14.4	+0.9	1.3
Automotive	+4.1	+17.2	+3.3	1.7
Electrical Equipment	+4.6	-8.6	+5.0	1.7
Non-Manufacturing	+4.4	-0.9	-1.6	16.5
All Industries	+2.6	+0.3	+0.6	25.1

Source: Bank of Japan's quarterly short-term economic survey (April 2, 2015)

Ongoing rise in infrastructure investment in Asian markets, particularly strong growth of 5% in ASEAN market

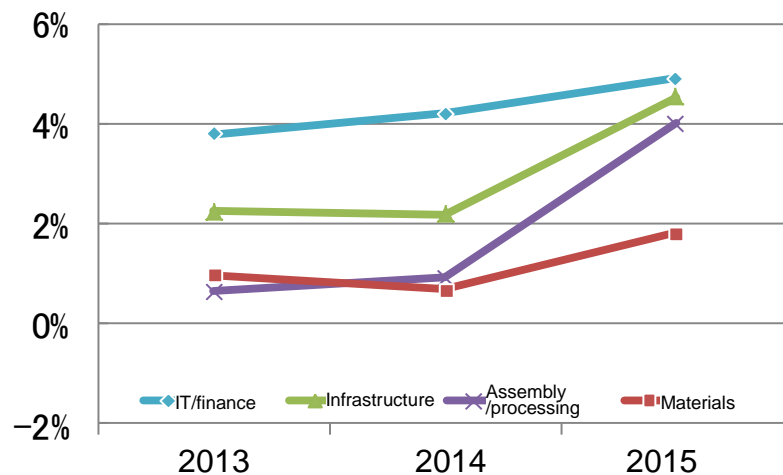
● Overseas GDP Growth Rate (Year-on-Year)

(%)

	Total	ASEAN-5					NIEs-4	India	China	Americas	Europe
		Indonesia	Thailand	Malaysia	Vietnam	Philippines					
2014	4.6	5.0	0.9	6.0	6.0	6.1	3.3	7.2	7.4	2.1	1.3
2015	4.8	4.8	2.8	4.7	6.6	6.5	3.3	7.6	7.0	2.4	1.8

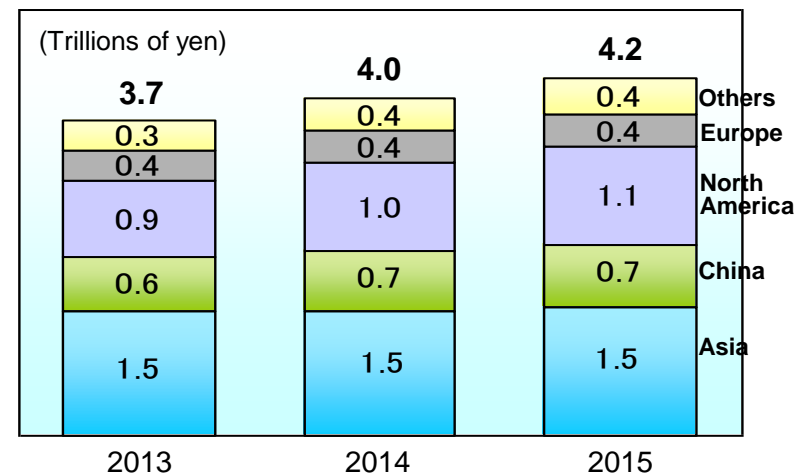
Source: Mizuho Research Institute Ltd. (May 21, 2015), etc.

● Capital Investment by Sector in Asian Markets (Growth Rate)



Source: IHS Global Insight forecasts (April 2015)

● Capital Investment in Overseas Markets by Japanese Companies (Manufacturers)

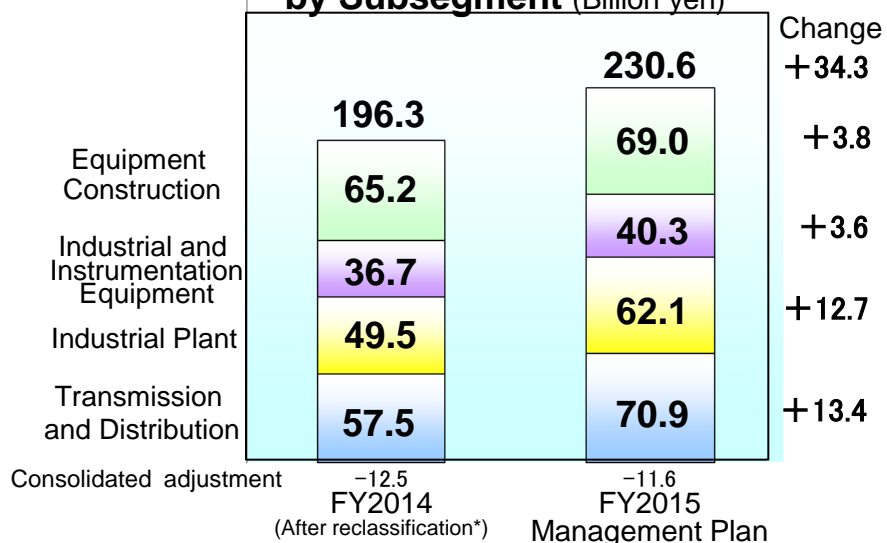


Source: Quarterly Survey of Overseas Subsidiaries, Ministry of Economy, Trade and Industry, and Global Insight

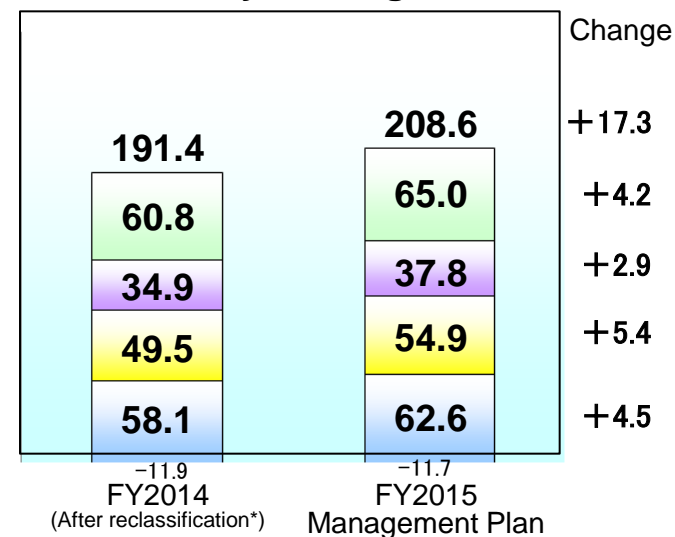
Business Targets

Business Targets

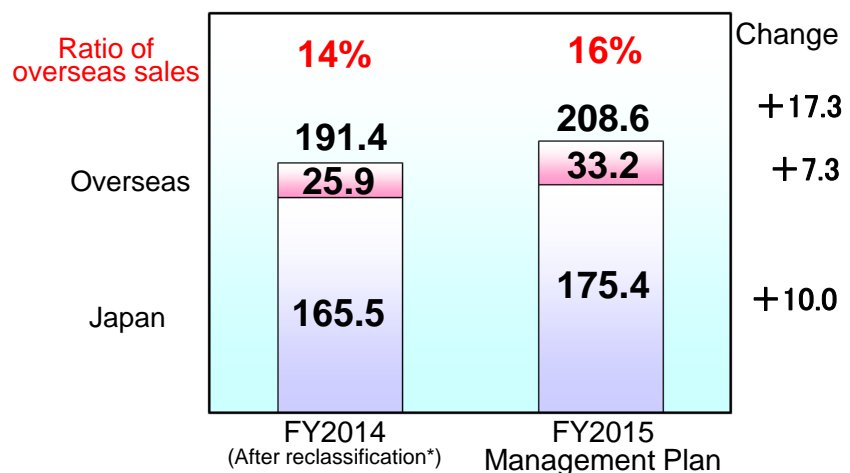
Amount of Orders Received by Subsegment (Billion yen)



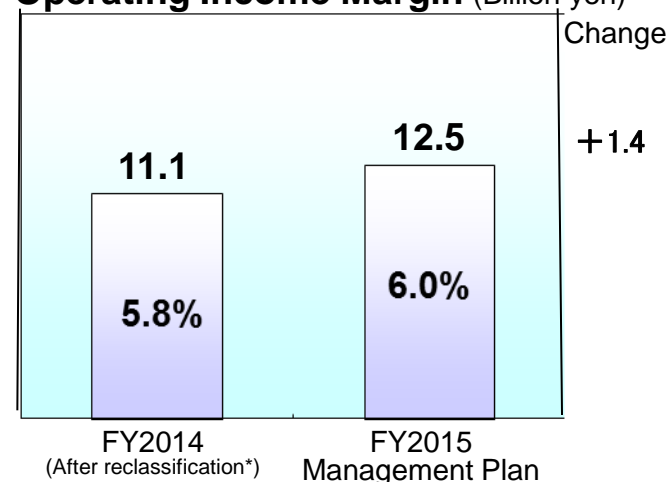
Net Sales by Subsegment (Billion yen)



Net Sales in Japan / Overseas (Billion yen)



Operating Income / Operating Income Margin (Billion yen)



* FY2014 figures have been restated to reflect the change in business divisions instituted in FY2015.

Business division change: Transference of sales directed at METAWATER Co., Ltd. (Social engineering systems → Industrial plant)

Change of control of HMI subsidiary (Industrial and instrumentation equipment → Drive)

Change of control of switchgear and controlgear subsidiary (Industrial and instrumentation equipment → Power supply)

Priority Measures

➤ **Expansion of overseas operations**

Strengthen manufacturing and engineering systems in Asia to increase orders and sales (M&A activities)

→ Target YOY increase in sales outside of Japan of ¥7.3 billion (+28%)

➤ **Strengthening of industry strategies**

Expand orders and sales centered on the industrial plant business (assembly/processing, industrial distribution, IDCs)

→ Target YOY increase in net sales of ¥5.4 billion (+11%)

➤ **Initiatives to capture domestic replacement demand in Japan**

Increase orders and sales of service businesses (maintenance, diagnostics, and replacement)

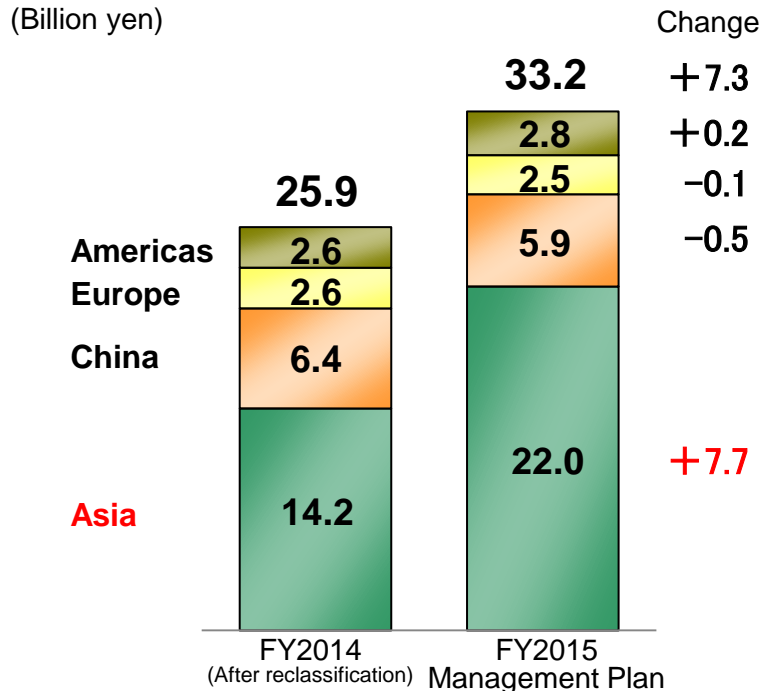
→ Target YOY increase in domestic sales of ¥10.0 billion (+6%)

Expansion of Overseas Operations

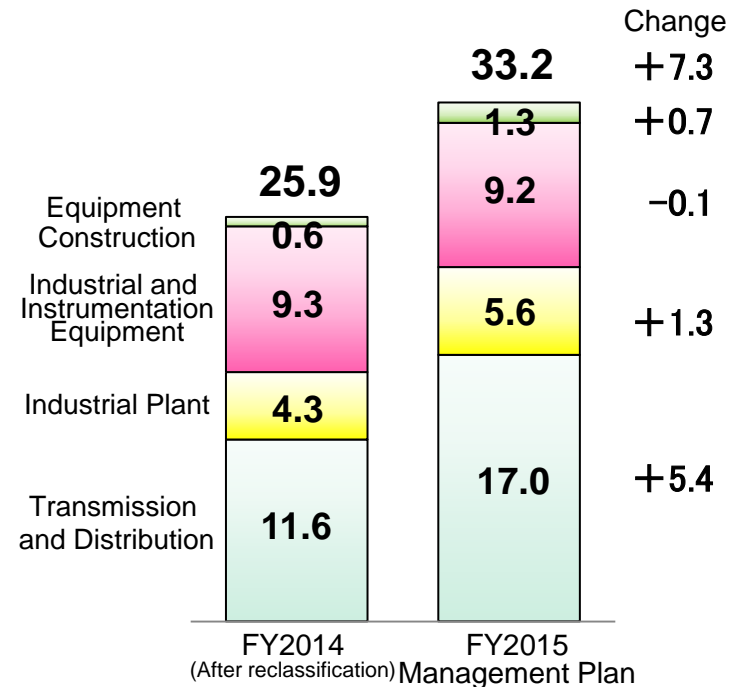
Expand overseas operations centered on **Asia**

- Increase production in Thailand and promote local production and consumption
- Strengthen engineering systems to expand sales of overseas business companies (growth rate: 135%)

Overseas Net Sales (by area)

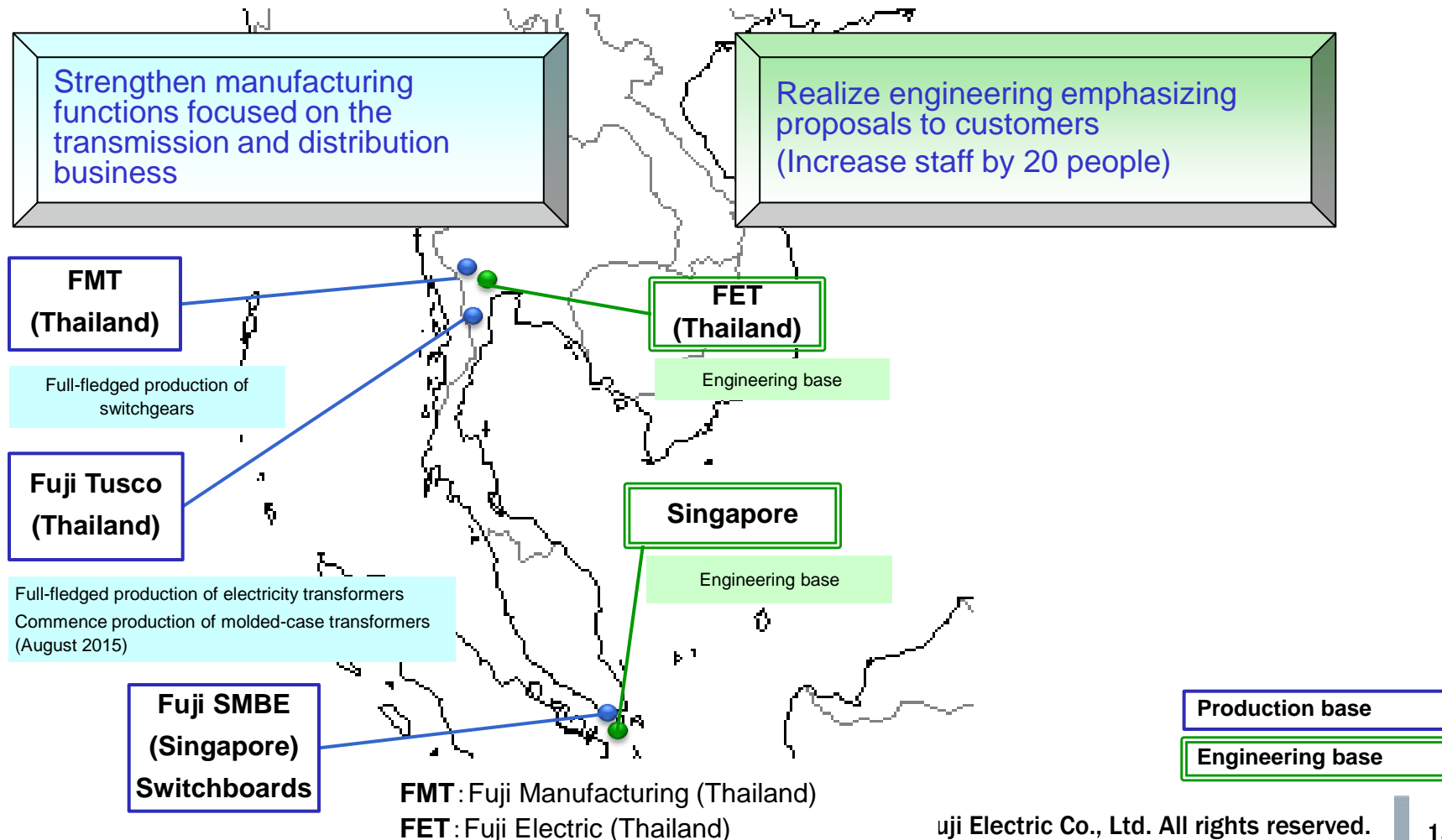


Overseas Net Sales (by segment)



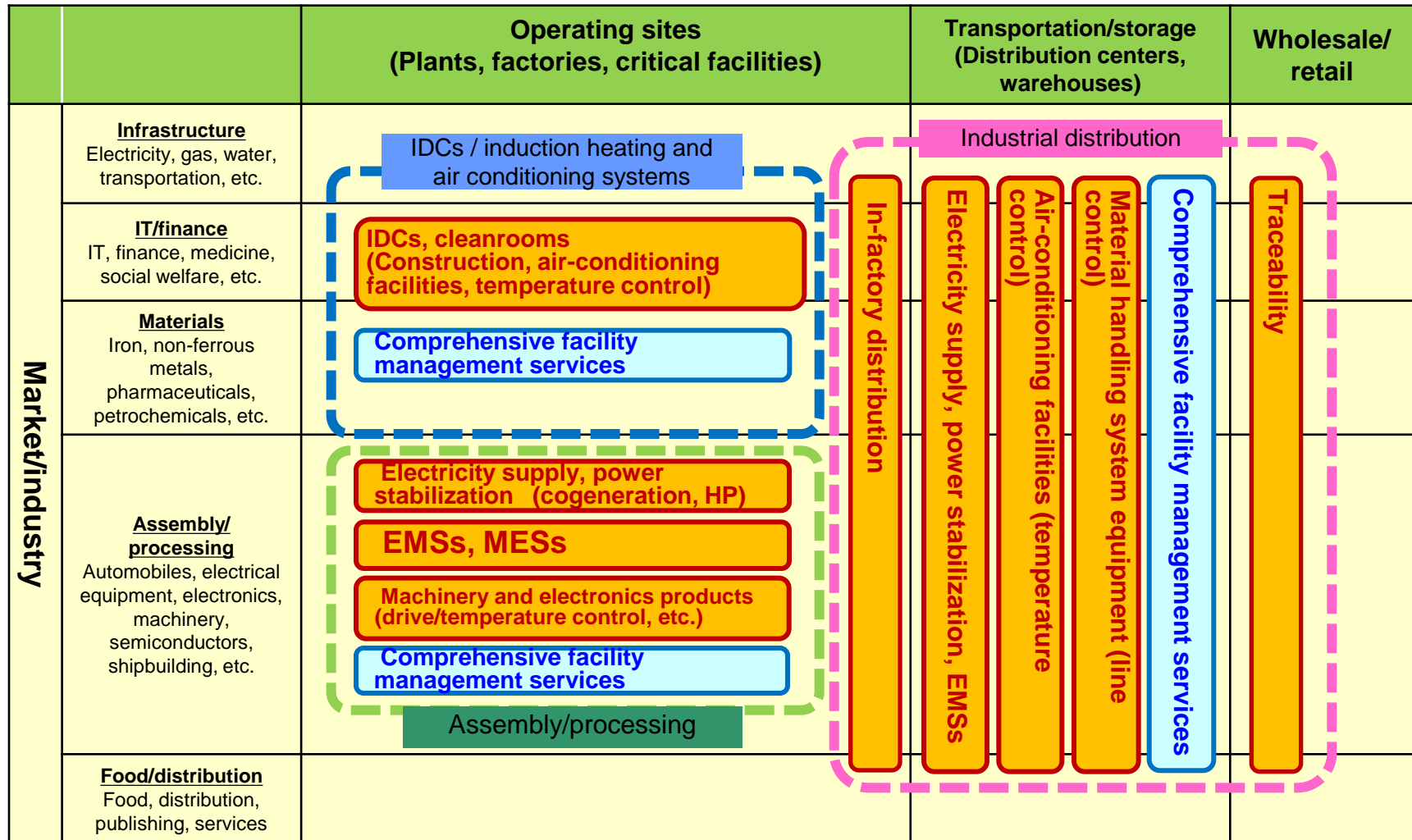
Expansion of Overseas Operations (Expansion of Orders in Asia)

Establish competitive **manufacturing and engineering functions** centered on Thailand
→ Expand from Thailand into other Asian countries (M&A activities)



Strengthening of Industry Strategies (Specific Targets and Products)

Provide **one-stop engineering** services for meeting customer needs related to energy (electricity and heat); monitoring, control, and management of production equipment; and environmental optimization



IDC : Internet Data Center

EMS: Energy Management System

Expansion of Industrial Plant Business (Assembly/Processing)

Provide one-stop response to market needs through lineup of products ranging from power stabilization solutions and EMS to electricity and machinery controls

Offer **new products** that contribute to optimal electricity and heat usage

- Cogeneration system (gas engines of 2G Energietechnik GmbH)
- Steam Generation Heat Pump

✓ Gas engine



**Compatible with
600–2,000 kW
output range**

- World-leading efficiency
- Quiet-running:
Approx. 65 dB(A)

**Exclusive rights to sales of 2G Energietechnik's
products in Japan**

2G Energietechnik: German module manufacturer that has delivered more than 4,000 units, which are currently operating in 20 countries around the world

✓ Steam Generation Heat Pump



**Generate steam using
heat recovered from hot
exhaust water over 6°C**

- Temperature of steam
generated: 100–120°C
- Maximum heating
capacity: 30 kW

Scheduled for FY2015 launch

Expansion of Industrial Plant Business (Industrial Distribution)

Utilize power electronics, control, and ICT technologies to provide **comprehensive solutions** in order to help improve the efficiency of distribution centers, and leverage technologies developed for refrigeration centers



Market needs

- Energy saving
- Automation / labor saving
- Distribution BCPs
- Safety and security

Operation management (cloud)



24-hour call center



Sensing

Sensing

Sensing

Remote monitoring

Electricity supply / energy management



Power receiving and distribution substation equipment



UPS, emergency-use power supplies



EMSs



Air-conditioning facilities / temperature control

Indirect outside air-conditioning unit

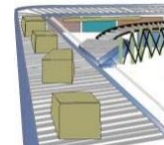


Heat pumps

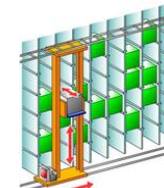


Warehouses for refrigerated and frozen foods

Material handling system equipment and controls



Sorting facilities



Automated warehouses

Material handling system controls



Operation management

Maintenance subcontracting



Camera monitoring systems



Access management systems



Expansion of Industrial Plant Business (IDCs)

Offer high-energy-efficiency **modular data centers and container-type data centers**

Power electronics technologies



Fluid technologies



Heating and cooling technologies



Products for datacenters



Incoming and Transforming equipment



Private Power generation



Servers (air conditioning)



UPS



Operation monitoring

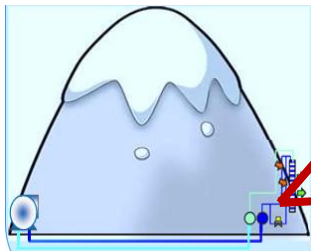
Container-type data center



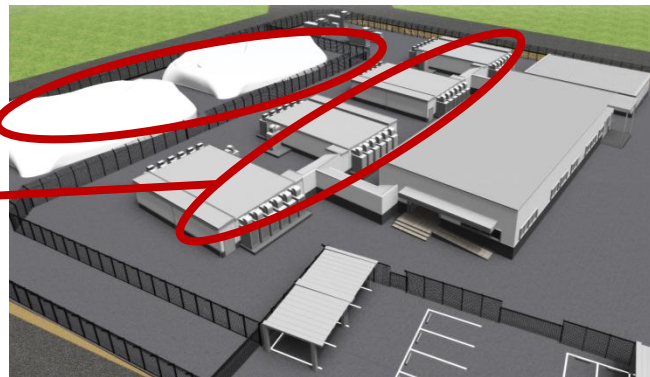
One-Stop Engineering Solutions

[Example of One-Stop Provision of IDC Services]

Modular data center for cold regions (Aomori Cloud Base in Japan)



[Utilizes indirect outside air and snow and ice]



- Modular data center realizing **short construction period, optimal investment amount, and ability to be expanded** upon in the future
- Datacenter for cold region of Aomori Prefecture contributing to **regional invigoration**
- **Energy savings** realized through utilization of indirect outside air-conditioning unit and snow and ice (yearly average of **COP:12**)
- **High efficiency (97%)** for UPS due to employment of 3-level inverter

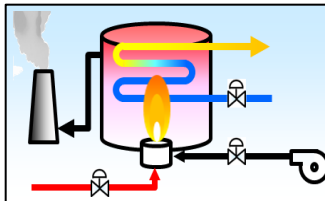
Enhancement of Product Lineups (Expansion of Sensor Business)

Respond to needs of global society through **focus on state-of-the-art sensor components**

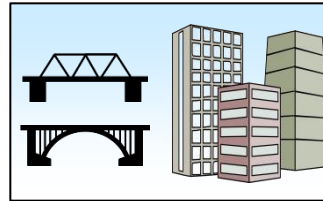
Securing energy resources



Energy saving



Measures for aging infrastructure



Pollution countermeasures



Solution Lineup

Production efficiency improvement for shale gas and offshore oil fields

Combustion efficiency improvement

Energy resource recovery

Pollutant reduction

Radiation monitoring

Infrastructure health monitoring

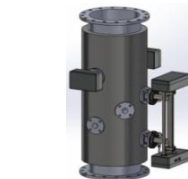
Pollutant identification



Ultrahigh static pressure sensors



High-speed laser analyzers



Exhaust gas analyzers for ships



Highly sensitive gamma ray cameras



Dosimeters



vibration sensors



Aerosol particle combined analyzers

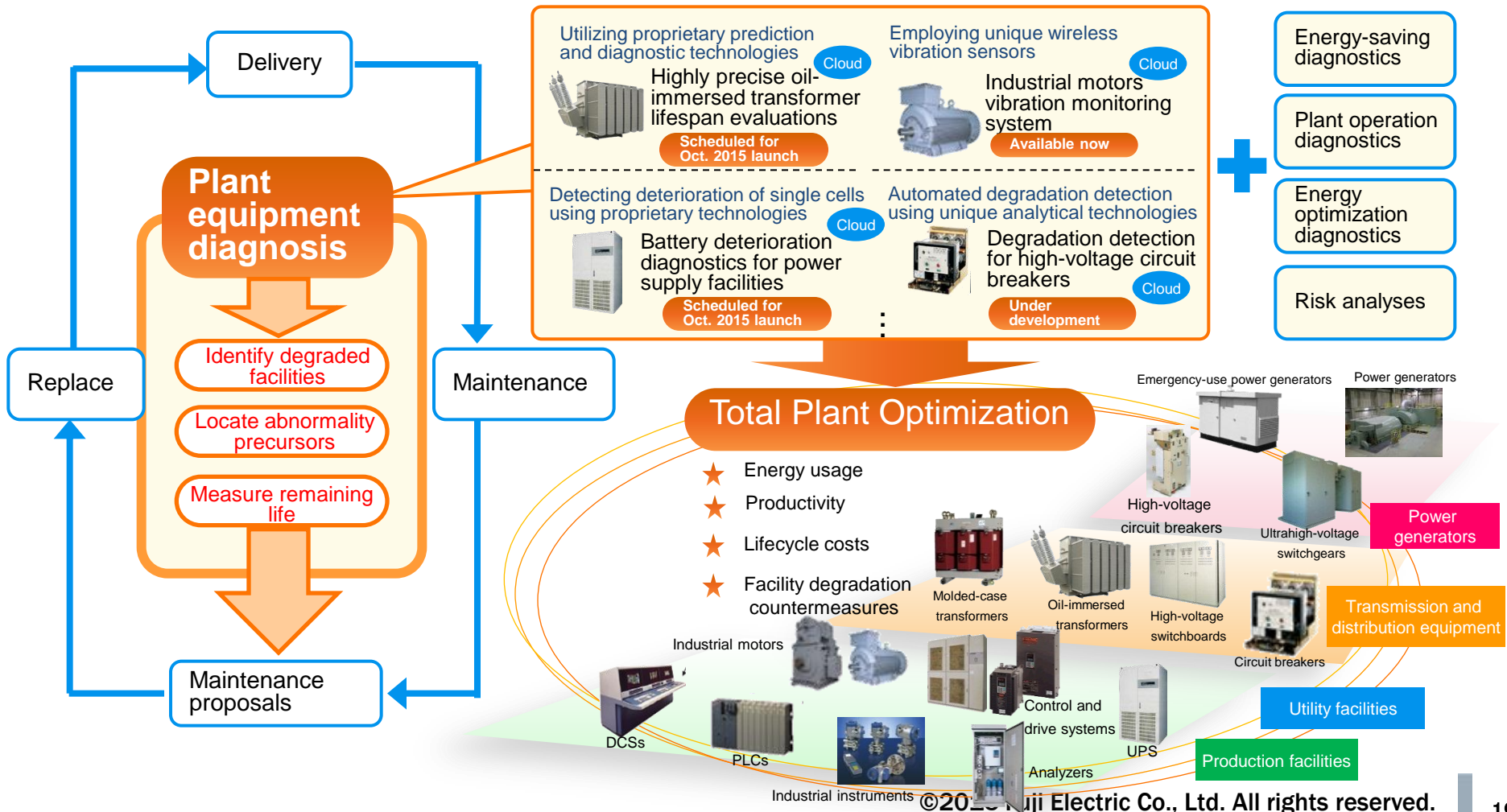
Uses technologies for analyzing **PM2.5** and other aerosols in real-time to aid pollution countermeasures
Scheduled for Jun. 2015 launch

- Multiple applications
 - PM2.5
 - Black carbon
 - Particle diameter and number measurement
- Sales targets
 - China: Environmental monitoring bureaus, etc.
 - Japan: Prefectural governments, etc.

Initiatives to Capture Replacement Demand in Japan Fuji Electric Innovating Energy Technology

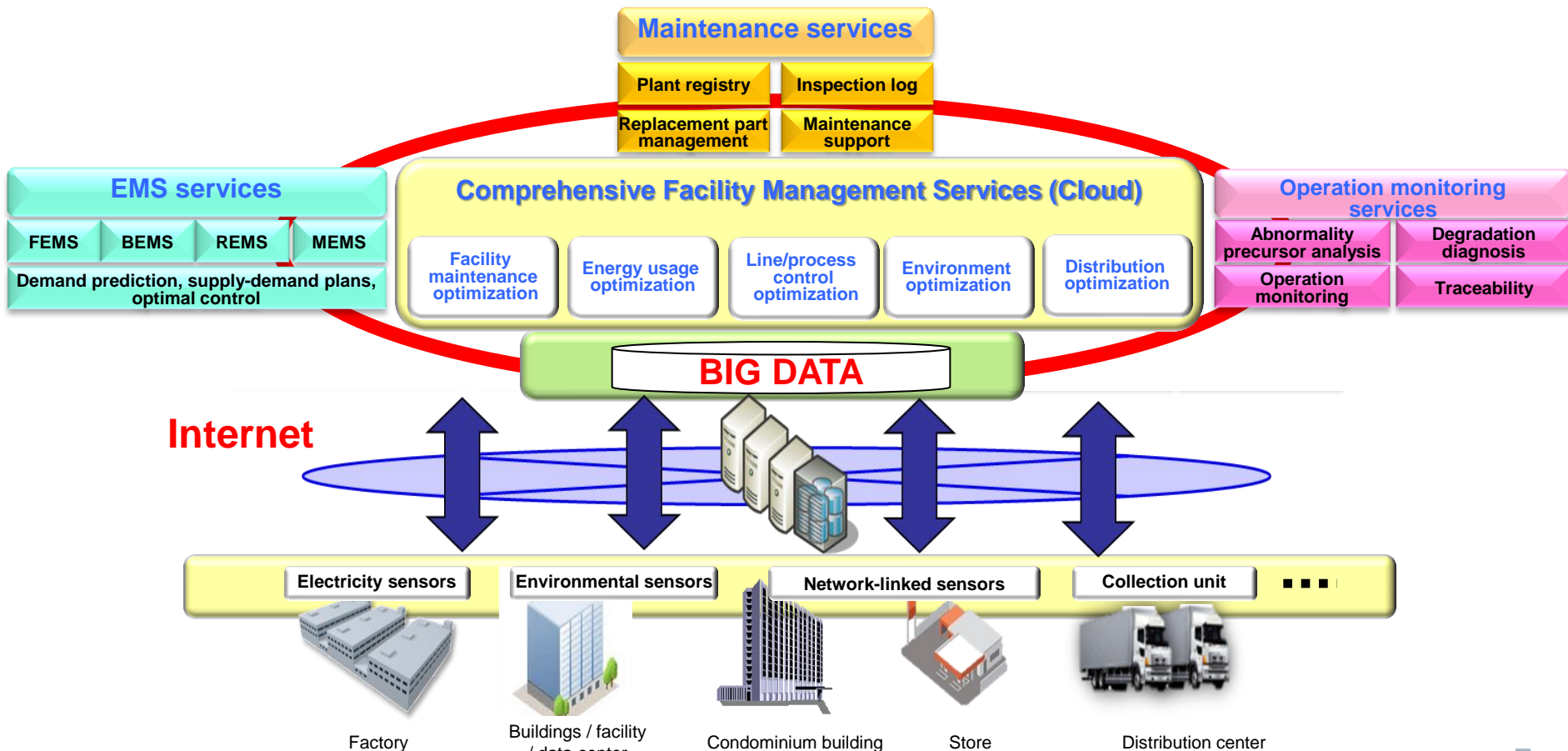
(Expansion of Service Business Orders)

Stimulate latent facility replacement demand **by diagnosing customers' plant equipment**
Utilize facility replacement as an opportunity to make **proposals for overall plant optimization**



Spread from Comprehensive Facility Management Services to IoT and M2M

Provide **comprehensive facility management services** combining **integrated cloud computing foundation** (comprised of sensing, energy saving analysis, demand prediction, quality trend analysis, and facility degradation diagnostic technologies) with energy and environmental **sensors**



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