

Power Electronics Business Strategies

May 26, 2014

Fuji Electric Co., Ltd.

Power Electronics Business Group

- Business Overview
- Market Trends
- Business Targets
- Priority Measures

Business Overview

Business Overview

Major products

Market position

Drive

- Inverters
- Motors
- Servo systems
- Transportation power electronics



Inverters



Motors



Servo systems



Automotive electronics



Electric equipment for railcars

- **Low-voltage inverters**
Domestic share: 24% (No.2)
Global share: 4% (No.7)
- **Medium-voltage inverters**
Domestic share: 12% (No.3)

Power supply

- UPSs
- PCSs
- Switching power supplies



Uninterruptible power supply systems (UPSs)



Power conditioners (PCSs) for mega solar systems



Switching power supplies

- **Medium- and large-capacity UPSs**
Domestic share: 22% (No.2)
Share of units sold
- **PCSs**
Top class domestic share

ED&C components

- Power distribution and control equipment



Magnetic switches



Molded case circuit breakers

- **Magnetic switches**
Domestic share: 49% (No.1)
- **Molded case circuit breakers**
Domestic share: 16% (No.2)

Market Trends

Inverters Market Trends

- The recovery trend continues in Japan
- Full-fledged recoveries expected in China and other parts of Asia from 2Q onward
- Continued favorable business climate in North America, Europe also trending gradually toward recovery

| Region / country | Market Growth Rate (year-on-year) | High-Growth Fields | Forecasts of market conditions |
|------------------|-----------------------------------|---|--|
| World | 104% | — | — |
| Japan | 103% | Air conditioners, cranes, molding machines, metal processing machines, testing machines | <ul style="list-style-type: none"> • Market conditions continue trending toward recovery • Cranes and other export machinery remain favorable |
| Overseas | 104% | — | <ul style="list-style-type: none"> • Recoveries expected in China and other parts of Asia from 2Q onward • Continued favorable business climate in North America, Europe also trending gradually toward recovery |
| China | 104% | Air conditioners, cranes, spinning machines, molding machines | <ul style="list-style-type: none"> • Market conditions remain opaque • Sense of recovery in the OEM market, driven by elevators and cranes |
| Asia | 106% | Air conditioners, manufacturing plants | <ul style="list-style-type: none"> • Recovery expected from 2Q onward, despite weakness in India and Indonesia • Recoveries expected in air conditioners and mining (Australia, Indonesia) from 2Q onward |
| Europe | 102% | Air conditioners, elevators | <ul style="list-style-type: none"> • Continued gradual recovery, centered on Germany • Elevator market conditions remain robust in Italy and Turkey |
| The Americas | 105% | Air conditioners | <ul style="list-style-type: none"> • Housing demand recovering, favorable market for air conditioners • Favorable market continue, centered on oil and gas |

UPSs Market Trends

- In Japan, the IDC market is firm and post-disaster recovery demand is growing
- Market conditions remain favorable in China and other parts of Asia
- Market conditions continue to be favorable in North America, but no growth in Europe

| Region / country | Market Growth Rate (year-on-year) | High-Growth Fields | Forecasts of market conditions |
|------------------|-----------------------------------|----------------------------|---|
| World | 104% | — | — |
| Japan | 106% | IDC, Construction | <ul style="list-style-type: none"> ▪ Big data demand is supporting a robust IDC market ▪ Post-disaster recovery demand in the Tohoku region is growing |
| Overseas | 103% | — | <ul style="list-style-type: none"> ▪ Market conditions remain favorable in China and other parts of Asia ▪ Market conditions continue to be favorable in North America, but no growth in Europe |
| China | 103% | IDC | <ul style="list-style-type: none"> ▪ Market conditions are favorable overall, though growth is slowing |
| Asia | 106% | IDC, Public infrastructure | <ul style="list-style-type: none"> ▪ IDC market conditions remain favorable, particularly in Singapore and Malaysia |
| Europe | 100% | IDC | <ul style="list-style-type: none"> ▪ Market is mature, not growing ▪ Local manufacturers numerous, accelerating trend toward lower prices |
| The Americas | 105% | IDC | <ul style="list-style-type: none"> ▪ IDC market conditions remain favorable ▪ The Big 3 account for more than 70% of the market |

PCSs Market Trends

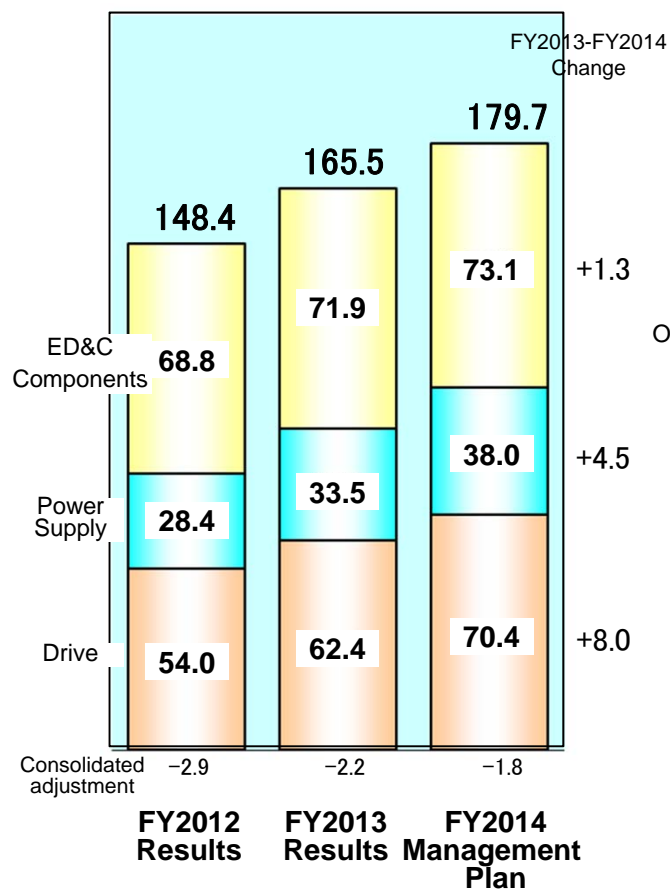
- In Japan, mega solar business is favorable, deployment of solar power generation is expected to peak in 2014
- Market conditions remain favorable in China and other parts of Asia
- Market conditions continue to be favorable in North America

| Region / country | Market Growth Rate (year-on-year) | High-Growth Fields | Forecasts of Market conditions |
|------------------|-----------------------------------|---|---|
| World | 114% | — | — |
| Japan | 139% | mega solar systems | <ul style="list-style-type: none"> ▪ Deployment of solar power generation is expected to peak in 2014 |
| Overseas | 113% | — | <ul style="list-style-type: none"> ▪ Market conditions remain favorable in China and other parts of Asia ▪ Market conditions continue to be favorable in North America, but no growth in Europe |
| China | 109% | mega solar systems, medium-sized commercial-use | <ul style="list-style-type: none"> ▪ Demand increasing for PCSs with large output capacity (more than 500kW) ▪ Local manufacturers are maintaining market share |
| Asia | 118% | mega solar systems, medium-sized commercial-use | <ul style="list-style-type: none"> ▪ Market conditions are favorable in Thailand, Malaysia, and South Korea ▪ Large-scale projects continue |
| Europe | 97% | medium-sized commercial-use | <ul style="list-style-type: none"> ▪ Significant country-specific changes in government policies and economic conditions |
| The Americas | 115% | mega solar systems, medium-sized commercial-use | <ul style="list-style-type: none"> ▪ Market conditions are favorable for small- and medium-capacity PCSs |

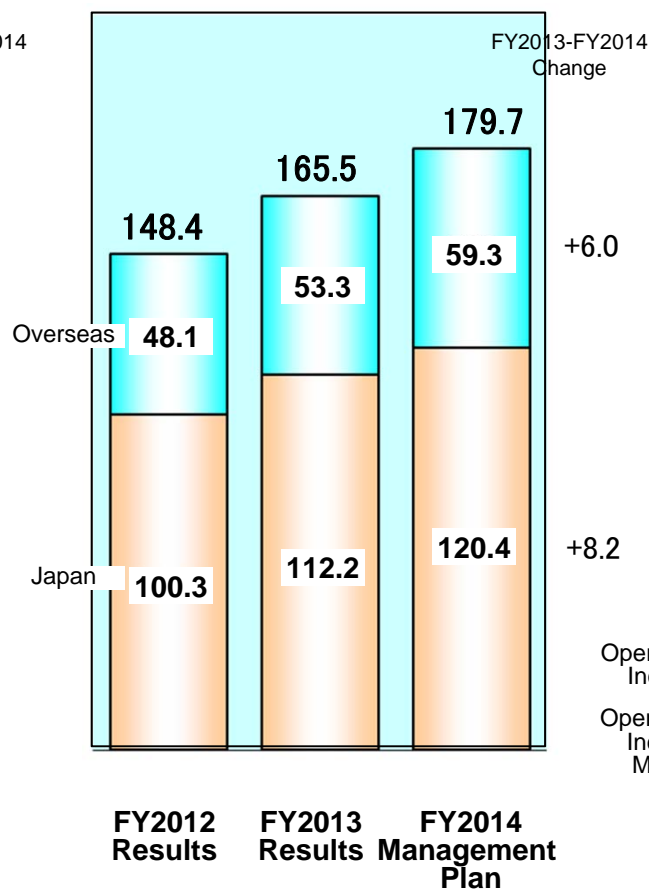
Business Targets

Business Targets

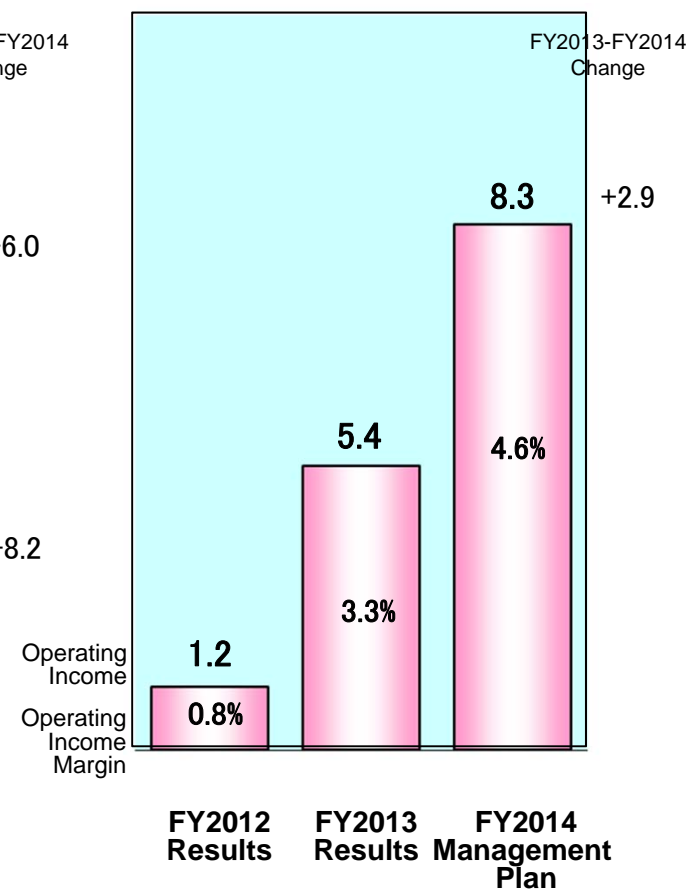
Net Sales by Subsegment
(Billion yen)



Net Sales in Japan / Overseas
(Billion yen)



Operating Income / Operating Income Margin (Billion yen)












Priority Measures

- **Accelerate development and introduce new products**
(one-of-a-kind products, products mounted with SiC semiconductors)
- **Reinforce initiatives targeting key industries**
Air conditioners (HVAC), cranes, molding machines, metal processing, automotive testing machines
- **Expand overseas business by utilizing joint ventures with Shanghai Electric Group**

*HVAC is an abbreviation for Heating, Ventilation, and Air Conditioning.

Inverters New Product Introduction Plan

Respond to global needs through the ongoing introduction of new and one-of-a-kind products

| Application / Industries | Models | FY2013 | FY2014 | | | |
|---|---|---|---------------------------|----|--|----|
| | | | 1Q | 2Q | 3Q | 4Q |
| Industrial Plants, Electric power and Social Infrastructure | Medium-voltage Inverters  | | expand Series | | | |
| cranes, Automotive testing equipment, molding machines | Stack-type FRENIC-VG high-performance vector-controlled inverter |  | 400V Series | | 690V Series : Equipped with SiC | |
| elevators | FRENIC-Lift for elevators  | | | | Slim type  | |
| Air conditioners (HVAC) | Low voltage Inverters FRENIC-HVAC for air conditioning applications  | | 400V Series / 200V Series | | 575V Series | |
| General industrial machinery | FRENIC-Ace, a global standard model |  | Higher voltage, capacity | | For sale in Japan | |
| Compact industrial machinery, conveyers | Compact FRENIC-Mini model change |  | Higher voltage, capacity | | Internal EMC filter | |
| Semiconductor fabrication equipment, Metal processing machines, packaging machines, printing machines | Servo systems ALPHA5 Smart for overseas markets |  | Medium-capacity series | | Amp compatible with E-SX bus  | |
| | ALPHA5 E-SX type for motion systems | | | | | |

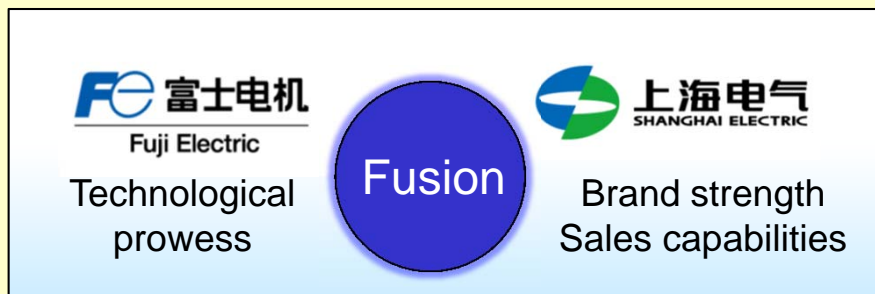
Leverage Joint Venture in Medium-Voltage Inverters with Shanghai Electric Group

April 2014

Operations commenced at joint venture company Shanghai Electric Fuji Electric Power Technology Co., LTD.

Focus areas: Electric power, petrochemicals

- Synergies between Fuji Electric's technological prowess and Shanghai Electric's sales capabilities



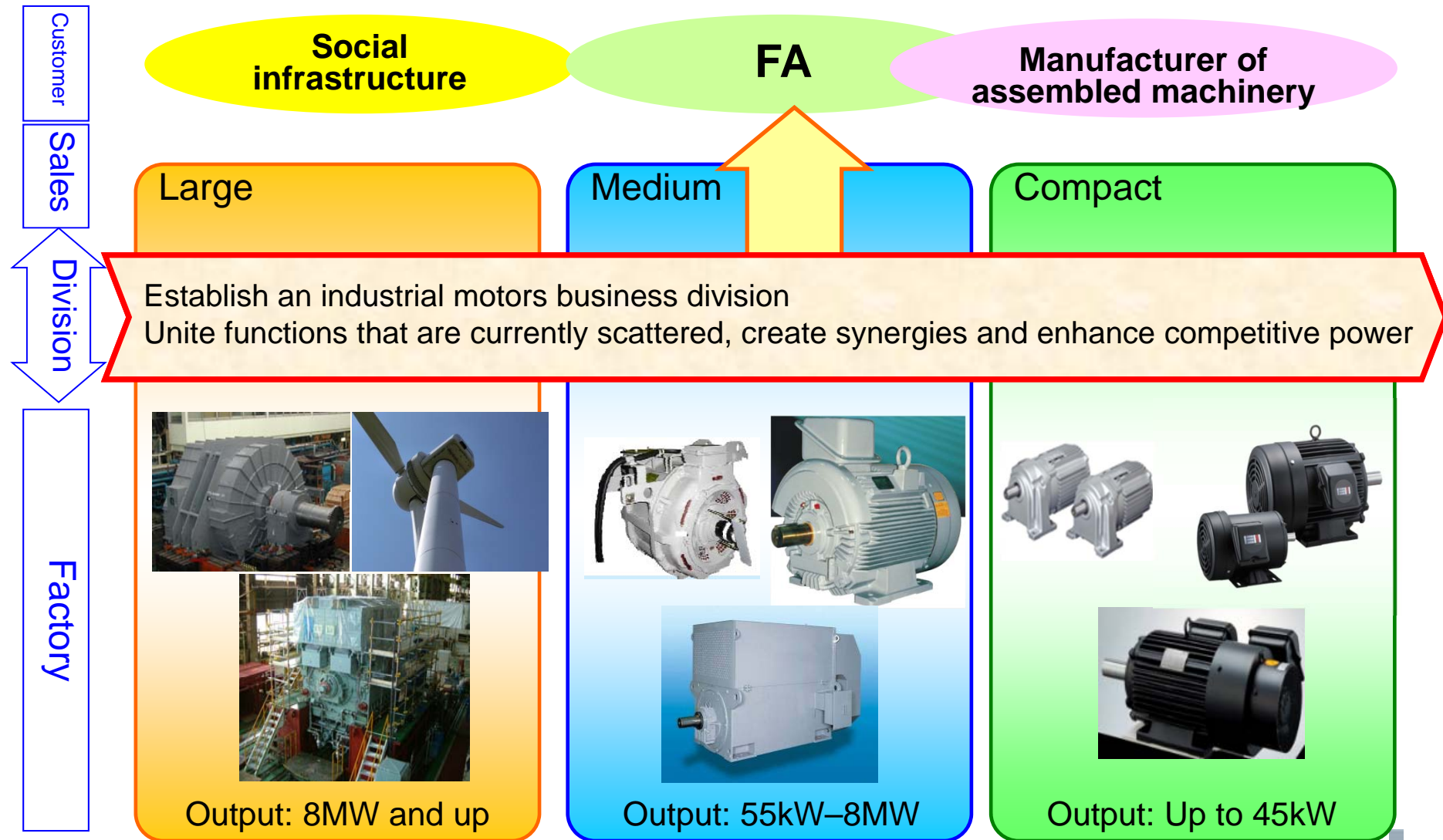
- Establish a completely local operation, with local design and local manufacture for local consumption



Consider increasing and augmenting our scope of collaboration to expand our business in China

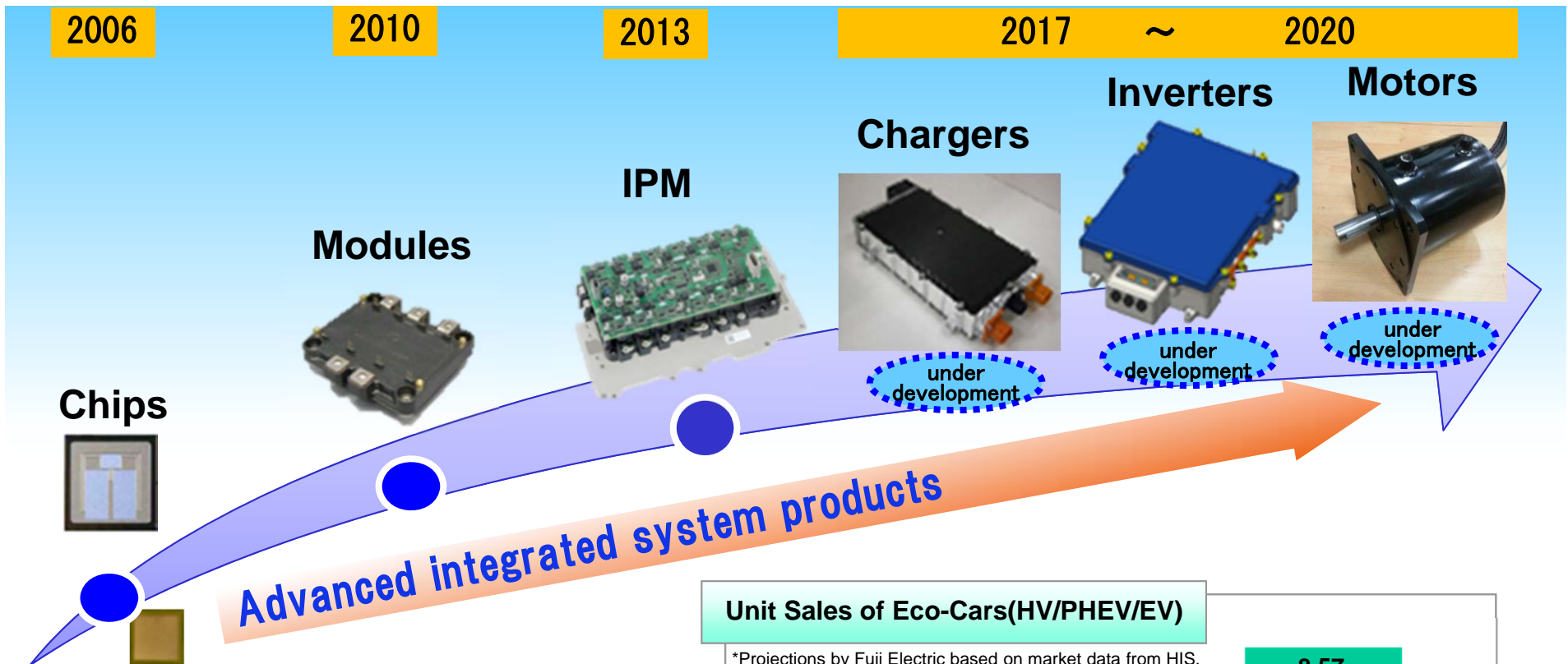
Motors Priority Measures

Propose and Implement a Coherent Operational, Management and Business Strategy for Compact, Medium-Sized and Large Industrial Motors



Automotive power electronics Priority Measures

Combine own Advanced Semiconductor Device Technology and Power Electronics Technology to Create the Highest-Performance Automotive Power Electronics Products in the world



Unit Sales of Eco-Cars(HV/PHEV/EV)

*Projections by Fuji Electric based on market data from HIS.

1.92 million units



2012
Results

8.57 million units

2020
Forecasts

- Accelerate development and market launch of new products (products with overseas specifications, high-capacity products for Japan)
- Propose solutions to leading IDC companies (large-capacity UPSs)

New Product Introduction

| Product | Models | FY2013 | | FY2014 | | | | | |
|--------------------------------|---|---|----|---|----|----|----|--------|--|
| | | 3Q | 4Q | 1Q | 2Q | 3Q | 4Q | | |
| Medium- and Large-Capacity UPS | UPS7000HX-T4 for Chinese/Asia market | 500kVA | | | | | | | |
| | UPS7000HX-T3U for North America market |  | | <div style="border: 1px solid black; padding: 5px;"> <p>UPS7000HX High efficiency, space saving</p> <p>UPS6000DX Power factor 1.0 compatible uses touch screen, high performance</p> </div> | | | | 500kVA | |
| | UPS6000DX-T3 for Japan market/High-capacity | | | 100kVA~ | | | | | |
| Small power supplies | Off-Line UX100 |  | | 500VA~1000VA | | | | | |

- Enhance competitiveness and bolster our domestic market share by enhancing our product lineup (660kW units for indoor use, SiC- equipped PCSs)
- Through collaboration, make inroads in China and other parts of Asia

New Product Introduction Plan

| Model | Type | FY2013 | | FY2014 | | | |
|-------|----------------------------------|--------------------------------|----|--------|----|----|----|
| | | 3Q | 4Q | 1Q | 2Q | 3Q | 4Q |
| PCSs | Indoor DC1000V PVI1000-3/660 | 660kW | | | | | |
| | SiC-equipped PVI1000AJ-3/1000 | Scheduled for launch in FY2014 | | | | | |



- Conversion efficiency at world's highest level
- High-voltage input capability (1,000V DC) enables high system efficiency

- **Japan: Focus on cultivating business in high-growth fields, such as renewable energy, IDC, and shipping**
 - ⇒ **Leverage distinctive Schneider products to augment product range**
 - ⇒ **Focus allocation of management resources on growth fields**

- **Overseas: Concentrate on Southeast Asia and China**
 - ⇒ **Introduce products to meet different markets' specific needs (specifications, prices)**

- **Make use of new development wing, Techno Lab**
 - ⇒ **Accelerate market launch of new products, increase opportunities to come into contact with customers**

Proactively Introduce New Products for Growth Fields

Renewable Energy

Non-polar, DC MCCBs



Electromagnetic contactors for PV systems



DC string monitoring units for PV systems



Replacement Market (High-Voltage Equipment)

Multi-VCBs (movable type) Multi-VCBs (fixed type)



Data Centers, Shipping

Busway system for data centers



Distribution unit with power monitoring F-MPC

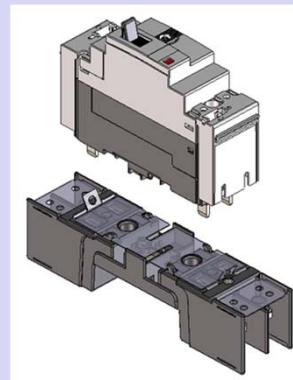
Busway system for luxury liners



Distribution unit with power monitoring MCCB, on-board NSX

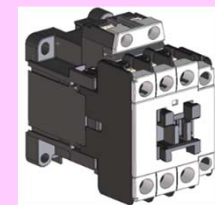
Products generated through busway and EMS collaboration

Plug-in breakers



Inverter, Servo Load-Capable Connectors

SK series (6-32A)



Introduce products that respond to market needs

Control

Mid-range to high-end OEM

- High quality and performance
- Compatible with international standards



Low-end OEM

- Economical
- Compatible with international standards



Power distribution

Electrical distribution for large-scale facilities

- High quality and performance
- Extensive lineup



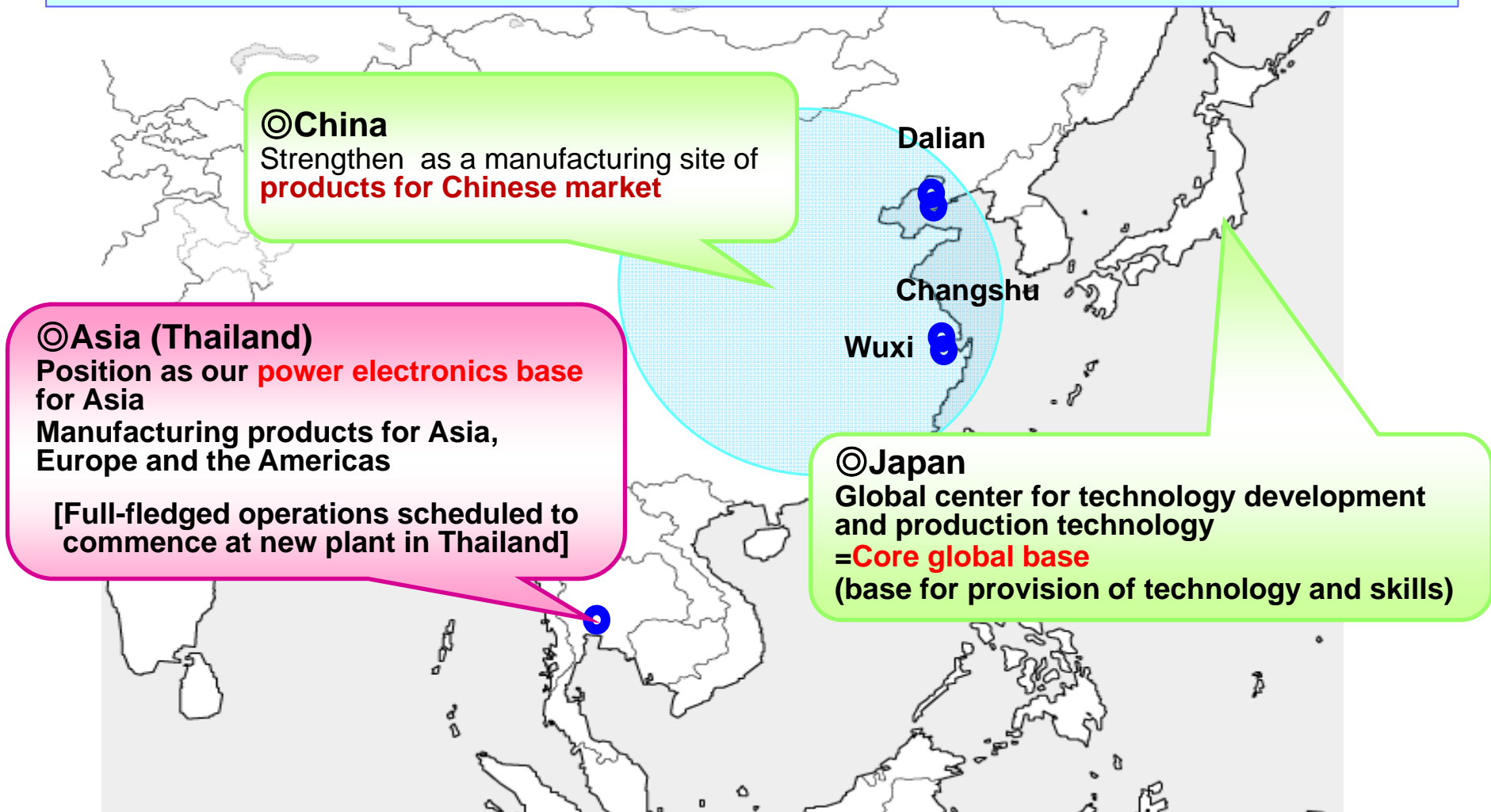
Electrical distribution for small and medium-scale facilities

- Economical
- Extensive lineup



Establish Global Manufacturing Structure

Establish Three-Hub Manufacturing Structure (Japan/Asia/China)

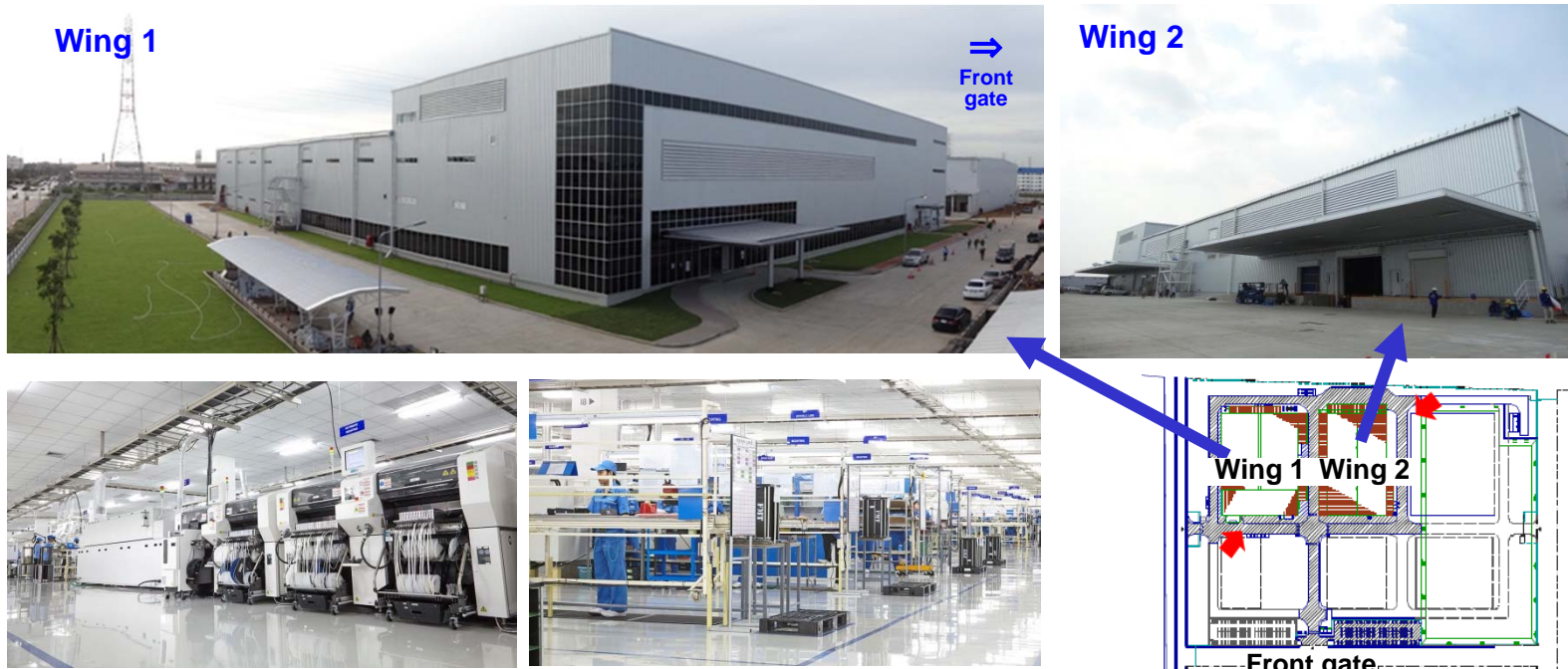


Enhance Competitiveness of the new Thai Factory

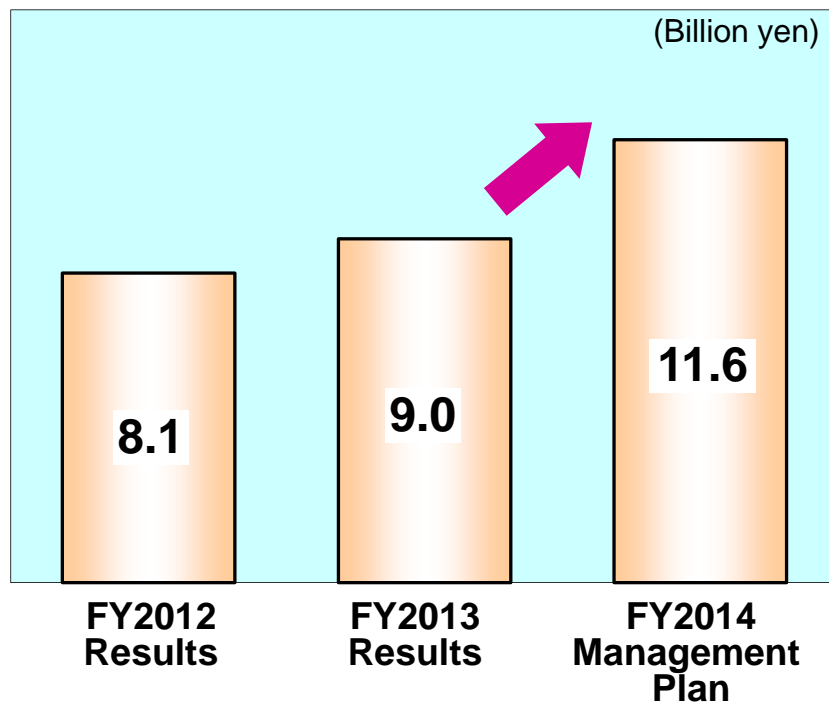
- FY2013 :** At new plant in Thailand, establish foundations for system to handle local production for local consumption
- Increase manufacture of products for Asia, Europe, and the Americas
- FY2014 :** Move to global supply structure, centered on the new plant in Thailand
- Expand number of items manufactured
 - Transform into plant with the highest level of competitiveness (QCDS)



Enhance price competitiveness



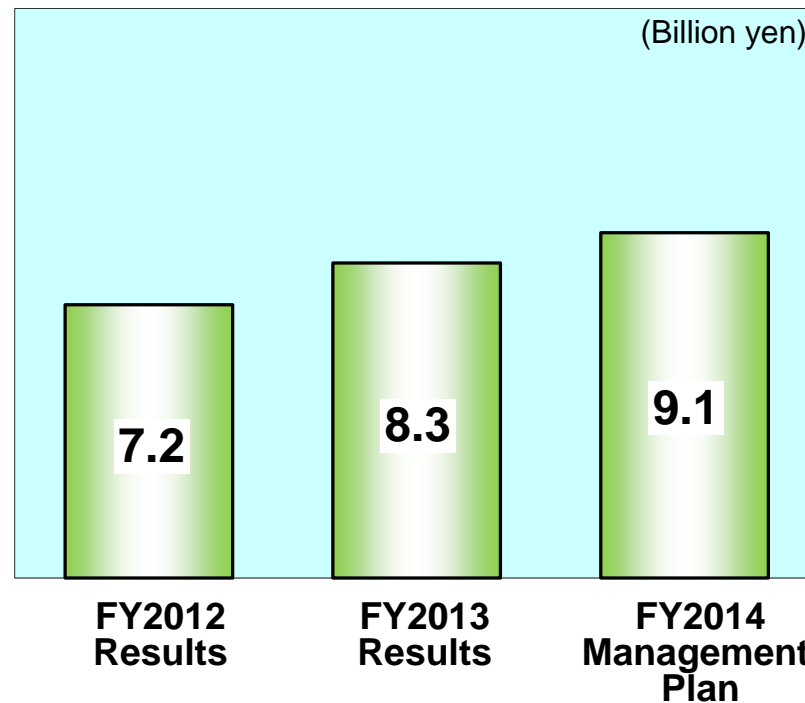
R&D Expenditures



【Major themes】

- Development of new products for the global market
- Development of products differentiated to have high efficiency, high functionality, etc.

Plant and Equipment Investment



【Major themes】

- Increased production equipment of the new Thai Factory
- ED&C New Development Center (Fukiage Factory Techno Lab)

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