Fuji Electric
Innovating Energy Technology

Power and New Energy Business Strategies

May 31, 2018
Fuji Electric Co., Ltd.
Power and New Energy Business Group

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Business Overview

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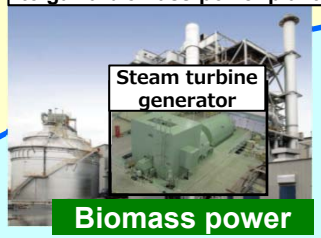
Contribute to the realization of a sustainable society by stably creating safe and secure energy

~Develop businesses with maximized environmental performance, efficiency, economic benefits, value, and innovation~

Renewable Energy and New Energy

Compatibility with high efficiency

Itoigawa biomass power plant



Biomass power

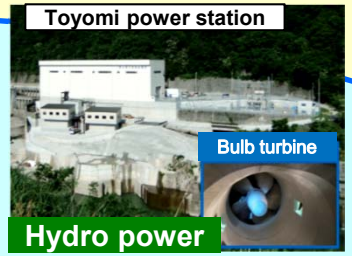
Expanded lineup

Nga Awa Purua Geothermal Power Station

Geothermal Power

Response to S&B demand

Toyomi power station



Hydro power

EPC and grid stabilization services

Minami Alps Energy Park

Solar power

Ogimi Wind Power Generation Demonstration Research Facility

Wind power

Expansion of product lineup from phosphoric acid models to SOFC models

Fuel Cells

Expansion of after sales businesses

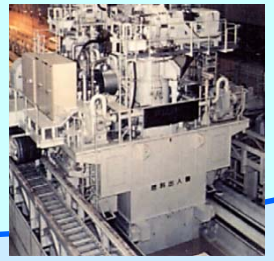
Thermal power

Compatibility with high temperatures and efficiency and expanded service lineup

Yoshinoura Thermal Power Station

Nuclear Power-Related Equipment

Expanded lineup of decommissioning systems and service offerings



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Review of FY2017

Review of FY2017

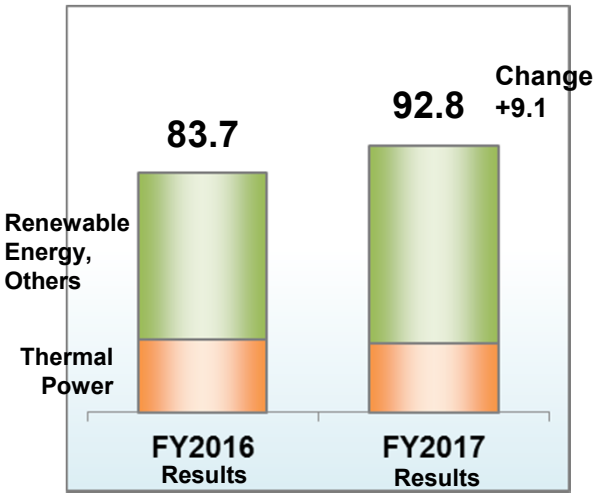
Initiative Results in FY2017

- Continually acquired official biomass power plant orders and unofficial agreements in Japan (total of five)
- Received orders for large-scale solar power plants (received orders for plants with attached storage cells)
- Increased orders for nuclear power-related equipment

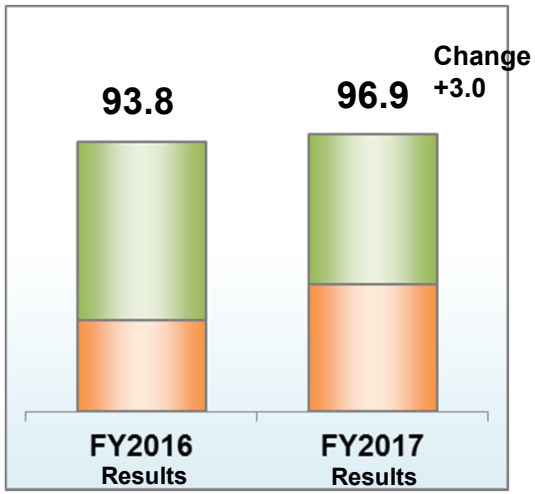
Challenges to Be Tackled in FY2018

- Expansion of orders (orders ≧ sales)
- Redoubling of cost reduction activities to increase profits

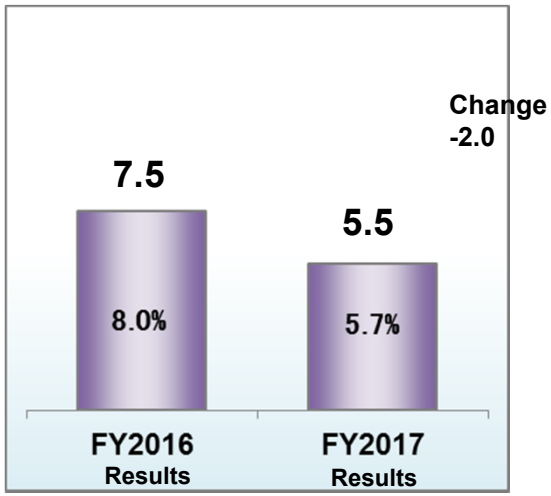
Amount of Orders Received
(Billion yen)



Net Sales (Billion yen)



Operating Income / Operating Margin (Billion yen)



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FY2018 Management Plan

Business Policies

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Address substantial changes in market structures to achieve stable and ongoing business growth

- Shift from large-scale power sources to distributed power sources
- Growing presence of renewable energy

Business Policies

- Increase orders for renewable energy projects
- Expand after sales businesses
- Redouble cost reduction activities to increase profits

Business Plan

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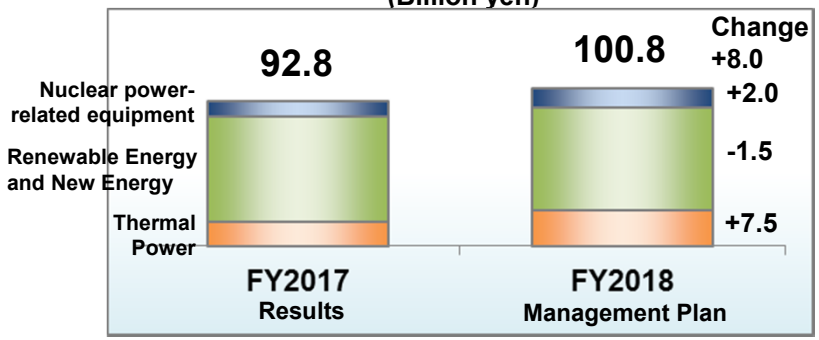
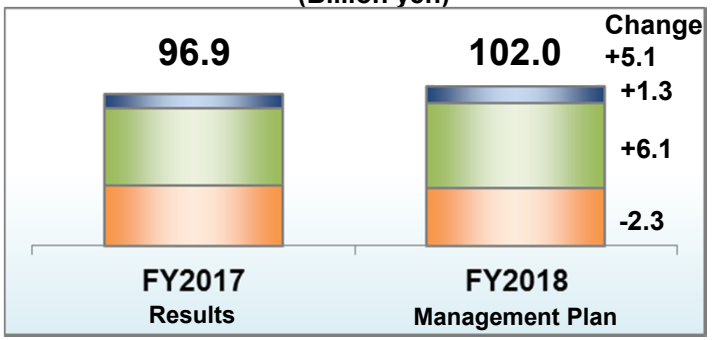
Amount of Orders Received by model

(Billion yen)

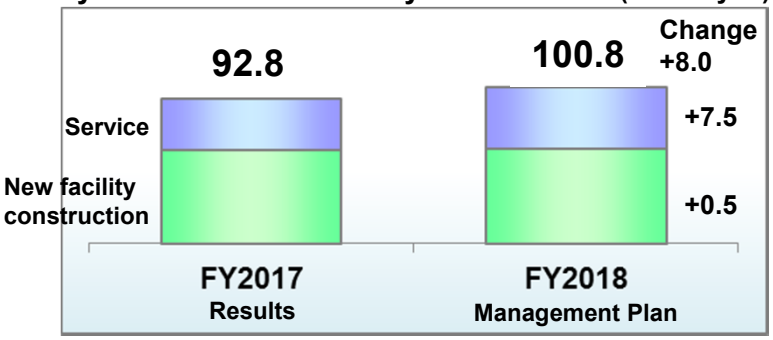


Net Sales by model

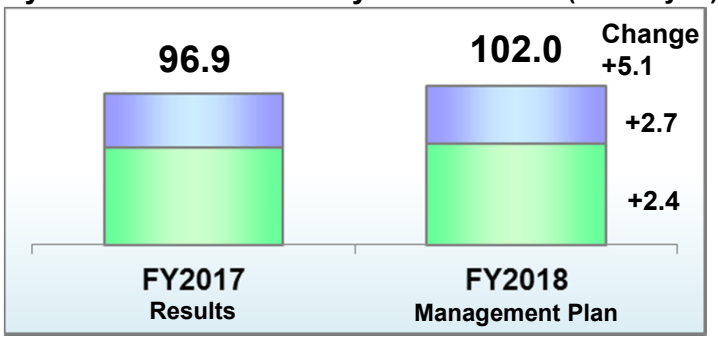
(Billion yen)



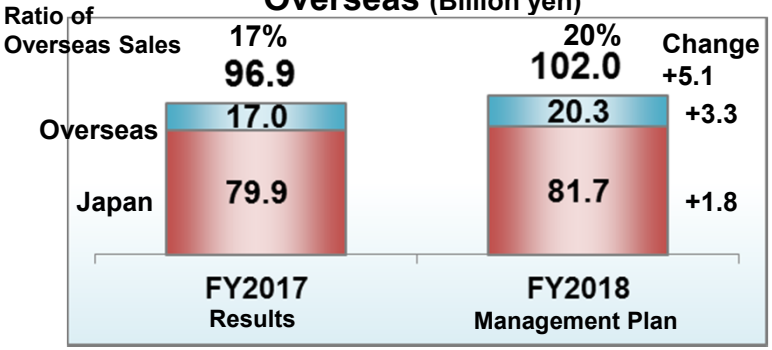
Amount of Orders Received by Service or New Facility Construction (Billion yen)



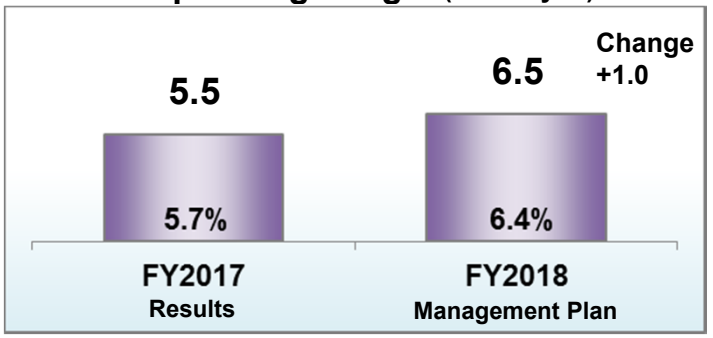
Net Sales by Service or New Facility Construction (Billion yen)



Net Sales in Japan / Overseas (Billion yen)



Operating Income / Operating Margin (Billion yen)



Power Generation Facilities—Market Trends (Global)

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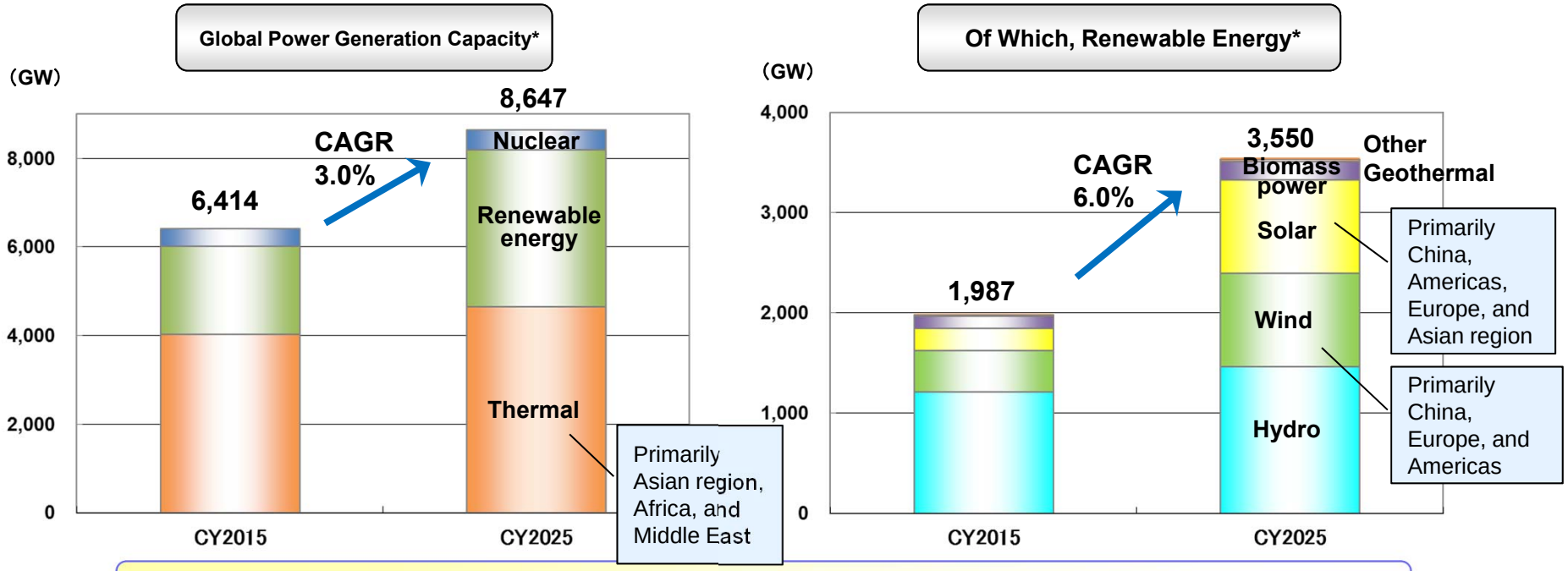
Continuing global growth in electricity demand and increasing installation of generation facilities



- **Annual growth rate (CY2016–CY2025) of 2.1% for global energy demand***
  - **—North America, Europe, and Japan: 0.7% annual growth**
  - **—Other regions: 3.2% annual growth**
- **Thermal: Decline in large-scale coal-fired thermal projects, increase in gas combined cycle projects**
- **Geothermal: Promotion of geothermal power generation plant introduction by government measures and subsidies (Indonesia and Africa)**
- **Solar and wind: Driving force behind growth of renewable energy**

* Source: IEA World Energy Outlook 2017

Power Generation Facilities—Market Trends (Japan)

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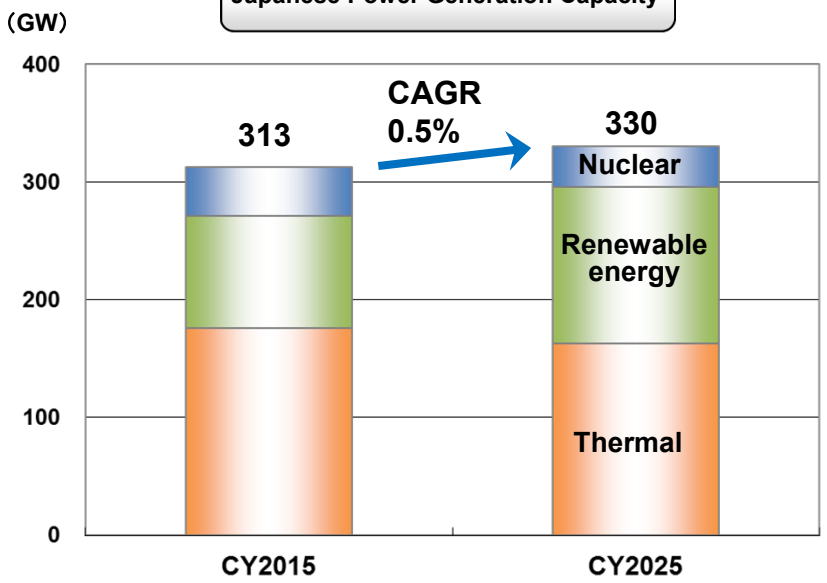
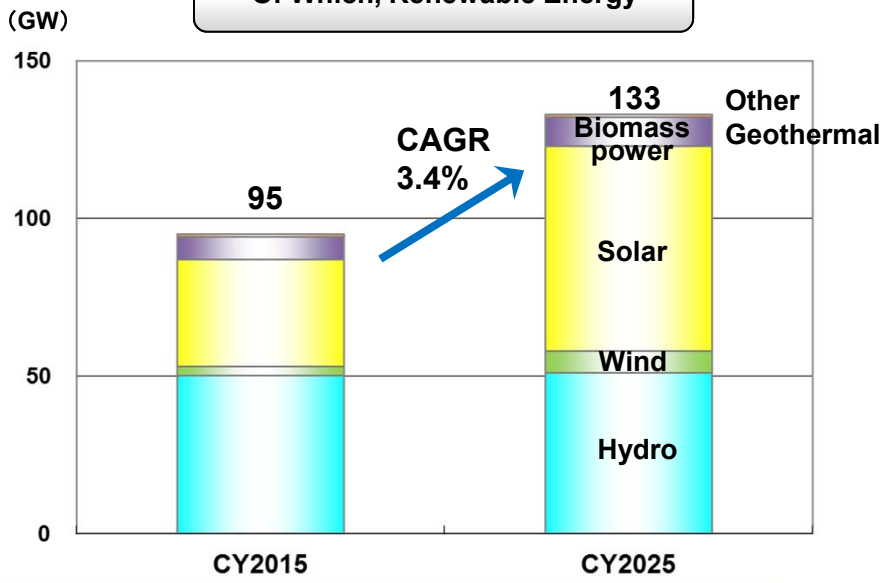
Decline in thermal and nuclear power, growth in renewable energy going forward

Japanese Power Generation Capacity*



Of Which, Renewable Energy*



- Electricity demand in Japan projected to around the same level as 2016 in 2025*
- Thermal: Overall market contraction due to decline of coal-fired thermal and oil-fired thermal
- Hydro: Ongoing demand centered around S&B projects for improving efficiency
- Wind: Rapid growth driven by projects applicable under FIT scheme
- Solar: Shift of focus from projects applicable under FIT scheme to in-house generation and rooftop generation projects
- Biomass: Growth driven by projects applicable under FIT scheme
- Nuclear: Market contraction due to decommissioning of nuclear power plants

* Source: IEA World Energy Outlook 2017

Thermal Power and Biomass Thermal Power —Priority Measures

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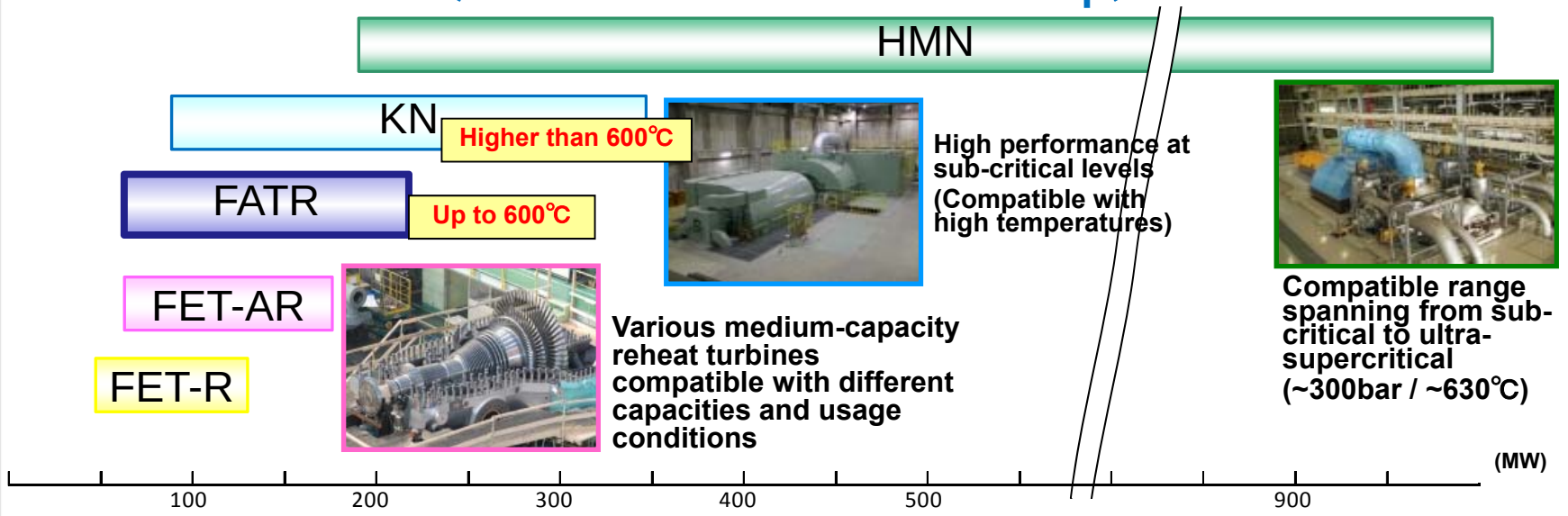
■**Continue to acquire orders for biomass and combined cycle projects primarily in Japan, Asia, and the Middle East**

■**Launch high-temperature, high-efficiency products**

・**Realize compatibility with high temperatures (600℃~) and improve efficiency of main units**

■**Increase profits through project management and accelerated cost reductions**

＜Reheat Turbine Product Lineup＞



* IPP: Independent power producer, PPS: Power producer and supplier

Geothermal Power—Priority Measures

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■Continue acquiring orders in Asia and Africa and work to acquire orders in Central and South American markets
- ・Step up coordination with existing partners (Asia) and new partners (Africa and Central and South America)
- ・Increase profits through project management and accelerated cost reductions

■Expand orders for flash and binary geothermal power generation plants in Japan
- ・Promote sales to new flash geothermal power generation plants to be developed in Japan
- ・Leverage existing track record to promote sales of binary geothermal power generation plants

＜Binary Geothermal Power Generation＞

Robust product lineup covering capacities up to and exceeding 10 MW
Delivered one of Japan's largest binary geothermal power generation plants, continuing trend for FY2016

Yamagawa Binary Power Station of Kyuden Mirai Energy Company, Incorporated

- ・Start of commercial operation: February 23, 2018
- ・Location: Yamagawa-Ogawa , Ibusuki City, Kagoshima Prefecture
- ・Generation capacity: 4,990 kW
- ・Generation method: Air-cooled binary generation
- ・Generation conducted by effectively utilizing energy that cannot be used with the generation method employed by the Yamagawa Power Station of Kyushu Electric Power Company, Incorporated

Hydro Power—Priority Measures

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■**Steadily advance initiatives in relation to after sales services for existing power plants (including output increases)**

・**Promote output increases at existing power plants by upgrading runners and generators while also performing periodic maintenance**

■**Expand orders for S&B projects and new power plants taking advantage of FIT scheme**

・**Proactively seek to acquire projects from power companies, enterprise bureaus, and private-sector companies**

■**Differentiate operations by utilizing new, eco-friendly technologies**

・**Use water servomotors and water lubricated bearings, minimize use of pressure oil equipment, etc.**

【Turbine and Generator Upgrades】

Akiha No. 1 Power Station of Electric Power Development Co., Ltd.
・Turbine type: Vertical Francis turbine (2 units, 22.6 MW capacity)
・Start of operation: May 2017 for No. 2
May 2018 for No. 1

【Turbine Runner Upgrade】

Nakanosawa Power Station of Tokyo Electric Power Company Holdings, Incorporated
・Turbine type: Vertical Francis turbine (1 unit, 43.5 MW capacity)
・Start of operation: May 2018

- S&B: Scrap & build FIT: Feed-in Tariff

Solar and Wind—Market Trends (Japan)

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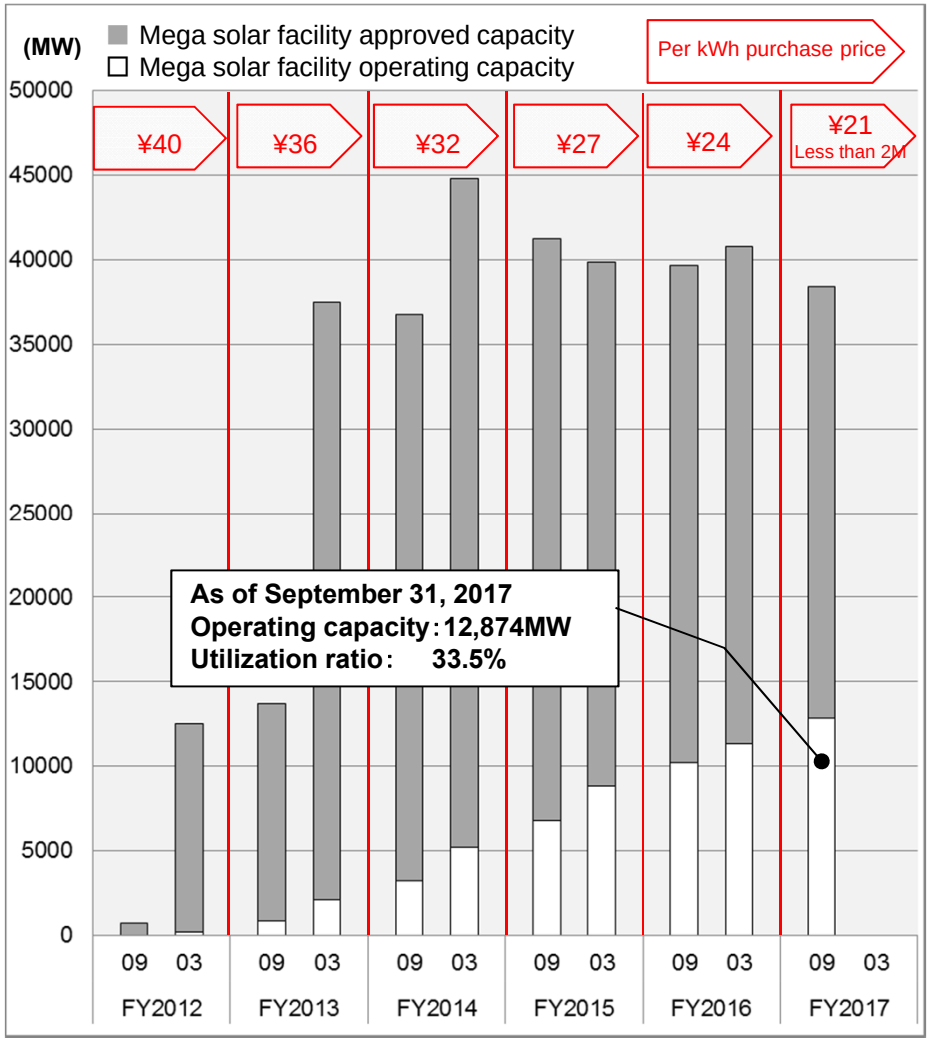
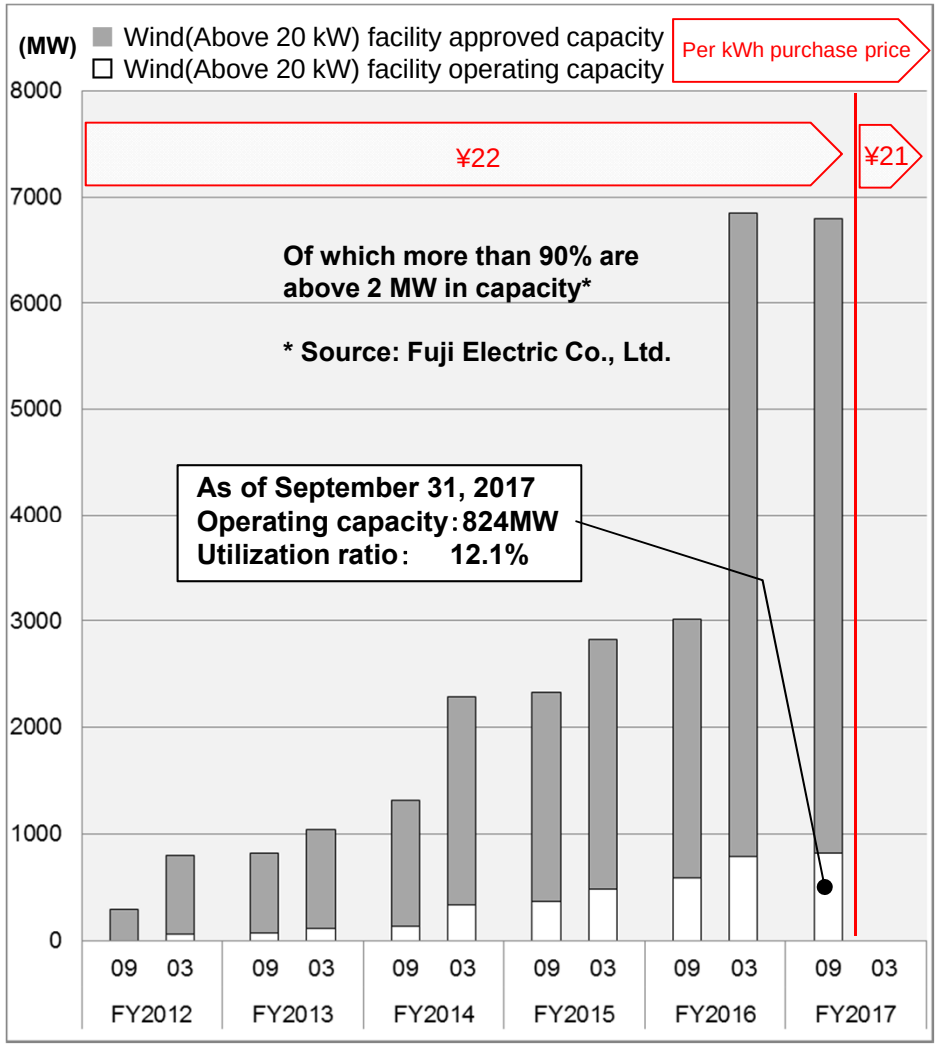
Solar Power (Mega Solar) Facility Approval and Operation Trends



Wind Power (Above 20 kW) Facility Approval and Operation Trends



Source: Agency for Natural Resources and Energy

Solar Power and Wind Power—Priority Measures

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■**Solar Power**

- **Identify potential EPC projects yet to be started and boost orders through negotiations that incorporate attached storage cells, grid stabilization systems, etc.**
- **Expand orders for maintenance services**
- **Increase profits through large-scale EPC project management and accelerated cost reductions**

■**Wind Power**

- **Increase EPC project orders**
- **Boost orders through negotiations that incorporate attached storage cells, grid stabilization systems, etc.**

Tomakomai Mega Solar Power Station
No. 1 of GPD Sakura Solar
(EPC project with generation capacity of 38 MW of DC power and 25 MW of AC power)

Scheduled to commence operation in August 2018

Nuclear Power-Related Equipment, Fuel Cells —Priority Measures

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■Nuclear Power-Related Equipment

- **Begin utilizing Europe's cutting-edge solidification technology (SIAL®)* in the plant decommissioning field and for treating waste at plants under operation, which are on the rise as nuclear power plant operations resume**
- **Steadily produce MOX fuel manufacturing equipment compatible with new regulatory standards**

* SIAL® is a registered trademark of Wood (UK).

SIAL® solidified body

SIAL® solidified sample

wood.

■Fuel Cells

- **Take advantage of South Korea's systems encouraging fuel cell introduction (RPS system,*1 mandatory installation) to promote sales**
- **Utilize patents of Fuji N_2telligence to promote sales in German fire prevention market through collaboration with fire prevention equipment manufacturers**
- **Quickly launch SOFCs*2 that will serve as high-efficiency distributed power sources (FY2018)**

*1 RPS system: Renewable Portfolio Standard system
System for promoting the spread of new energy by requiring power companies to generate a certain portion of their power from new energy sources

*2 SOFCs: Solid oxide fuel cells

【Fuel Cell Introduction】

Five 100 kW fuel cells introduced Yuil Industry facility in South Korea (completed in 2017)

After Sales Businesses—Priority Measures

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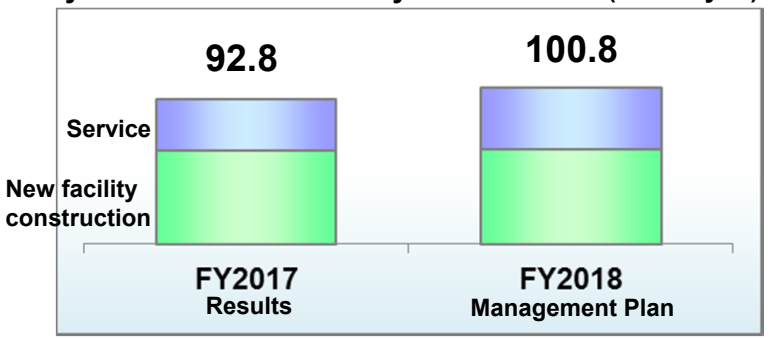
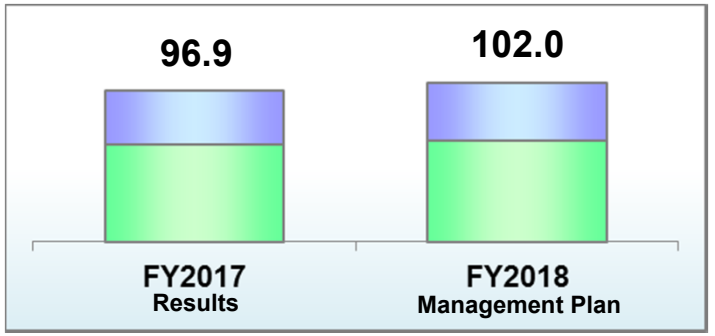
Amount of Orders Received
by Service or New Facility Construction (Billion yen)



Net Sales
by Service or New Facility Construction (Billion yen)



After Sales Business Orders and Net Sales

【Orders】

FY2017: ¥32.5 billion (35% of total)

FY2018 (Target): ¥40.0 billion (40% of total)

Change: +¥7.5 billion (+5 ppts.)

【Net Sales】

FY2017: ¥34.8 billion (36% of total)

FY2018 (Target): ¥37.5 billion (37% of total)

Change: +¥2.7 billion (+1 ppt.)

Secure stable earnings by expanding after sales businesses

■ Thermal and geothermal
- Enhance services that are custom-tailored to customers
- Bolster service lineup

■ Hydro
- Increase orders for S&B projects
- Expand scope of duties handled in after sales businesses

■ Nuclear
- Enter into nuclear waste treatment field and expand sales therein

■ Solar and wind
- Reinforce maintenance service systems

Thermal and Geothermal Power
Expansion of After Sales Businesses

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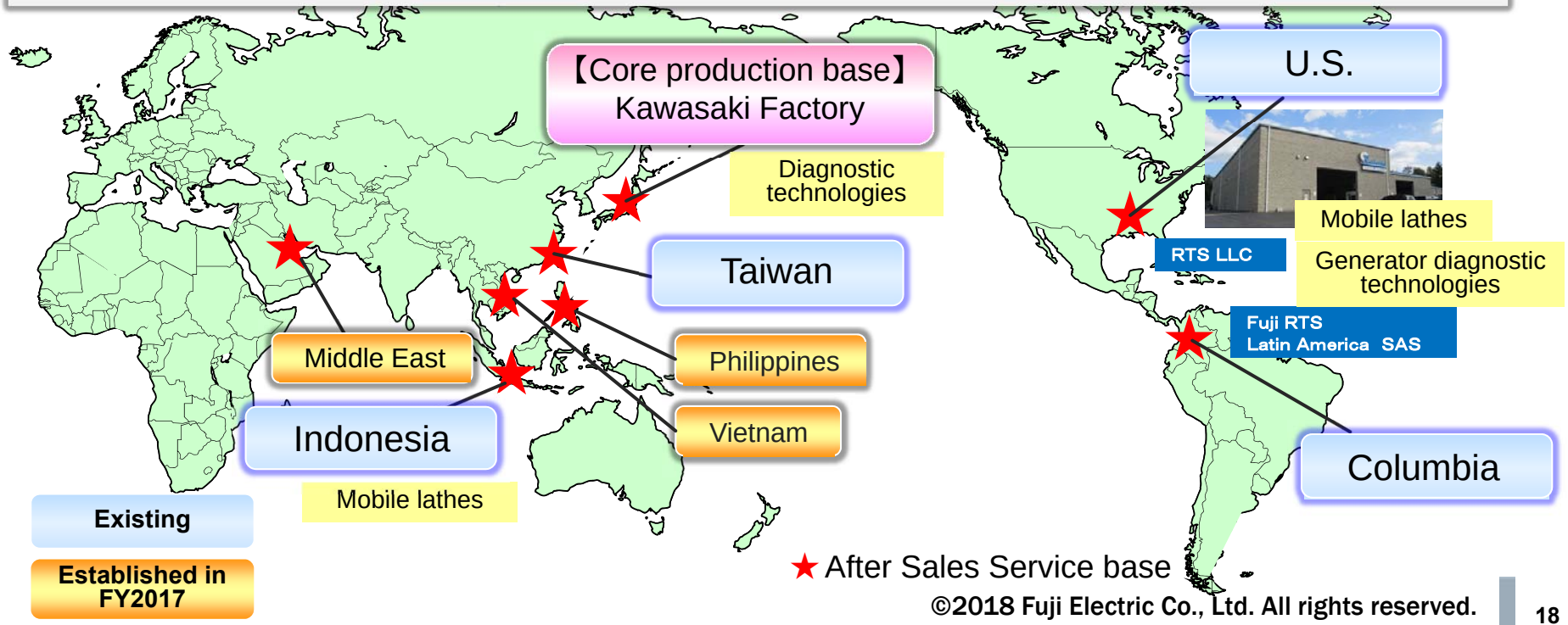
■Enhance services that are custom-tailored to customers
- ・Bolster functions at overseas bases (established additional bases in the Philippines, Vietnam, and the Middle East in FY2017)
- ・Increase customer coverage by strengthening area strategies (sales + engineering teams)

■Bolster service lineup
- ・Enhance lifespan diagnosis proposals
- ・Expand lineup of plant lifecycle optimization services (efficiency improvement, lifespan extension)
- ・Provide remote technical services by utilizing IoT

Portion of total sales attributable to after sales businesses (thermal and geothermal power):

Approx. 30% on average over past 3 years → 40% in FY2018



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Capital Investment / Research and Development

Capital Investment / Research and Development

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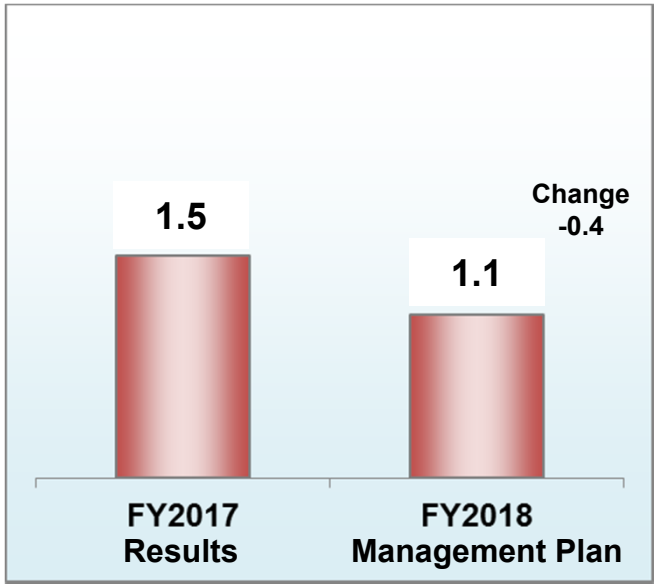
Capital Investment

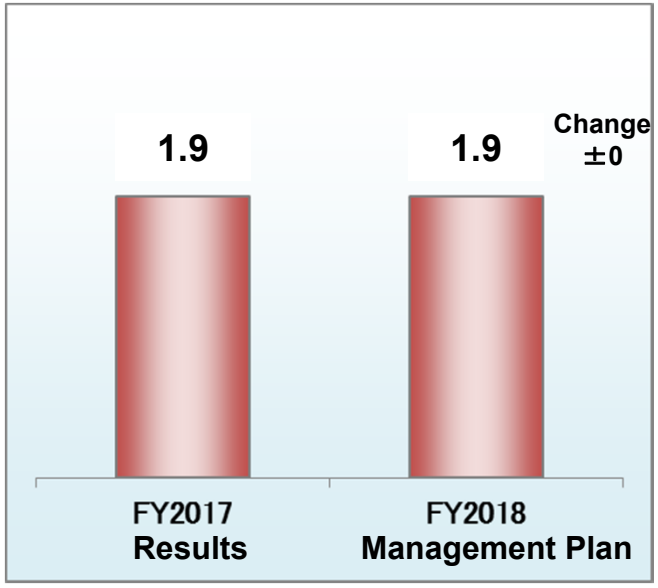
(Billion yen)



- Manufacturing equipment at Kawasaki Factory (rationalization, etc.)

Research and Development

(Billion yen)



- Efficiency increases for thermal turbines
- Service technology development
- Next-generation fuel cell (SOFC) development

* R&D expenditure figures above represent expenditures that have been allocated to segments based on theme and may therefore differ from figures contained in consolidated financial reports.

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