Power Systems Company
Business Strategy

June 9, 2010
Koji Tanaka
Vice President and Executive Officer
President & CEO,
Power Systems Company
Hitachi, Ltd.
Power Systems Company
Business Strategy

Contents
1. Business Overview
2. Market Environment
3. Business Policy and Strategy
4. Thermal Power Business
5. Nuclear Power Business
6. Renewable Energy Business
7. Business Performance Trends
8. Conclusion
1. Business Overview

Thermal Power Business
- Coal-fired thermal power plants
- IGCC

Nuclear Power Business
- Boiling water reactor nuclear power plants (ABWR, ESBWR)
- Preventive maintenance, nuclear fuel cycle, etc.

Other Businesses

FY2009 consolidated revenues ¥882.1 billion

- 24%
- 57%
- 19%

<Major equipment of nuclear power plants>
- Reactor pressure vessel
- Reactor equipment
- Main Control Room Panel

<Major equipment of coal-fired thermal power plants>
- Steam turbines and generators
- Boilers and AQCS
- Gas turbines
- Proton beam therapy system

<Major equipment of coal-fired thermal power plants>
- Boilers and AQCS
- Gas turbines
- Steam turbines and generators

<Major equipment of nuclear power plants>
- Reactor pressure vessel
- Reactor equipment
- Main Control Room Panel

<Major equipment of nuclear power plants>
- Hydroelectric power generation systems
- Wind power generation systems
- Solar power generation systems
- Power transmission and distribution systems, drive systems, smart grids, PET services, etc.

IGCC: Integrated Gasification Combined Cycle
AQCS: Air Quality Control System
ABWR: Advanced Boiling Water Reactor
ESBWR: Economic and Simplified Boiling Water Reactor
PET: Positron Emission Tomography
Power Systems Company
Business Strategy

Contents
1. Business Overview
2. Market Environment
3. Business Policy and Strategy
4. Thermal Power Business
5. Nuclear Power Business
6. Renewable Energy Business
7. Business Performance Trends
8. Conclusion
Increasing role of power sector to reduce CO$_2$ emissions

Accelerate realization of a low-carbon society (nuclear power, CCS and renewable energy are projected to increase)

Global CO$_2$ Emissions

40.2 Gt emissions in 2030

Breakdown of reduction

Power generation related sector
6.6 Gt (-48%)

Other
7.2 Gt (-52%)


CCS: Carbon Dioxide Capture and Storage

Gt: Gigaton
## 2-2. Japanese Market Trends

### Capital expenditure of around ¥2.4 trillion

Source: Management plan presentation materials of utility companies

### Power Plant Investment (10 Utilities)

![Graph showing power plant investment from FY2005 to FY2011.](image)

### Power Capacity Development Plans

<table>
<thead>
<tr>
<th></th>
<th>Under Construction (MW)</th>
<th>No. of Plants</th>
<th>Planned (MW)</th>
<th>No. of Plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>2,760</td>
<td>2</td>
<td>16,550</td>
<td>12</td>
</tr>
<tr>
<td>BWR*</td>
<td>(2,760)</td>
<td>(2)</td>
<td>(11,890)</td>
<td>(9)</td>
</tr>
<tr>
<td>Thermal</td>
<td>9,130</td>
<td>23</td>
<td>14,210</td>
<td>44</td>
</tr>
<tr>
<td>Renewable energy, etc.</td>
<td>60</td>
<td>7</td>
<td>40</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>11,950</td>
<td>32</td>
<td>30,800</td>
<td>69</td>
</tr>
</tbody>
</table>

Source: Agency for Natural Resources and Energy, Summary of Electricity Supply Plan, FY2010

### Nuclear power
- Continuous construction plans, mainly of BWR, as core power source

### Thermal power
- Demand for highly efficient new plants
- Increasing efficiency of existing plants

### Renewable energy, etc.
- Accelerate testing and commercialization of mega-solar systems, and smart grids

### Government institution initiatives
- Industrial Structure Vision 2010, Basic Energy Plan
  - Public-private partnership approach for infrastructure projects in emerging nations
    (Nuclear, “clean coal” thermal power, etc.)
  - Promoting construction of next-generation energy systems
    (Smart grids, etc.)

*BWR: Boiling Water Reactor*

© Hitachi, Ltd. 2010. All rights reserved.
World electricity generation is expected to grow by 1.8 times (from 2005 to 2030)

Coal-fired generation is to continue to play a significant role in power sector

Nuclear power plants introduction plan

Capacity demand in emerging markets to grow by 1.6 times (Asia, etc.)

Accelerate realization of a low-carbon society
- Increased expectations on “clean coal” technologies
- Nuclear power use
- Increase in renewable energy use (Wind solar)

Strengthening and expanding power transmission network (Large capacity, stabilization, high quality)
Power Systems Company
Business Strategy

Contents
1. Business Overview
2. Market Environment
3. Business Policy and Strategy
4. Thermal Power Business
5. Nuclear Power Business
6. Renewable Energy Business
7. Business Performance Trends
8. Conclusion
3-1. Focus on Growth Regions and Fields

Expand revenues focusing on emerging markets (Asia, etc.)

Revenue target ¥1.2 trillion

- Increase overseas revenues by 1.7 times
- 40% overseas revenue ratio in FY2009
- 50% overseas revenue ratio in FY2015

- Thermal
  - Clean coal
  - Higher efficiency
  - A-USC, IGCC development
  - CCS
  - Low NOx combustion, advanced AQCS

- Nuclear
  - Higher output, larger capacity
  - Advanced maintenance technologies
  - Accelerate development of next-generation reactors

- Renewable energy
  - Grid stabilization
  - Wind, solar, adjustable-speed pumped storage hydro-power system
  - Grid stabilization technologies, storage batteries
  - Fusion of power systems and ICT

Focusing on growth fields with high contribution to the environment

- Overseas revenue ratio (%)
  - 40% in FY2009
  - 50% in FY2015

- Revenue target ¥1.2 trillion

- *2009 Minister of Environment Award

A-USC: Advanced Ultra Super Critical  
IGCC: Integrated Gasification Combined Cycle  
AQCS: Air Quality Control System  
CCS: Carbon Dioxide Capture and Storage
3-2. Promoting Globalization (1)

Global Deployment of Power Systems Company

- Expand global business operations centered on three core regional bases
  - CAGR: 25% (2006-2009)
- Promoting localization and partnering
- Cooperate to realize low-carbon society
  - Collaborate with China's National Development and Reform Commission

Overseas revenue ratio (%)
Overseas revenues (Billion yen)

- Expand global business operations centered on three core regional bases
- Promoting localization and partnering
- Cooperate to realize low-carbon society
  - Collaborate with China's National Development and Reform Commission

CAGR: Compound Average Growth Rate

[Group total: 45 companies (23 companies (Japan), 22 companies (Overseas)]
3-3. Promoting Globalization (2)

Hitachi Products Around the World

- Global No.1 share in boilers (20%)*1
- Expanding sales of ABWR/ESBWR
- Global No.1 share in DeNOx catalyst (24%)

- No.1 Japan share in ABWR (67%)*2
- Cumulative global unit orders for gas turbines 575 units
- ThermalHydro

- Thermal : Delivered Capacity (GW) *3

- *1 05-09: Excluding China and India
- *2 Including plants under construction. Reactors and turbines counted as 0.5 of a plant each
- *3 Size of pie chart shows capacity image

Coal-fired thermal power plants

Europe

75GW

Middle East

20GW

Asia

21GW

China

26GW

Japan

100GW

North America

18GW

Central and South America

17GW

Australia

7GW

India

2GW

Africa

31GW

- H-25/80
### 3-4. Strengthen Business Competitiveness

#### Production and Procurement
- **Global production optimization**
  - Share production among subsidiaries, utilize partners
- **Strengthen procurement ability through cooperation among subsidiaries**
  - Worldwide lowest cost procurement, manage exchange rate fluctuations
- **Promote cost reductions** *(Standardization, joint VEC)*
- **Strengthen MONOZUKURI** *(Manufacturing capabilities) and HR development*

#### Project Management
- **Bolster overseas project management capabilities**
  - Strengthen overseas project management *(HR and organizational structure)*
  - Expand local partners
  - Rigorous risk management *(Utilize experience in EPC worldwide)*

#### Services
- **Promote globalization of services**
  - Expand and enhance local service bases
- **Nuclear power advanced maintenance** *(Cooperate with GE)*
- **Strengthen gas turbine service business**
  - Increase output of high-temperature components *(Nearly double present capacity)*

#### R&D
- **Strengthen global R&D Network**
  - Establish cooperative structure between three core regional bases *(Japan, Europe and U.S.)* and universities in the regions
- **Propose and participate in national projects to promote development of future technologies**
- **Hitachi’s corporate R&D focus on Social Innovation Business**

---

VEC: Value Engineering for Customers  Integrated activities designed to improve products and services in line with customers' expectations.
EPC: Engineering, Procurement, Construction

© Hitachi, Ltd. 2010. All rights reserved.
3-5. Fusion of Power Systems and ICT

Total proposals for creating highly eco-friendly new social infrastructure

- Electricity storage
- Electricity consumption
- Electricity transmission
- Distributed power sources
- Power generation
- Conventional large-scale power sources
- Renewable energy

Power systems and energy technologies
- Power facilities
- Power protection and control system
- Various engineering technologies (Power Systems Company)

ICT
- Information systems technology
- Communications network
- Construction technologies
- (Information & Telecommunication Systems Company)

Provide new solutions through “fusion”
Provide integrated solutions from electricity generation and transmission/distribution to energy use
Established Smart City Business Management Division in April 2010 for creating solutions
Power Systems Company
Business Strategy

Contents
1. Business Overview
2. Market Environment
3. Business Policy and Strategy
4. Thermal Power Business
5. Nuclear Power Business
6. Renewable Energy Business
7. Business Performance Trends
8. Conclusion
### 4-1. Basic Policy

<table>
<thead>
<tr>
<th>Revenues</th>
<th>FY2015: ¥650.0 billion</th>
<th>FY2009: ¥500.0 billion</th>
</tr>
</thead>
</table>

- Expand eco-friendly coal-fired thermal power business
- Expand Hitachi-developed gas turbine business

**Strengthen highly efficient coal-fired thermal power business**

- Step up global development
- Expand EPC business

**Accelerate development of “clean coal” technology**

- Develop A-USC, IGCC technology
- Field test carbon capture technology

**Expand medium-capacity gas turbine business**

- Accelerate business development centered on Hitachi-developed gas turbine
Global business development based on the three core regional bases

Hitachi Power Europe GmgH (HPE)

- Babcock-Hitachi K.K.
- Hitachi Power Systems America, Ltd.
- Hitachi Power Europe GmgH (now Hitachi Power Europe GmbH)
- Hitachi Power Systems America, Ltd.
- Babcock-Hitachi (Philippines) Inc.
- Hitachi Industrial Machinery Philippines Corp.
- HPE Group History
  - 2003 Established Babcock-Hitachi Europe GmbH (now Hitachi Power Europe GmbH)
  - 2005 Established Hitachi Power Africa Pty. Ltd.
  - 2007 Acquired Meeraner Dampfkesselbau GmbH
  - 2008 Acquired Donges Steel Tec GmbH

Revenues

- Core Group companies
- Manufacturing and engineering subsidiaries
- Service subsidiaries

FY2009

- HPE Group Over 40%
- ¥500.0 billion

FY2015

- HPE Group Over 40%
- ¥650.0 billion

<Hitachi Power Europe GmgH (HPE)>

Hitachi, Ltd.

- Hitachi Power Africa Pty. Ltd.
- Clyde Babcock-Hitachi (Australia) Pty. Ltd.
- Dalian Hitachi Machinery & Equipment Co., Ltd.
- Meeraner Dampfkesselbau GmbH
- Donges Steel Tec GmbH

<Hitachi Power Africa Pty. Ltd.>

<Hitachi, Ltd.>

- Babcock-Hitachi Dongfang Boiler Co., Ltd.
4-3. Strengthen Highly Efficient Coal-fired Thermal Power Business (Expand EPC Business[1])

Expand business by drawing on Hitachi’s superior technologies and EPC capabilities

Steam turbines and power generators (TG)
- Highly efficient and reliable
  - Achieved world’s highest level efficiency with the new No. 2 unit of Isogo Thermal Power Plant for Electric Power Development Co., Ltd. (Commercial Operation since July 2009)
  - Steam condition: 25MPa 600℃/620℃

Boilers (B)
- Highly efficient combustion: Low Nox/CO₂ emissions, high economical efficiency
- Compatible with various coal types: Applicable low grade coal

AQCS
- Integrated system (DeNOx reactor, precipitator, desulfurizer)
- High-performance DeNOx catalyst: In-house development and production system

---

Steam turbines and power generators (TG)
- Highly efficient and reliable

Boilers (B)
- Highly efficient combustion: Low Nox/CO₂ emissions, high economical efficiency
- Compatible with various coal types: Applicable low grade coal

AQCS: Air Quality Control System
Recent Construction Achievements and Progress (Major Plants)

Europe, South Africa
- Walsum-10 (Under construction) BTG
- Electrabel-1,2 (Under construction) BTG
- BoA II-1,2 (Under construction) B
- Boxberg-1 (Under construction) B

Asia
- YongHung-3,4 (Operation in 2008)
- Electric Power Development Co., Ltd. / New No.2 unit, Isogo Thermal Power Plant (Operation in 2009) TG

Americas
- Keephills-3 (Under construction) BTG
- Duke Energy (Under construction) B
- Elm Road-1,2 (Under construction) BTG

Ultra Super Critical (USC) Construction Track Record
(Incl. Under Construction)
- Japan: 8, Overseas: 23 (Total: 31 Units)

Expand business centered on the HPE Group

Ultra Super Critical (USC): Steam temperature at least 593°C, steam pressure at least 24.1MPa

B: Boiler  TG: Steam turbines and generators  ⭐: EPC project  ⚫: USC project
4-5. Accelerate Development of Clean Coal Technologies
(Develop A-USC/IGCC Technology)

Accelerate development of A-USC, IGCC and CCS technologies

<table>
<thead>
<tr>
<th>A-USC</th>
</tr>
</thead>
<tbody>
<tr>
<td>700°C A-USC development target: more than 50%</td>
</tr>
<tr>
<td>Cutting-edge commercial equipment (Steam temperature 600°C/620°C)</td>
</tr>
<tr>
<td>(Current average worldwide: about 35%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IGCC + CCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology development in EAGLE project (Since 2002)</td>
</tr>
<tr>
<td>~2006: Confirmed plant performance in approx. 6,000 hours of test operations</td>
</tr>
<tr>
<td>~2009: CCS test (World's first with coal gas for power generation)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Target</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂ capture ratio</td>
<td>90%</td>
<td>&gt;90%</td>
</tr>
<tr>
<td>CO₂ purity</td>
<td>99%</td>
<td>&gt;99%</td>
</tr>
</tbody>
</table>

Europe (Hitachi Power Europe participation)

~2013: Develop materials, test with commercial equipment

Late 2010s: Apply to commercial equipment

Japan (Hitachi, Ltd, Babcock-Hitachi participation)

2008~: Develop materials and core technologies by national projects

Osaki CoolGen Project (NEDO Feasibility Study: 2010 to 2011)

- Operator: Osaki CoolGen Corporation
- Details: Scale-up testing of oxygen-blown IGCC and CCS separation and capture technologies

<table>
<thead>
<tr>
<th>Item</th>
<th>Gasifier</th>
<th>1,100t/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas refinery</td>
<td>Wet chemical absorption type</td>
<td></td>
</tr>
<tr>
<td>Combined cycle</td>
<td>170MW</td>
<td></td>
</tr>
</tbody>
</table>

EAGLE: Coal Energy Application for Gas, Liquid and Electricity
(Multi-purpose coal gasification technology development project run by NEDO and Electric Power Development Co., Ltd.)

NEDO: New Energy and Industrial Technology Development Organization

© Hitachi, Ltd. 2010. All rights reserved.
4-6. Accelerate Development of Clean Coal Technologies (Carbon Capture Technology[1])

CCS commercialization through cooperation among three core regional bases
→ Revenue target of ¥100.0 billion/year from 2020

- Chemical absorption
  - U.S./Wolverine Power Supply Cooperative, Inc.
    - Contract for basic design of carbon capture equipment (2009 to 2010)
  - Canada/Saskatchewan Power Corporation
    - Comprehensive collaborative agreement on low-carbon energy technologies (2010 to 2012)
    - 150MW-class CCS demonstration project
      - Steam turbine and generator order (2010)

- Oxy-combustion
  - 4MW-th burner combustion test (From 2008)
    - Babcock-Hitachi Kure Research Laboratory
  - Finland/Fortum Corporation
    - Oxy-combustion joint research (2008 to 2010)
  - Germany/Vattenfall AB
    - Oxy-combustion burner test (2009 to 2010)

CCS: Carbon Dioxide Capture and Storage

© Hitachi, Ltd. 2010. All rights reserved.
Accelerate Development of Clean Coal Technologies (Carbon Capture Technology[2])

Hitachi-Saskatchewan Province (Canada)
“May 2010—Joint Declaration for Collaboration on Energy and Environmental Technology Development”

Areas of Collaboration
- CCS technology
- AQCS
- Boilers, Steam Turbines, Generators
- Renewable Energy Technologies
- Smart Grid Technologies

Hitachi-SaskPower (Saskatchewan Power Corporation)
“February 2010—Comprehensive Collaborative Agreement on Low-Carbon Energy Technologies”

- Participate in CCS demonstration project (Carbon capture technology for coal-fired thermal power plants)
4-8. Expand the Medium-Capacity Gas Turbine Business

Expand business of Hitachi-developed equipment

H-25
- Top-class performance in heavy-duty gas turbines
- Highly reliable and compatible with various types of fuels
- Target order: At least 20 units/year

**H-25 specifications**

<table>
<thead>
<tr>
<th>Output</th>
<th>31,000kW (Natural gas)</th>
<th>30,000kW (Heavy fuel oil A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>34.8% (LHV)</td>
<td>33.6% (LHV)</td>
</tr>
</tbody>
</table>

H-80 (Newly developed 80MW class GT)
- World’s largest capacity as a two-axle heavy-duty type gas turbine

**H-80 specifications**

<table>
<thead>
<tr>
<th>Output</th>
<th>89,000kW (Natural gas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>38% (LHV)</td>
</tr>
</tbody>
</table>

- Replaced gas turbines of Unit 1 at Shin-Oita thermal power plant*1 at Kyushu Electric Power Co., Inc. with H-80 (Operation in January 2010)

- Exploring replacement demand for highly efficient combined-cycle gas turbines in Japan

**Market Share (20-40MW-class GT) [McCoy Reports 2009: Heavy-duty type]**

- HITACHI 17%
- B 26%
- Company A 48%
- Other 9%

**Increasing production capacity**

**Plant efficiency**

- Before GT replacement: 47.7% (LHV)
- After GT replacement: 51.4% (LHV)

LHV: Lower Heating Value

*1: Plant output 115MW
Power Systems Company
Business Strategy

Contents
1. Business Overview
2. Market Environment
3. Business Policy and Strategy
4. Thermal Power Business
5. Nuclear Power Business
6. Renewable Energy Business
7. Business Performance Trends
8. Conclusion
## 5-1. Basic Policy

| Revenues       | FY2020: ¥380.0 billion | Implement ABWR projects in Japan |
|               | FY2009: ¥210.0 billion | Strengthen global business development |

### Deploy new nuclear power plants in the global market
- Maintain No.1 share of ABWR plants in Japan
- Accelerate global deployment under “One Team” framework with GE

### Provide one stop service through the total nuclear fuel cycle
- Hitachi expand nuclear fuel cycle business together with GE

### Develop nuclear technologies and increase production capacity
- Promote development of ABWRs (Increase output), ESBWRs and next-generation BWRs
- Develop advanced maintenance technologies and increase facility capacity (Production and development)

**ABWR**: Advanced Boiling Water Reactor  
**ESBWR**: Economic and Simplified Boiling Water Reactor
5-2. Maintain No.1 share of ABWR plants in Japan

**No.1 share of new plant construction in Japan**

- ABWR market share 67%*1
- Participate in construction of all ABWR plants

<table>
<thead>
<tr>
<th>(MWe)</th>
<th>8,000</th>
<th>5,000</th>
<th>3,000</th>
<th>0</th>
</tr>
</thead>
</table>

- [In operation/under construction]
- Power generation capacity (Cumulative)
- Hitachi's share (67%)
- Ohma*1
- Shimane Unit No.3
- Shika Unit No.2
- Hamaoka Unit No.5*1
- Kashiwazaki Kariwa Unit No.7*1
- Kashiwazaki Kariwa Unit No.6*1

**Application of advanced construction technology**

- **1990**
  - Large-sized Modular construction
  - Parallel construction

- **2000**
  - Module Works construction
  - Applied large-block modular construction and used composite modules
  - Use of RFIDs
  - Expanded scope of application (Approx. 180 modules)

**Stable progress of construction**

- Shimane Nuclear Power Station Unit No.3 (under construction)
  - The Chugoku Electric Power Co., Inc.
  - Completion of energization
  - Started pre-operational test

- Ohma Nuclear Power Station
  - Electric Power Development Co., Ltd.
  - Construction fully in progress

**Nuclear power plant construction plans**

- PWRs 3
- BWRs 9

*1 Reactor island and turbine island counted as 0.5 of a plant each
*2 Source: Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry, Summary of Electricity Supply Plan, FY2009
Target Order
At least 38 new plants by 2030 (Target market share of 1/3)

Explore global markets

Promote order intake activities
(Turbines, Generators, etc.)

Order intake with alliance of Hitachi-GE (JSO)

Equipment supply
(Countries developing own nuclear reactors: China, Russia and South Korea)

New construction market size (To 2030)
Approx. 150 plants

Target order intake of plant
(Japan, U.S., Europe, India, Southeast Asia, etc.)

Joint Sales Office (JSO)

Strengthen sales activities and project promotion functions

Hitachi-GE Nuclear Energy, Ltd.

HPSA

GE-Hitachi Nuclear Energy LLC

JSO: Joint Sales Office
(GE-Hitachi Nuclear Energy International LLC)

Public-private partnership approach to win orders

- Cooperate with new company International Nuclear Development Co., Ltd. (Tentative name)

Strengthen product competitiveness

- Strengthen ABWR competitiveness
  Accelerate development (Increase output, etc.)

- Develop ESBWR engineering
  Win customers by obtaining U.S. design certification


© Hitachi, Ltd. 2010. All rights reserved.
5-4. Provide one stop service through the total nuclear fuel cycle

Develop with Hitachi-GE Alliance and Partners

- Cooperate with GNF, GLE and Cameco Corp.
- Enter interim storage market (facilities and casks)
- Develop reprocessing technologies
- GLE is conducting tests toward commercialization of the world’s first laser enrichment system

<table>
<thead>
<tr>
<th>Cameco Corp.</th>
<th>GLE</th>
<th>GNF</th>
<th>Hitachi/GE</th>
<th>Hitachi: Entire plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure uranium raw materials</td>
<td>Consistently supply uranium fuel</td>
<td>Construction Maintenance</td>
<td>Facility integration, Cask manufacturing</td>
<td>Participate in reprocessing for Rokkasho facilities, Promote development of FLUOREX method</td>
</tr>
</tbody>
</table>

Cameco Corp.’s share of uranium mining: 15% (2008 result)
Source: World Nuclear Association website

GLE: GE-Hitachi Global Laser Enrichment
GNF: Global Nuclear Fuel
FLUOREX: Fluoride volatility and solvent extraction
5-5. Continuous Development of Nuclear Power

Continue development of nuclear power to respond market needs

Strengthen ABWR product competitiveness
- Apply for renewal of U.S. design certification (November)
- Develop “global-standard ABWR” Increase output (1,500MW class) Dramatically shorten construction period

Promote ESBWR engineering
- Scheduled to obtain U.S. design certification (Sept. 2011) Earliest among nuclear reactors under application

Develop next-generation reactors
- Next-generation BWRs (1,800MW class) Develop as national project
- Develop series of ABWRs (ABWR-600, ABWR-900)
- Develop small reactors Small BWRs (300MW class) Small, fast reactors (Na cooling system, 300MW class)

(DW)
2,000
1,000
Global-standard ABWR
Increase output
Next-generation BWR
ESBWR
ABWR
BWR-5
BWR-4
BWR-3
BWR-2
Applicable site candidates increase
ABWR -900
ABWR -600
Small reactors
Decade

Dome withstanding aircraft crash
SC structure containment vessel

SC: Steel Plate Reinforced Concrete
5-6. Develop Advanced Technologies and Increase Capacity

**Develop advanced maintenance technologies**

- Improve capacity factor and shorten periodical inspection time
  - Develop online maintenance technologies (Increase maintenance efficiency)
  - Develop more sophisticated inspection technologies (Prevent problems)

**Fusion of electric energy technologies and ICT**

- RFID application technologies: Improve construction and maintenance efficiency
  - Develop (world-first) cable fitted with RFID*1
  - Condition monitoring (Integrate experience and knowledge as well as communications and other IT)

*1 Jointly developed with Hitachi Cable

**Reinforce systematic manufacturing and development capabilities**

- Introduced large turn-mill machine (2006)
- Hitachi Utility Steam Test Leading facility (2009)
- Seismic behavior of FMCRD testing facility (2009)

* Planned *

- Strengthen machine processing facilities, Additional extension of production building
  - Seismic behavior of FMCRD testing facility (2009)

* FMCRD: Fine Motion Control Rod Drive *
Power Systems Company
Business Strategy

Contents
1. Business Overview
2. Market Environment
3. Business Policy and Strategy
4. Thermal Power Business
5. Nuclear Power Business
6. Renewable Energy Business
7. Business Performance Trends
8. Conclusion
6-1. Renewable Energy Business Basic Policy

<table>
<thead>
<tr>
<th>Revenues</th>
<th>FY2015: ¥200.0 billion</th>
<th>FY2009: ¥60.0 billion</th>
</tr>
</thead>
</table>

- Promote as a systems integrator
- Expand business through establishment of Smart City Business Management Division

**Strengthen business base as a systems integrator**

- Increase in orders of 2MW-class downwind turbines
- Order intake of Japan’s largest 13MW mega solar plant for electric providers
- Strengthen smart grids; fusion between technologies and deployment for smart city market

**Differentiate through systems proposal capabilities based on advanced technologies**

- Control technologies of output fluctuation due to natural energy (Control systems, storage batteries, etc.)
- Highly efficient, high-performance PCS (Power conditioners)
- Micro grid technologies control → Apply to smart grids
6-2. Business Promotion (Wind Power)

Increase in orders of 2MW-class downwind type wind turbines

- Efficiently utilizes wind blowing upwards along land form
  - 1st commercial unit (Completed Feb. 2008)
  - Downwind
  - Upwind

Proven mitigation technology for output fluctuation due to wind power with storage batteries

- Mitigate wind power output fluctuations by charging and discharging storage batteries
- Stable interconnection with grids using storage batteries

- Wind Power Ibaraki Ltd. (Operation in 2010)
- Kuroshio Wind Power Ltd. (Operation in 2010)
6-3. Business Promotion (Mega-Solar Systems)

Build grid-friendly systems as a systems integrator

Lump sum order intake of Japan’s largest mega-solar systems for electric providers

13MW-class Mega-Solar System for TEPCO, Ohgishima (Feb. 2011)

PCS with harmonic suppression function

440kW

Suppresses “harmonic noise” emitted in PCS and maintains high-quality power

Limit Value

Harmonic Order

Relative Harmonic Content (%)
6-4. Business Promotion (Adjustable-Speed Pumped Hydro)

Contribute to stable interconnection between main power grids and renewables

**Adjustable speed pumped hydro**

- Rapid adjustability of frequency
- Reduction of power loss during water pumping operation

**Improvement of frequency adjustment**

**Comparison of frequency adjustability**

- **Adjustable speed**
  - Frequency: 60.1 Hz
  - Time: 0 - 8 minutes

- **Conventional**
  - Frequency: 60.0 Hz
  - Time: 0 - 8 minutes

**KEPCO Okawachi (400MW)**

**Delivery record in Japan**

<table>
<thead>
<tr>
<th>Customer</th>
<th>Units</th>
<th>Year of operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Kansai Electric Power Co., Inc. Okouchi power station</td>
<td>2</td>
<td>93,95</td>
</tr>
<tr>
<td>Kyushu Electric Power Co., Inc. Omarugawa Power Station</td>
<td>2</td>
<td>07,10</td>
</tr>
<tr>
<td>The Kansai Electric Power Co., Inc. Okutataragi power station*</td>
<td>2</td>
<td>13,14</td>
</tr>
</tbody>
</table>

*Conversion of existing pumped hydro
6-5. Business Promotion (Smart Grid)

Contribute to optimization of energy infrastructures based on the fusion of power and information technologies

- Realization of low-carbon society based on fusion of power and information technologies
  - Best mix of large scale power generations and renewable energy.
  - Stabilization and optimal design of power grids (Power stabilization equipment, adjustable speed pumped hydro, secondary battery)
  - Development of advanced stabilization technologies

- Accumulation of technologies and standardization through demonstration projects
  - Japan Wind Development Co., Ltd.(Rokkasho), NEDO (New Mexico state) etc.

Best mix for low-carbon society

Next generation smart grid

Stabilization of power grids

Smart grid, Supply and demand optimization

Present

Interconnected electric vehicle

CEMS

BEMS/HEMS

Mega solar
Wind power

Secondary battery

Nuclear/thermal/hydro powers

Residential PV
Power Systems Company
Business Strategy

Contents
1. Business Overview
2. Market Environment
3. Business Policy and Strategy
4. Thermal Power Business
5. Nuclear Power Business
6. Renewable Energy Business
7. Business Performance Trends
8. Conclusion
7-1. Business Performance Trends

Revenues (Billion yen)

Overseas revenue ratio

Operating income ratio (%)

--- | --- | --- | --- | ---
566.7 Billion yen | 882.1 Billion yen | 880.0 Billion yen | 900.0 Billion yen | 1,200.0 Billion yen

- Thermal power business revenues
- Nuclear power business revenues
- Other business revenues
- Operating income ratio

- FY2010 est.: 2.5% Operating income ratio
- FY2012 target: 5.0% Operating income ratio
- FY2015 target: 6.0% Operating income ratio

- FY2006: Loss
- FY2009: 3.3% Operating income ratio
## 7-2. Results and Outlook

### FY2008 to FY2010 Results and Forecasts

<table>
<thead>
<tr>
<th></th>
<th>FY2008 (Actual) (Billion yen)</th>
<th>FY2009 (Actual) (Billion yen)</th>
<th>YoY</th>
<th>FY2010 (Forecast) (Billion yen)</th>
<th>YoY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>862.3</td>
<td>882.1</td>
<td>102%</td>
<td>880.0</td>
<td>100%</td>
</tr>
<tr>
<td>Operating income</td>
<td>3.4</td>
<td>22.0</td>
<td>633%</td>
<td>29.0</td>
<td>131%</td>
</tr>
</tbody>
</table>

- **Revenues**: Maintain at existing level despite recent market slowdown
  - Strong thermal power revenues in Europe and South Africa
  - Strong nuclear power revenues from domestic new plant construction and preventive maintenance

- **Operating income**: Higher earnings due to improved profitability in overseas businesses
Power Systems Company
Business Strategy

Contents
1. Business Overview
2. Market Environment
3. Business Policy and Strategy
4. Thermal Power Business
5. Nuclear Power Business
6. Renewable Energy Business
7. Business Performance Trends
8. Conclusion
8. Conclusion

Contribute to creation of low-carbon society

Promote globalization

Improve profitability

FY2015 targets
- Revenues: ¥1.2 trillion
- Overseas revenue ratio: 50%
- Operating income ratio: 6%
Cautionary Statement

Certain statements found in this document may constitute “forward-looking statements” as defined in the U.S. Private Securities Litigation Reform Act of 1995. Such “forward-looking statements” reflect management’s current views with respect to certain future events and financial performance and include any statement that does not directly relate to any historical or current fact. Words such as “anticipate,” “believe,” “expect,” “estimate,” “forecast,” “intend,” “plan,” “project” and similar expressions which indicate future events and trends may identify “forward-looking statements.” Such statements are based on currently available information and are subject to various risks and uncertainties that could cause actual results to differ materially from those projected or implied in the “forward-looking statements” and from historical trends. Certain “forward-looking statements” are based upon current assumptions of future events which may not prove to be accurate. Undue reliance should not be placed on “forward-looking statements,” as such statements speak only as of the date of this document.

Factors that could cause actual results to differ materially from those projected or implied in any “forward-looking statement” and from historical trends include, but are not limited to:

- economic conditions, including consumer spending and plant and equipment investments in Hitachi’s major markets, particularly Japan, Asia, the United States and Europe, as well as levels of demand in the major industrial sectors which Hitachi serves, including, without limitation, the information, electronics, automotive, construction and financial sectors;
- exchange rate fluctuations for the yen and other currencies in which Hitachi makes significant sales or in which Hitachi’s assets and liabilities are denominated, particularly against the U.S. dollar and the euro;
- uncertainty as to Hitachi’s ability to access, or access on favorable terms, liquidity or long-term financing;
- uncertainty as to general market price levels for equity securities in Japan, declines in which may require Hitachi to write down equity securities that it holds;
- the potential for significant losses on Hitachi’s investments in equity method affiliates;
- increased commoditization of information technology products and digital media-related products and intensifying price competition for such products, particularly in the Components & Devices and the Digital Media & Consumer Products segments;
- uncertainty as to Hitachi’s ability to continue to develop and market products that incorporate new technology on a timely and cost-effective basis and to achieve market acceptance for such products;
- rapid technological innovation;
- the possibility of cost fluctuations during the lifetime of or cancellation of long-term contracts, for which Hitachi uses the percentage-of-completion method to recognize revenue from sales;
- fluctuations in the price of raw materials including, without limitation, petroleum and other materials, such as copper, steel, aluminum and synthetic resins;
- fluctuations in product demand and industry capacity;
- uncertainty as to Hitachi’s ability to implement measures to reduce the potential negative impact of fluctuations in product demand, exchange rates and/or price of raw materials;
- uncertainty as to Hitachi’s ability to achieve the anticipated benefits of its strategy to strengthen its Social Innovation Business;
- uncertainty as to the success of restructuring efforts to improve management efficiency by divesting or otherwise exiting underperforming businesses and to strengthen competitiveness and other cost reduction measures;
- general socio-economic and political conditions and the regulatory and trade environment of Hitachi’s major markets, particularly Japan, Asia, the United States and Europe, including, without limitation, direct or indirect restrictions by other nations on imports, or differences in commercial and business customs including, without limitation, contract terms and conditions and labor relations;
- uncertainty as to the success of alliances upon which Hitachi depends, some of which Hitachi may not control, with other corporations in the design and development of certain key products;
- uncertainty as to Hitachi’s access to, or ability to protect, certain intellectual property rights, particularly those related to electronics and data processing technologies;
- uncertainty as to the outcome of litigation, regulatory investigations and other legal proceedings of which the Company, its subsidiaries or its equity method affiliates have become or may become parties;
- the possibility of incurring expenses resulting from any defects in products or services of Hitachi;
- the possibility of disruption of Hitachi’s operations in Japan by earthquakes or other natural disasters;
- uncertainty as to Hitachi’s ability to maintain the integrity of its information systems, as well as Hitachi’s ability to protect its confidential information and that of its customers;
- uncertainty as to the accuracy of key assumptions Hitachi uses to value its significant employee benefit related costs; and
- uncertainty as to Hitachi’s ability to attract and retain skilled personnel.

The factors listed above are not all-inclusive and are in addition to other factors contained in Hitachi’s periodic filings with the U.S. Securities and Exchange Commission and in other materials published by Hitachi.