Power Systems Business Presentation
—Collaborative Creation and Profits—

July 24. 2007
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President & Chief Executive Officer, Power Systems Group
Hitachi, Ltd.
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### 1-1 Position of Power Systems

#### Hitachi’s Revenues by Industry Segment

- **Total**: ¥10,247.9 B
- **Power & Industrial Systems**
  - **Power Systems Group**: ¥566.7 B
- **Financial Services**: ¥3022.2 B
- **High Functional Materials & Components**: ¥2455.5 B
- **Electronic Devices**: ¥2455.5 B
- **Digital Media & Consumer Products**: ¥3022.2 B
- **Information & Telecommunication Systems**: ¥3022.2 B
- **Logistics, Services & Others**: ¥3022.2 B
- **Power Systems Group in Power & Industrial Systems**
  - **Hitachi, Ltd.**
    - Industrial Systems
    - Automotive Systems
    - Urban Planning & Development Systems
    - Hitachi Construction Machinery Co., Ltd.
    - Hitachi Plant Technologies, Ltd.
    - Hitachi Industrial Equipment Systems Co., Ltd.
    - Hitachi Via Mechanics, Ltd.
    - Others

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*FY06 Consolidated Basis (ended March 31, 2007)*

*Total revenues are the total after eliminations and corporate items; shares of total revenues by segment are computed based on revenues before eliminations and corporate items.*
1-2 Overview of Power Systems Group

Power Systems Revenues by Business

- Thermal & Hydroelectric Systems: 61%
- Nuclear Systems: 23%
- Power & Industrial Systems, etc.: 16%
- Total: ¥566.7 B

Ratio of Overseas Revenues in Power Systems

- Overseas: 34%
- Japan: 66%
- Total: ¥566.7 B

FY2006 ending March 31, 2007

- Constructed for MidAmerican Energy Company (USA) Council Bluffs Energy Center
- Constructed for The Chugoku Electric Power Co., Inc. Shimane Nuclear Power Station No. 3 unit
- Constructing for STEAG Aktiengesellschaft and EVN AG Duisburg-Walsum Power Plant, Germany
1-3 Product Line in Power Systems Group

- **Thermal & Hydroelectric Systems**
  Ultra-super critical pressure boilers, environmental control systems (desulfurization systems, denitrification equipment, etc.), steam turbines and generation equipment, H-25/H-15 gas turbines, water turbine runners, monitoring and control equipment, plant engineering, preventive maintenance, electric power sales

- **Nuclear Systems**
  Nuclear reactors, reactor internals, piping and other structures, nuclear turbines and generators, monitoring and control equipment, plant engineering, preventive maintenance, nuclear fuel, dry casks for nuclear fuel transport and storage, nuclear fusion equipment, accelerator and superconducting application systems

- **Power & Industrial Systems, Other**
  Large-scale generators, large-scale electrical machinery (industrial motors), receiving and transforming equipment, distributed power supply systems (wind generator systems, bifacial photovoltaic solar modules, co-generation systems, microgrid monitoring and control systems), power devices, proton beam therapy systems, advanced medical support services business (PET (Positron Emission Tomography) services)
1-4 Domestic Development and Manufacturing Bases

**Hitachi Region**

- **Hitachi Work** (Hitachi City, Ibaraki Prefecture)
  - Turbines, generators and electrical machinery, transmission equipment, power devices, solar cells

- **Hitachi-GE Nuclear Energy, Ltd.**
  - Nuclear power facilities

- **Group companies** (Ibaraki Prefecture)
  - Generation equipment, electrical equipment, inspection facilities, etc.

**Kokubu Region**

- **Babcock-Hitachi K.K. [Kure Works and Laboratory]** (Kure City, Hiroshima Prefecture)
  - Nuclear reactors, boilers, AQCS

**Ibaraki**

- **Power & Industrial Systems R&D Laboratory** (Hitachi City, Ibaraki Prefecture)
  - Core electric power and energy systems technologies

- **Hitachi Research Laboratory** (Hitachi City, Ibaraki Prefecture)
  - Materials, devices, components

- **Mechanical Engineering Research Laboratory** (Hitachinaka City, Ibaraki Prefecture)
  - Mechatronics, advanced verification (analysis technology)
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2-1 Origins of Power Systems Group

Era when generators, water turbines and other generation equipment depended on overseas technology

Corporate Credo
“Contribute to society through the development of superior, original technology and products”

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910</td>
<td>Manufactured 5hp electric motor</td>
</tr>
<tr>
<td>1911</td>
<td>Completed 45kVA transformer</td>
</tr>
<tr>
<td>1916</td>
<td>Completed 10,000hp Francis water turbine</td>
</tr>
</tbody>
</table>

Growth focused on *monozukuri* (manufacturing capabilities) using proprietary technologies
Growth focused on *monozukuri* using proprietary technologies

- **1933**: Delivered Hitachi’s first steam turbine for Nagasaki Spinning (2,800kW)
- **1974**: Constructed first Japanese-made nuclear power plant (465 MW) for The Chugoku Electric Power Co., Inc.
- **2003**: Installed Japan’s first supercritical pressure-based coal-fired power plant at Tokyo Electric Power Company (TEPCO); 1 million kW
- **2005**: Installed Canada’s first supercritical pressure coal-fired boiler at Epcor Power Development Corporation (495MW)
- **2003**: Received PowerGen International’s 2005 Projects-of-the-Year award in Best Coal-fired category
- **2006**: H-25/H-15 gas turbine broke 100 units of amount order

**Technology and monozukuri**

- Nuclear reactors
- Boilers
- AQCS
- Generators
- Steam/Gas turbine
- Water turbine runners
- Engineering
Growth focused on *monozukuri* using proprietary technologies

Gained experience tackling new challenges (2006)

**North American coal-fired thermal power plant**
- MidAmerican Project; started operation in June 2007

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**Repair of turbine damage at nuclear power stations in Japan**
- Used supercomputer for more sophisticated performance evaluation
- Increased reliability by testing minimal scale steam load
- Investing ¥20.0 billion to strengthen *monozukuri* base (FY2006~2009)
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3-1 Domestic Market Trends

Forecast for Next 10 Years (through FY2016)

■ Demand for Power Plants

Average annual growth of 0.9%
(equivalent to 16,000MW over 10 years)

■ 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>Thermal</td>
<td>11,710</td>
<td>18</td>
<td>13,630</td>
<td>22</td>
</tr>
<tr>
<td>Nuclear</td>
<td>2,229</td>
<td>2</td>
<td>12,260</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>(1,370)</td>
<td>(1)</td>
<td>(11,350)</td>
<td>(8)</td>
</tr>
<tr>
<td>Total</td>
<td>14,000</td>
<td>20</td>
<td>25,890</td>
<td>31</td>
</tr>
</tbody>
</table>


* BWR: Boiling Water Reactor

To increase power generation efficiency and replace equipment for existing power plants in thermal power plant business (deleted s in equipments)

To implement plant construction in line with the previously approved program in nuclear plant business
### Outlook to 2030

#### Electricity Generating Capacity by Type

<table>
<thead>
<tr>
<th>Year</th>
<th>Coal</th>
<th>Natural gas</th>
<th>Oil</th>
<th>Nuclear</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>41%</td>
<td>19%</td>
<td>16%</td>
<td>16%</td>
<td>18%</td>
</tr>
<tr>
<td>2015</td>
<td>45%</td>
<td>19%</td>
<td>12%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>2030</td>
<td>41%</td>
<td>19%</td>
<td>12%</td>
<td>15%</td>
<td>15%</td>
</tr>
</tbody>
</table>

- **Doubling of capacity by 2030**
  (Comparing to 2004)

- **Electricity demand will increase**
- **Coal-fired thermal power generation will remain a core power source**
- **Demand also expected to rise for flue gas treatment systems due to more stringent environmental controls**
- **Renewed activity in nuclear power aimed at ensuring energy security**

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U.S. Department of Energy  
“International Energy Outlook 2007”
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4-1 Challenges

**Challenges**

**Energy Resource**

- **G.E.C**
  - Air quality conservation (emission control)
  - Countermeasures against global warming (CO₂ Reduction)

**Current Technology**

- **USC** (Ultra Super Critical)
- **AQCS** (Air Quality Control System)

**Future Technology**

- **A-USC** (Advanced Ultra Super Critical)
- **IGCC** (Integrative Coal Gasification Combined Cycle Power Generation) + **CCS** (Carbon Capture and Storage)

**Thermal Power Plant**

- **Nuclear Power Plant**
  - ABWR (Advanced Boiling Water Reactor)
  - ESBWR (Economic and Simplified BWR)
  - FBR (Fast Breeder Reactor)

**Renewable** (hydro-, wind-, photovoltaic-, etc)

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*1 Ultra Super Critical  
*2 Air Quality Control System  
*3 Advanced Ultra Super Critical  
*4 Integrated Coal Gasification Combined Cycle Power Generation  
*5 Carbon Capture and Storage  
*6 Advanced Boiling Water Reactor  
*7 Economic and Simplified BWR  
*8 Fast Breeder Reactor
4-2 Power Systems Group Targeted Fields

Products meeting both ecological and economical requirements

Ultra-super critical pressure coal-fired thermal power plant

- Technologies for achieving high efficiency that reduce greenhouse gas (GHG) emissions (generate more electricity with less fuel)
- Flue gas treatment technology meeting environmental regulations

Nuclear power plants

- Slash GHG emissions
4-3 Power Systems Group Business Policy

- Focus on products and systems that meet both ecological and economic requirement
  
  High-efficiency thermal and nuclear power generation

- Strengthen operating framework based on collaborative creation rooted in each global region
  
  Collaborative creation with group companies in Europe and North America, and GE

- Generate stable earnings by continuing to reinvest to improve reliability and competitiveness
  
  More sophisticated simulation and verification
4-4 Power Systems Group Targets

FY2009 Targets
Operating margin: 3%
Revenue: ¥870.0 billion

[Graph showing FY06 actual, FY07 target, and FY09 target for Operating margin and Overseas revenue ratio]
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5-1 Thermal Power Generation Business

Hitachi Technologies

Ultra super critical boilers, AQCS (flue gas treatment)

- Highly efficient combustion \(\text{NOx} \cdot \text{CO}_2\) reduction and higher economic efficiency
- Compatible with different types of coal: Can use low-grade coal
- Integrated system: Integrated system (denitrification equipment, precipitator, desulfurization equipment)
- High-performance catalysts: Catalysts for denitrification with global top share

*AQCS: Air Quality Control System*
5–2 Thermal Power Generation Business

Hitachi Technologies

Steam turbines and generators

- Higher economic efficiency by highly-efficient and standardized design

Integrated operation of thermal power systems

- Boiler AQCS + turbine generators: optimize equipment
5-3 Thermal Power Generation Business

Initiatives to strengthen technological capabilities

One of the world’s largest coal combustion testing facilities

- Possible to conduct highly reliable combustion testing as if using an actual burner
- Demonstrated technology capable of approximately halving NOx emissions compared with existing Hitachi technology

Integrated research facility for flue gas treatment

- Possible to conduct integrated experiments using the same equipment configuration as an actual plant
5-4 Thermal Power Generation Business

- Initiatives to increase profitability
  - To reinforce ability in design
    - Introduction of high-speed, high-accuracy engineering tools
    - To identify the amount of material with high-accuracy
    - Halves evaluation time
  - Strengthening of project management
    - Training of project managers and enhancement of management tools
    - Severe control of operation, profit/loss, risk management

Images taken from high-speed, high-accuracy engineering tools
5-5 Thermal Power Generation Business

**Europe**
- Increasing construction and renewal demand [31GW/year, mainly coal-fired thermal power plants] (Hitachi estimate)
- Growth most noticeable in Germany and Eastern Europe

**North America**
- Increasing construction and renewal demand [Coal-fired thermal power plants-8GW/year]
- Increasing demand for addition of AQCS [Desulfurization 7.5GW/year; denitrification 7GW/year] (Hitachi estimate)

**Japan**
- Development, design and manufacturing of core components
- Engineering and procurement support

**Europe**
- HPE established (April 2006)
- Made Meeraner Dampfkesselbau GmbH a subsidiary (July 2007)

**North America**
- HPSA established (February 2005)
- Made MD&A a subsidiary (September 2005)

- Establish a locally led operating structure
- Strengthen cooperation among regions (tripolar system)

*HPE: Hitachi Power Europe GmbH  *HPSA: Hitachi Power Systems America, Ltd.
*MD&A: Mechanical Dynamics & Analysis Ltd. (U.S.)
5-6 Thermal Power Generation Business

Strengthening of operating framework through collaborative creation rooted in Europe

- Hitachi Power Europe
  Established April 2006
  Sales of coal-fired power plants, AQCS (flue gas treatment systems), engineering, procurement, project management

- Meeraner Dampfkesselbau GmbH
  Purchased shares in July 2007
  Manufacture of some boiler components

- Hitachi, Ltd.
- Babcock-Hitachi K.K.
  Development, design and manufacturing of turbines, boilers and AQCS, engineering and procurement support

- Construction and renewal mainly of coal-fired power plants
- Environmental countermeasures of coal-fired power plant, addition of AQCS
- Operation led by each global region

European thermal power business
FY09 revenue target: ¥175.0 billion
5-7 Thermal Power Generation Business

- Strengthening of operating framework through collaborative creation rooted in North America

**Hitachi Power Systems America, Ltd.**
Established February 2005
Sales of coal-fired power plants, AQCS (flue gas treatment systems), engineering, procurement, project management

**Mechanical Dynamics & Analysis Ltd. (U.S.)**
Made wholly owned subsidiary in September 2005
Preventive maintenance services for steam turbines

**Hitachi, Ltd.**
Development, design and manufacturing of turbines, boilers and AQCS, engineering and procurement support

**Babcock-Hitachi K.K.**

**Construction and renewal mainly of coal-fired power plants**

**Environmental countermeasures of coal-fired power plant, addition of AQCS**

**Operation led by each global region**

North American thermal power business
FY09 revenue target: ¥95.0 billion
5-8 Thermal Power Generation Business

- Track record based on collaborative creation rooted in regions

### Plants for Belgian company Electrabel

- Bulk order worth ¥300 billion for constructing 3, ultra super critical pressure coal-fired power plants (0.79 million kW each) in the Netherlands and Germany
- Order received May 2007, scheduled to be operational by 2012

### Plant for Canadian companies EPCOR and TransAlta Power

- Turnkey order worth ¥50 billion for constructing, ultra super critical pressure coal-fired power plant (0.495 million kW) for Keep Hills No. 3 unit
- Order received March 2007, scheduled to be operational by 2011
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6-1 Nuclear Power Generation Business

Hitachi Technologies

Nuclear reactors
- ABWR*: Simple operations and control systems, easy to enlarge higher economic efficiency
- Preventive Maintenance: Safe and economical technology, including WJP*

Steam turbines and generators
- Large capacity: High-performance and highly reliable next-generation blades

Nuclear power plant concept

ABWR: Advanced Boiling Water Reactor
WJP: Water Jet Peening: WJP is a maintenance technique whereby a high-pressure water jet is applied to the surface of steel structures to reduce the residual tensile stress on surfaces.
6-2 Nuclear Power Generation Business

Superiority of ABWR and Hitachi’s technologies

Plant engineering
- Track record in turnkey ABWR* projects
- Track record constructing third-generation light water reactors
- U.S. design certification (GE) already obtained
- Experience in construction using modular technique

Nuclear power plant concept

ABWR: Advanced Boiling Water Reactor
## ABWR Nuclear Power Plants in Japan

Power Plants Planned in the Next 10 Years (Through FY2016)

<table>
<thead>
<tr>
<th>Company/Plant Name</th>
<th>Start of Construction</th>
<th>Start of Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Chugoku Electric Power Co., Inc. /Shimane Nuclear Power Station No. 3 unit</td>
<td>Under construction</td>
<td>Dec. 2011</td>
</tr>
<tr>
<td>TEPCO/Higashidori Unit #1</td>
<td>Nov. 2008</td>
<td>Dec. 2014</td>
</tr>
<tr>
<td>TEPCO/Fukushima Daiichi Unit #7</td>
<td>Apr. 2009</td>
<td>Oct. 2013</td>
</tr>
<tr>
<td>TEPCO/Fukushima Daiichi Unit #8</td>
<td>Apr. 2009</td>
<td>Oct. 2014</td>
</tr>
<tr>
<td>The Chugoku Electric Power Co., Inc. /Kaminoseki Nuclear Power Station No. 1 unit</td>
<td>FY2009</td>
<td>FY2014</td>
</tr>
</tbody>
</table>

*Source: Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry, Summary of Electricity Supply Plan, FY2007*
Initiatives to improve Hitachi’s reliability

Introduction of supercomputer for analysis

- Use of supercomputer as advanced verification system realized multi-stage analysis of non-constant flow in turbines
- Rigorous pursuit of reliability through more sophisticated design and performance evaluation not just of blades, but also shafts, bearings and other parts
Initiatives to improve Hitachi’s reliability

Establishment of scaled model steam load testing facility

- Recreates a simulated low-load environment and flush-back with the same structure as an actual facility
- Rigorous pursuit of reliability through evaluation of results with advanced verification system

Testing facility

minimal scale steam turbine rotor
6-6 Nuclear Power Generation Business

Creation of global collaborative creation operating framework

Nuclear Power Generation Business
FY09 revenue target: ¥160 billion

HITACHI

GE

【Shareholdings】
80.01% 40% 19.99% 60%

Hitachi-GE Nuclear Energy, Ltd.

Split of nuclear power plant business of Hitachi into new company
Commenced operations in July 2007
Research, design, manufacture, construction and maintenance of light water reactors, fast breeder reactor equipment, nuclear fuel cycle equipment

GE-Hitachi Nuclear Energy

Split off nuclear power plant business of GE into new company
Commenced operations in June 2007

Note: GE-Hitachi Nuclear Energy is an equity-method affiliate

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6-7 Nuclear Power Generation Business

Aim of business integration
Build framework able to supply cutting-edge nuclear power plants to international markets

- ABWR
  - Proven track record in manufacturing, constructing and operating ABWR in Japan
  - Already obtained U.S. design certification

- ESBWR
  - Highly economical next-generation technology
  - U.S. and U.K. design approval pending

Next-generation light water reactor [ESBWR]
Economic and Simplified BWR
No recirculation pumps required due to natural circulation
Employs gravity-driven cooling system, natural convection and other safety systems
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FY2009 Targets
Operating margin: 3%
Revenue: ¥870.0 billion
Cautionary Statement

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:

- increasing commoditization of information technology products, and intensifying price competition in the markets for such products, particularly in the Information & Telecommunication Systems segment, Electronic Devices segment and Digital Media & Consumer Products segment;
- fluctuations in product demand and industry capacity, particularly in the Information & Telecommunication Systems segment, Electronic Devices segment and Digital Media & Consumer Products segment;
- 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 change, particularly in the Information & Telecommunication Systems segment, Electronic Devices segment and Digital Media & Consumer Products segment;
- fluctuations in rates of exchange for the yen and other currencies in which Hitachi makes significant sales or in which Hitachi’s assets and liabilities are denominated, particularly between the yen and the U.S. dollar;
- uncertainty as to Hitachi’s ability to implement measures to reduce the potential negative impact of fluctuations in product demand and/or exchange rates;
- general socio-economic and political conditions and the regulatory and trade environment of Hitachi’s major markets, particularly the United States, Japan and elsewhere in Asia, including, without limitation, a return to stagnation or deterioration of the Japanese economy, or direct or indirect restrictions by other nations on imports;
- 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 results of litigation and 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;
- uncertainty as to the success of restructuring efforts to improve management efficiency and to strengthen competitiveness;
- 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 ability to access, or access on favorable terms, liquidity or long-term financing; and
- uncertainty as to general market price levels for equity securities in Japan, declines in which may require Hitachi to write down equity securities it holds.

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