Energy & Environment
Business Plan
Senior Executive Vice President, President and CEO, Energy & Environment

Atsushi MAEKAWA

6.8.2015

MITSUBISHI HEAVY INDUSTRIES, LTD.
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1. Business Overview

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1-2. Business Structure
1-1. Business of Energy & Environment Domain

Mitsubishi Hitachi Power Systems, LTD.

Nuclear Energy Systems Division

Chemical Plant & Infrastructure Division

Renewable Energy Business Division

Marine Machinery & Engine

Cross-domain

Distributed power systems

Oil & Gas business

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1-2. Business Structure

Mitsubishi Hitachi Power Systems, Ltd.
【Thermal Power Generation Systems】

President and CEO, MHPS
Takato Nishizawa
Senior General Manager, Nuclear Energy Systems Division
Ei Kadokami
(Executive Vice President)

Nuclear Energy Systems Division

Chemical Plant & Infrastructure Division
【Company-wide EPC Support Functions】
Senior General Manager, Chemical Plant & Infrastructure Division
Yoichiro Ban
(Senior Vice President)

Renewable Energy Business Division

Mitsubishi Heavy Industries Marine Machinery & Engine Co., Ltd
【Marine Machinery & Engine】
President & CEO, Mitsubishi Heavy Industries Marine Machinery & Engine Co., Ltd.
Kazuo Soma

Management & Administration Division
Quality Assurance Integration Division
Business Division
Business Development Solution Dept.
Turkey Nuclear IPP Development Dept.

PWPS
PWPS President and CEO
Peter Christman

Turboden
Turboden President and CEO
Paolo Bertuzzi

Distributed power systems
Energy & Environment Domain
Executive Vice President
Koji Hiramoto

Oil & Gas
Energy & Environment Domain
General Manager
Mitsuhiko Kawai

Cross-domain
Energy & Environment Domain
Atsushi Maekawa
(Senior Executive Vice President)
2. Review of 2012 Medium-Term Business Plan

2–1. Targets and Results
2–2. Overall Level of Achievement
2–3. Percentages of Total Company Orders, Sales, Profits
2–4. Management Status for Each Business Position
2-1. Targets and Results

Thanks to implementation of various reforms, including domain system and M&A synergies, targets were almost all achieved.

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Orders received</strong></td>
<td>1,350.0</td>
<td>1,330.0</td>
<td>1,740.0</td>
</tr>
<tr>
<td><strong>Net sales</strong></td>
<td>1,130.0</td>
<td>1,200.0</td>
<td>1,460.0</td>
</tr>
<tr>
<td><strong>Operating income</strong></td>
<td>80.0 (7.1%)</td>
<td>100.0 (8.3%)</td>
<td>150.0 (10.2%)</td>
</tr>
</tbody>
</table>

(in billion yen)

- Increases in orders received and net sales
  - Orders received for large-scale thermal and chemical plants, etc.
  - Merits from integration with Hitachi in thermal power systems business
- Improvement in operating profit margin
  - Growth in after-sale servicing business
  - Improvement in profitability of chemical plants
  - Downsizing and withdrawal from unprofitable operations

Launch of Energy & Environment domain
2-2. Overall Level of Achievement

Growth preparations were completed. Ready to shift to new full-fledged growth and aggressive approach phase.

<table>
<thead>
<tr>
<th>Expansion of business scale</th>
<th>FY2012</th>
<th>FY2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orders Received 937.6</td>
<td>→</td>
<td>1,923.6 billion yen (×2.1-fold)</td>
</tr>
<tr>
<td>Operating income 90.0</td>
<td>→</td>
<td>162.6 billion yen (×1.8-fold)</td>
</tr>
</tbody>
</table>

Strength and synergy benefits from domain system and M&A's
- Exchanges of human resources, administrative consolidation and efficiency enhancement
- Integration with Hitachi in thermal power systems (MHPS)
- Acquisition of PWPS and Turboden (expansion of small/medium-size gas turbine lineup)

Acceleration of globalization
- Preparation of overseas bases
- Establishment of JV with Vestas in offshore wind turbines

Portfolio management employing strategic business evaluations
- Withdrawal from production of lithium batteries
- Cash flow creation from strategic business evaluation system

2015 Business Plan: Taking Up New Challenges
2–3. Percentages of Total Company Orders, Sales, Profits

FY2014 Actual

Orders received
4,699.1

Net sales
3,992.1

Operating Income
296.1

(in billion yen)

- Energy & Environment
- Commercial Aviation & Transportation Systems
- Integrated Defense & Space Systems
- Machinery, Equipment & Infrastructure
- Others, Eliminations or Corporate

Orders received

<table>
<thead>
<tr>
<th>Sector</th>
<th>Orders received</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy &amp; Environment</td>
<td>1,304.6</td>
<td>28%</td>
</tr>
<tr>
<td>Commercial Aviation &amp; Transportation Systems</td>
<td>1,923.6</td>
<td>41%</td>
</tr>
<tr>
<td>Integrated Defense &amp; Space Systems</td>
<td>999.2</td>
<td>21%</td>
</tr>
<tr>
<td>Machinery, Equipment &amp; Infrastructure</td>
<td>417.4</td>
<td>9%</td>
</tr>
<tr>
<td>Others, Eliminations or Corporate</td>
<td>417.4</td>
<td>9%</td>
</tr>
</tbody>
</table>

Net sales

<table>
<thead>
<tr>
<th>Sector</th>
<th>Net sales</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy &amp; Environment</td>
<td>1,319.5</td>
<td>33%</td>
</tr>
<tr>
<td>Commercial Aviation &amp; Transportation Systems</td>
<td>1,599.5</td>
<td>40%</td>
</tr>
<tr>
<td>Integrated Defense &amp; Space Systems</td>
<td>483.9</td>
<td>12%</td>
</tr>
<tr>
<td>Machinery, Equipment &amp; Infrastructure</td>
<td>529.5</td>
<td>13%</td>
</tr>
<tr>
<td>Others, Eliminations or Corporate</td>
<td>28.5</td>
<td>10%</td>
</tr>
</tbody>
</table>

Operating Income

<table>
<thead>
<tr>
<th>Sector</th>
<th>Operating Income</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy &amp; Environment</td>
<td>84.1</td>
<td>28%</td>
</tr>
<tr>
<td>Commercial Aviation &amp; Transportation Systems</td>
<td>162.6</td>
<td>55%</td>
</tr>
<tr>
<td>Integrated Defense &amp; Space Systems</td>
<td>23.4</td>
<td>8%</td>
</tr>
<tr>
<td>Machinery, Equipment &amp; Infrastructure</td>
<td>23.4</td>
<td>8%</td>
</tr>
<tr>
<td>Others, Eliminations or Corporate</td>
<td>23.4</td>
<td>8%</td>
</tr>
</tbody>
</table>

△2.7
(△1%)
2-4. Management Status for Each Business Position

Portfolio management targeting enhanced corporate value
Promotion of downsizing and withdrawal from unprofitable businesses

Resource distribution

Energy & Environment Businesses

GTCC
Conventional Nuclear Power Plant
Chemical Plant
Environmental Plant

Sales and income growth + Improving investment efficiency
- Improving profitability and efficiency
  - SBUs which have moved to the Grow/Maintain position
  - SBUs to be improved

Future direction

Improving the level towards further growth
- Determining strategy
  - Accelerating reform

Reducing losses + Proactive investment based on scrutiny of strategy
- Implementing various measures
- Implementing measures for commercialization

Downscale/Withdraw

New

Grow/Maintain
Reform

Lithium-rechargeable battery etc

Offshore wind turbines etc
3. 2015 Medium-Term Business Plan

3-1. Basic strategies
3-2. Numerical targets
3-3. Measures for achieving targets
3-4. Short-term earnings and longer-term growth initiatives
### 3-1. Basic strategies (1/3)

<table>
<thead>
<tr>
<th>Business Domain</th>
<th>Strategies</th>
<th>Main Measures</th>
</tr>
</thead>
</table>
| Energy & Environment             | • Simultaneously pursue short-term earnings and mid/long-term growth, with business expansion and profitability at the core (swift response to moves made by mega competitors)  
• Promote long-term continuation policy for nuclear power business | • Enter markets for high-performance models (large-scale GT); enhance lineups  
• Strengthen servicing business (employ ICT and big data; invest human resources)  
• Expand networks of domestic and overseas manufacturing bases  
• Expand business in distributed power generation systems (joint development with Machinery, Equipment & Infrastructure domain)  
• Full-scale entry in oil & gas upstream business (keeping collaborations and M&A’s in view) |
| Commercial Aviation & Transportation Systems | • Improve profitability of commercial airplane products  
• Advance MRJ development and improve airframe value  
• Undertake bold conversions in commercial and cruise ship businesses  
• Expand business in land transportation systems | • Promote increased production in businesses for Boeing and develop next-generation production processes  
• Steadily carry forward the MRJ’s development and develop a high-volume manufacturing base  
• Develop a new infrastructure export model based on domain synergies  
• Develop new business model for cruise ship business  
• Strengthen ability to promote business in large-scale overseas projects (Doha, etc.) |
| Integrated Defense & Space Systems | • Undertake sustained strengthening of existing businesses and prepare for next expansion step (initiatives to promote overseas business and conversion to commercial market needs) | • Undertake concentrated strengthening of integrated defense systems (land, sea, air)  
• Newly launch a state-of-the-art technology business department and promote the following:  
  - Development of new overseas businesses through tieups with overseas partners  
  - Development consumer demand-based businesses applying dual-use technologies |
| Machinery, Equipment & Infrastructure | • Along with the Energy & Environment domain, pursue achievable and immediately effective measures from the perspective of supporting the MHI Group’s scale and earnings | • Promote and accelerate PMI in metals machinery and forklift trucks  
• Expand oil & gas business involving compressors  
• Establish a global business structure for turbochargers  
• Further accelerate business restructuring (including M&A’s) |
## 3-1. Basic strategies (2/3)

### FY2014

<table>
<thead>
<tr>
<th>Domain</th>
<th>Main measures and fluctuating factors</th>
<th>Orders/Net sales</th>
<th>Operating income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy &amp; Environment</td>
<td>• Expanded synergies at MHPS</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>• Overall expansion of servicing business</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>• Distributed power systems, oil &amp; gas, etc.</td>
<td>O</td>
<td>-</td>
</tr>
</tbody>
</table>

### FY2017

<table>
<thead>
<tr>
<th>Domain</th>
<th>Main measures and fluctuating factors</th>
<th>Orders/Net sales</th>
<th>Operating income</th>
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</thead>
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<td>O</td>
</tr>
<tr>
<td></td>
<td>• Overall expansion of servicing business</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>• Distributed power systems, oil &amp; gas, etc.</td>
<td>O</td>
<td>-</td>
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</table>

### FY2017

<table>
<thead>
<tr>
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<th>Orders/Net sales</th>
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</thead>
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<td>O</td>
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<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>• Distributed power systems, oil &amp; gas, etc.</td>
<td>O</td>
<td>-</td>
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### FY2017

<table>
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<tr>
<th>Domain</th>
<th>Main measures and fluctuating factors</th>
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<th>Operating income</th>
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</thead>
<tbody>
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<td>Energy &amp; Environment</td>
<td>• Expanded synergies at MHPS</td>
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<td>O</td>
</tr>
<tr>
<td></td>
<td>• Distributed power systems, oil &amp; gas, etc.</td>
<td>O</td>
<td>-</td>
</tr>
</tbody>
</table>
3-1. Basic strategies (3/3)

2015 Medium-Term Business plan Basic Policies

【2015 Mid-term Plan】
Early achievement of business scale exceeding 5 trillion yen
<FY2017>

Orders received 5.5 trillion yen
Sales 5 trillion yen
Operating income 450.0 billion yen

【Vision】
Simultaneous pursuit of short-term earnings and longer-term growth
<FY2017>

Orders received 2.3 trillion yen
Sales 2.0 trillion yen
Operating income 240.0 billion yen

Measures

(A) Thorough strengthening of competitiveness
(B) Realization of synergy merits (domain system, M&A’s)
(C) Expanding into new fields as way toward longer-term growth

Full-fledged growth and aggressive approach phase

Backgrounds
Sense of crisis

Aiming to be a group that takes up bold challenges
- Focus on the customer (quality)
- Speed (achievement of swift management decisions)
- Strong focus on and initiatives to reap profits

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3-2. Numerical targets

Orders received (in trillion yen)
Net sales (in trillion yen)
Operating income (in billion yen)

Orders received 2012: 90.0 (8.6%)
Orders received 2013: 112.3 (10.2%)
Orders received 2014: 162.6 (11%)
Orders received 2015: 185.0 (11%)
Orders received 2016: 210.0 (11%)
Orders received 2017: 240.0 (12%)

Net sales 2012: 1.0
Net sales 2013: 1.2
Net sales 2014: 1.6
Net sales 2015: 1.6
Net sales 2016: 1.9
Net sales 2017: 2.0

Operating income 2012: 0.9
Operating income 2013: 1.3
Operating income 2014: 1.9
Operating income 2015: 2.0
Operating income 2016: 2.2
Operating income 2017: 2.3

2012 Business Plan
PWPS, Turboden Acquisition
- Start of domain system
  - Launch of MHPS
  - Establishment of JV in offshore wind turbines

2015 Business Plan:
Full-fledged growth and aggressive approach phase

(A) Thorough strengthening of competitiveness
(B) Realization of synergy merits (domain system, M&A’s)
(C) Expanding into new fields as way toward longer-term growth
## 3-3. Measures for achieving targets

### Simultaneous pursuit of short-term earnings and longer-term growth

<table>
<thead>
<tr>
<th>(A) Thorough strengthening of competitiveness</th>
<th>(B) Realization of synergy merits (domain system, M&amp;A’s)</th>
<th>(C) Expanding into new fields as way toward longer-term growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>① GTCC</td>
<td>① Active exchanges of (human) resources</td>
<td>① Oil &amp; Gas</td>
</tr>
<tr>
<td>② Conventional</td>
<td>② Consolidation of bases</td>
<td>② Distributed Power Business Development</td>
</tr>
<tr>
<td>③ Servicing Business</td>
<td>③ Restructuring of group companies; elimination of overlapping work functions</td>
<td>③ SOFC (Solid Oxide Fuel Cell)</td>
</tr>
<tr>
<td>④ Environmental Plant</td>
<td></td>
<td>④ Offshore Wind Turbines</td>
</tr>
<tr>
<td>⑤ Chemical Plant</td>
<td></td>
<td>⑤ EMS (Energy Management System)</td>
</tr>
<tr>
<td>⑥ Nuclear Power Plant</td>
<td></td>
<td>⑥ O &amp; M</td>
</tr>
</tbody>
</table>

Simultaneous pursuit of short-term earnings and longer-term growth: Active exchanges of (human) resources, Consolidation of bases, Restructuring of group companies; elimination of overlapping work functions, Oil & Gas, Distributed Power Business Development, SOFC (Solid Oxide Fuel Cell), Offshore Wind Turbines, EMS (Energy Management System), O & M.
(A) Thorough strengthening of competitiveness

① GTCC
② Conventional
③ Servicing Business
④ Environmental Plant
⑤ Chemical Plant
⑥ Nuclear Power Plant
Further strengthening of gas turbine business

1. Development of world’s most efficient gas turbines
   - Demonstration facility of world-class size
     - Constructed targeting continuous verification of next-generation gas turbine technologies and reliability enhancement
   - History of development at Demonstration facility
     - 1997: 1,500°C-class G-series gas turbines
     - 2010: 1,600°C-class J-series gas turbines
     - 2020: 1,650°C-class next-generation gas turbines

2. Strengthening of small/medium gas turbine business
   - Improve performance of small/medium GTs by flow-down of large-scale GT technologies
   - Expansion of production lines (to 3, from current 2)
     - Response to market expansion in emerging economies, etc.
     - Expand sales of H-100 to applications in LNG market

GT: gas turbine  LNG: liquefied natural gas
Swift response to increased global demand

- Successive orders for J-Series gas turbines
  - Cumulative orders worldwide: 38 units

- Increased demand due to lower natural gas prices, expanded product lineups through M&A's
  - Further sales expansion and strengthening of order taking capability

Total orders to date: 826 units
(including 38 J-Series)

Quantities as of May 31, 2015

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Further strengthening of conventional plants

- Aggressive development of domestic and overseas markets
  - Successive orders for 110MW coal-fired plants
  - Orders received for lignite-fired ultra-supercritical projects (Poland, etc.)
  - Orders received for 1000MW-class ultra-supercritical project
- Full-scale launch of IGCC plants (540MW at Nakoso, Hirono)

Joban Joint Power Co., Ltd.  Nakoso Power Station Unit No.10

Osaki CoolGen Corporation’s IGCC demonstration plant (conceptual rendering)
(within Chugoku Electric Power Co.’s Osaki Power Station)
(A) ③ Servicing Business

Expansion of servicing business applying new, unconventional methods

① Strengthening of service bases (Saudi Arabia, Philippines, Mexico, etc.)
② Focused allocation of human resources into servicing business
③ Expansion of servicing business using new technologies
   • Adoption of advanced inspection and maintenance technologies
   • Proactive use of IoT and AI

* IoT: Internet of Things  AI: Artificial Intelligence

Expansion in servicing orders

Asia (excluding Japan, China) (in billion yen)

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.0</td>
<td>650.0</td>
<td>700.0</td>
<td>800.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80.0</td>
<td>120.0</td>
<td>130.0</td>
<td>170.0</td>
<td>210.0</td>
<td></td>
</tr>
</tbody>
</table>

Formation of special service zones (e.g. Southeast Asia)

◇ Training center to be established in Manila
◇ MHPS Philippines to be converted to boiler and turbine service base
◇ Introduction of remote monitoring
(A) Environmental Plant

Business scale expansion through product and technology synergies

One Stop Solution
(High-performance flue-gas treatment systems)

- Establishment of new JV with FEIDA of China
  (initiative against Chinese soot dust and PM2.5)
- Establishment of new company dealing in electrostatic precipitators
  Achievement of full lineup in high-performance flue-gas treatment system components
  (SCR, EP, FGD)

1. Conversion of business model  
   (i.e. investment, entering new business)  
   • Investment in methanol/dimethyl ether  
     plant for Trinidad & Tobago  
2. Win and increase orders in Central Asia  
   • Fertilizer plant for Turkmenistan  
3. Commence business in CO2–EOR *  
   Production: Around 5,000 t/day  
   (largest EOR in the world)  
   • 4,776t/day plant in USA (world’s  
     largest) to commence operations in  
     4th quarter of 2016  
   * CO2–EOR (enhanced oil recovery)
1. Contribution to restarts
   • Focused allocation of human resources and technology into restarts
   • Contributions in safety improvement measures

2. Promotion of projects in Turkey and Vietnam
   • Expanded applications of global strategic reactors ATMEA1

3. Establishment of department to handle light-water reactor decommissioning projects
   • Provision of new reactor decommissioning solutions

(A) ⑥ Nuclear Power Plant

• Contributions to restarts and decommissioning
• Expanded global adoption of ATMEA1 as global strategic reactors
3-3. Measures for achieving targets

(B) Realization of synergy merits

① Active exchanges of (human) resources
② Consolidation of bases
③ Restructuring of group companies; elimination of overlapping work functions
Active exchanges of (human) resources

Active, effective allocation of human resources in response to market changes

Energy & Environment domain

Nuclear

Chemical plant

Thermal power plant

Overseas EPC implementation capability

Big data utilization knowhow

Overseas EPC support

After-sale servicing expertise

EPC capability

Other domains

Machinery, Equipment & Infrastructure

Commercial Aviation & Transportation Systems

Integrated Defense & Space Systems

Strengths in project management and EPC

Product technologies, etc.

After-sale servicing expertise

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(B) Consolidation of bases

A: Response to market changes
B: Strengthening of competitiveness by manifesting superior aspects of each region
C: Integration of overlapping functions

I: MHI-F (France) established in April 2015 as company integrating European and African regional operations

ⒷⒸ Integrated companies in America region, Stronger ties between MHI-A and MHPS-A ₓⒸ

ⒸⒸ Integrated companies in China region, Stronger ties between MHI-C and MHPS-C ₓⒸ

茑Ⓒ Integrated companies in Southeast Asia region, Stronger ties between MHI-AP and MHPS-AP ₓⒸ

Transfer of operations from Kanazawa Plant ₓⒸ
- Small/medium-size steam turbines → Chinese partner company
- Small/medium-size boilers → MHPS (Philippines)
(B) ③ Restructuring of group companies; elimination of overlapping work functions

- In tandem with business restructuring, restructuring of group companies
  - Approx. 15% reduction in number of group companies (101 in 2014 → 87 in 2017)

- Elimination of overlapping or superfluous facilities in tandem with M&A’s and business restructuring – Consolidation of functions to higher competitive bases

- Elimination of overlapping corporate functions

【Example of business restructuring】Integration of electrostatic precipitator business (October 2015)

Consolidation of air quality control systems (AQCS) to MHPS group

<table>
<thead>
<tr>
<th></th>
<th>Business scale (billion yen)</th>
<th>SCR</th>
<th>GGH Heat recovery system</th>
<th>EP</th>
<th>FGD</th>
<th>GGH Reheating</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHPS</td>
<td>67.0</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>MHI-MS (MHI Machinery, Equipment &amp; Infrastructure)</td>
<td>8.0</td>
<td>-</td>
<td>-</td>
<td>O</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HPC (Hitachi group)</td>
<td>7.0</td>
<td>-</td>
<td>-</td>
<td>O</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MHPS Group</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

*MHI-MS: Mitsubishi Heavy Industries Mechatronics Systems Ltd.  *HPC: Hitachi Plant Construction
3-3. Measures for achieving targets

(C) Expanding into new fields as way toward longer-term growth

① Oil & Gas Business Development
② Distributed Power Business Development
③ SOFCs (Solid Oxide Fuel Cell)
④ Offshore wind turbines
⑤ EMS (Energy Management System)
⑥ O & M (Operation & Maintenance)
Expand business scale from approx. 100bn yen to 300bn

1. Reasons

- Demand will expand over the long term in tandem with global population increase and economic growth.
- Business is growable through cross-domain collaboration.
- Oil & gas is a field in which a business model suited to MHI can be created.

![Gas turbine](image1)
![CO2 recovery plant](image2)
![Ultra-high-pressure compressor](image3)
![LNG carrier](image4)
![3D sea bottom resource exploration vessel](image5)
![Camera able to "see" radiation](image6)

* LNG: liquefied natural gas

2. Near-term initiatives

- Promotion of cross-domain activities through establishment of Oil & Gas Business Development Department (April 2015)
  - One-stop service depot enabling swift response to diverse customer needs
  - Provision of integrated solutions, etc. fusing multiple product technologies
  - Development of new models for collaborating with other companies, and expansion of new business areas

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• In-depth examination of MHI’s superiority/organizational capability
  ➤ Determination of areas of superiority
• Target: Middle East and Southeast Asia markets

Floating LNG Power Plant

LNG tanks

Regasification

250MW

Gas turbine

Steam turbine

LNG carrier

Engineering capability (chemical plants, etc.)
MHI Distributed Power Sector can supply one stop service.

Identifying Customer’s requirement

Proposing optimum system & solution

Engineering Procurement Construction

Operation & Maintenance

ORC: Organic Rankine Cycle
1. 250kW-class SOFC hybrid demonstration unit

Order for hybrid power system integrating SOFC stack with micro gas turbine, from Kyushu University

Target on early realization, in time for 2020 Tokyo Olympic Games

2. Triple combined cycle system

Target set on 70% efficiency rating

① SOFC
② Gas turbine
③ Steam turbine

SOFC-integrated hybrid power system generating electricity in 3 stages

* SOFC (Solid Oxide Fuel Cell)
Offshore wind turbines (1/2)

Expand business scale from approx. 40bn yen to 100bn yen

【Major recent orders for offshore wind turbines】

- Burbo Bank extension (UK): 32 units
  (world’s largest output: V164–8.0MW)
- Rampion Project (UK): 116 units (V112–3.45MW)

MHI Vestas Offshore Wind
JV with Vestas of Denmark in April 2014
MHI Vestas V164 blade plant
- V164 wind turbine blade manufacturing base
- Location: Isle of Wight, southern England
EMS (Energy Management System)

- Response to needs for high performance (energy savings), advanced load adjustment capability and heat/power co-generation capability
- Entry into demand response and ancillary services areas

Keihanna Eco City, Next-generation Energy and Social Systems Demonstration Project

Verification of demand response effect
Target: approx. 700 households in Kyoto Pref.
(Kyotanabe City, Kizugawa City, Seika Town)
(Kansai Electric Power, Mitsubishi Electric, MHI)

Takanochara Area Energy Supply Feasibility Study

Results of Keihanna demonstration
⇒ Consideration of feasibility of multi-service supply business model centering on energy (Kansai Electric Power, MHI, Toppan Printing, etc.)

Baseload power supply
- Coal, GTCC, Nuclear, Hydroelectric, Geothermal, etc.
- Load adjustment power supply
- Distributed Power

Load adjustment power supply
- GTCC, Distributed Power etc.

EMS (Energy Management System)

- Demand Response
- Supply capability

Auxiliary services
- System stabilization through installation of auxiliary power supply: ESS (energy storage system), etc.

Fluctuating power supply
- Solar, Wind

Energy Mix
- Gas turbines converted from aero engine
- Battery
- Fuel cell

Morning, Day, Evening, Night

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Now (MHI・Other companies)

End-user | Power plant | MHI operator
---|---|---

Operator (power provider)

Remote monitoring

100%

Future (differentiation strategy)

Smart meters

Power plant

Remote monitoring

90%

Staff of overseas IPPs, etc.

Remote control

Dispatch of maintenance personnel

Global O&M Center

Comprehensive management of system operation

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3–4. Simultaneous pursuit of short-term earnings and longer-term growth (1/2)

<table>
<thead>
<tr>
<th>(A) Thorough strengthening of competitiveness</th>
<th>GTCC, Conventional plant, Servicing business, Environmental plant, Chemical plant, Nuclear power plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B) Realization of synergy merits (domain system, M&amp;A’s)</td>
<td>Exchange of resources, consolidation of bases, restructuring of group companies, elimination of overlapping</td>
</tr>
<tr>
<td>(C) Expanding into new fields as way toward longer-term growth</td>
<td>Oil &amp; Gas, Distributed Power Business Development, Fuel Cell, Offshore wind turbines, EMS, O&amp;M</td>
</tr>
</tbody>
</table>

Orders received (in trillion yen)

- 2014: 1.9
- 2015: 2.0
- 2016: 2.2
- 2017: 2.3
- 2018: 2.3
- 2019: 2.3
- 2020: 2.3

Net Sales (in trillion yen)

- 2014: 1.6
- 2015: 1.6
- 2016: 1.9
- 2017: 2.0
- 2018: 2.0
- 2019: 2.0
- 2020: 2.0

Operating income (in billion yen)

- 2014: 162.6
- 2015: 185.0
- 2016: 210.0
- 2017: 240.0
- 2018: 240.0
- 2019: 240.0
- 2020: 240.0
## 3-4. Simultaneous pursuit of short-term earnings and longer-term growth (2/2)

### Schedule

<table>
<thead>
<tr>
<th>Short-term earnings</th>
<th>long-term growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>~2014</td>
<td>2018~</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. GTCC</th>
<th>Response to increased global demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large size</td>
<td>Response to market expansion in newly emerging economies, etc.</td>
</tr>
<tr>
<td>mid / small size</td>
<td>Domestic market focus</td>
</tr>
<tr>
<td>Flow-down of large-scale GT technologies: synergies</td>
<td>Expansion of overseas development</td>
</tr>
<tr>
<td>Development of 1,650°C-class next-generation</td>
<td>Commencement of IGCC operations at Nakoso and Hirono</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Conventional</th>
<th>Aggressive development of high-performance flue-gas treatment systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggressive development of overseas markets</td>
<td>World's largest (4,776t/day) CO2-EOR plant for USA</td>
</tr>
<tr>
<td>lignite-fired/1000MW-class ultra-supercritical pressurized reactors</td>
<td>Turkmenistan fertilizer plant</td>
</tr>
<tr>
<td>Delivery of Oraki CoolGen</td>
<td>Methanol/dimethyl ether plant for Trinidad &amp; Tobago</td>
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<thead>
<tr>
<th>3. Servicing Business</th>
<th>Proactive development of new strengths (technologies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTSA (long-term service agreement) expansion</td>
<td>Successful orders for subsequent plants</td>
</tr>
<tr>
<td>Application of advanced inspection/maintenance technologies, IoT, AI</td>
<td>100th anniversary for foundation of Turkey (2023)</td>
</tr>
</tbody>
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<thead>
<tr>
<th>4. Environmental Plant</th>
<th>Response to expanding markets for PM2.5 solutions, etc.</th>
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</thead>
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<tr>
<th>5. Chemical Plant</th>
<th>Response to decommissioning market</th>
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<tbody>
<tr>
<td>Turkmenistan fertilizer plant</td>
<td>Promotion of global strategic reactors</td>
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<tr>
<th>6. Nuclear Power Plant</th>
<th>Full-scale entry into new fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support of restarts</td>
<td>Tokyo Olympics, Paralympics (2020)</td>
</tr>
<tr>
<td>World’s largest (4,776t/day) CO2-EOR plant for USA</td>
<td>Full-scale entry into new fields</td>
</tr>
</tbody>
</table>

### (A) Thorough strengthening of competitiveness

- Active exchanges of (human) resources
- Consolidation of bases
- Restructuring of group companies: elimination of overlapping work functions

### (B) Realization of synergy merits (domain system, M&A’s)

- Establishment of Oil & Gas Business Development Dept. (April 2015)
- Sales expansion in new fields

### (C) Expanding into new fields as way toward longer-term growth

- Establishment of Distributed Power Supply Business Promotion Dept. (July 2014)
- Establishment of MHI Vestas Offshore Wind (April 2014)
- Deregulation of power industry

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4. Summary

Pledges as CEO of the Energy & Environment domain
4. Summary

Pledges as CEO of the Energy & Environment domain

2015 Business Plan

- Entry into full-scale growth and aggressive approach phase
  Vigorous implementation of all measures

Transition to a group that boldly takes up challenges

- Customer-focused, speedy (faster management decisions), focus on realizing profits, bold challenger
- Simultaneous pursuit of short-term earnings and longer-term growth
  (business expansion and profitability at the core of Energy & Environment domain)
Forecasts regarding future performance in these materials are based on judgment made in accordance with information available at the time this presentation was prepared. As such, those projections involve risks and insecurity. For this reason, investors are recommended not to depend solely on these projections for making investment decision. It is possible that actual results may change significantly from these projections for a number of factors. Such factors include, but are not limited to, economic trends affecting the Company's operating environment, currency movement of the yen value to the U.S. dollar and other foreign currencies, and trends of stock markets in Japan. Also, the results projected here should not be construed in any way as being guaranteed by the company.