Machinery & Steel Structures
Business Operation

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MITSUBISHI HEAVY INDUSTRIES, LTD.

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Executive Vice President,
General Manager,
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CONTENTS

1. Progress with Business Reform
2. Business Domains
3. Overall Strategy
5. Reinforcing Medium-Scale Product Operations
6. Next Generation Business Initiatives
7. Summary
1. Progress with Business Reform

(1) Amount of orders received and operating income (consolidated)

(In billion yen)

<table>
<thead>
<tr>
<th>Year</th>
<th>Orders received</th>
<th>Operating income</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>515.8</td>
<td>2.3</td>
</tr>
<tr>
<td>2006</td>
<td>469.0</td>
<td>2.9</td>
</tr>
<tr>
<td>2007</td>
<td>557.3</td>
<td>7.0</td>
</tr>
<tr>
<td>2008</td>
<td>530.0</td>
<td>14.0</td>
</tr>
<tr>
<td>2010</td>
<td>550.0</td>
<td>15.0</td>
</tr>
</tbody>
</table>

First Phase of Reforms

Second Phase of Reforms
1. Progress with Business Reform

(2) First Phase of Reforms (2006 - 2007)

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>5/2006 Integration of Machinery and Steel Structures &amp; Construction Headquarters</td>
</tr>
<tr>
<td>2006</td>
<td>Improving profitability</td>
</tr>
<tr>
<td></td>
<td>Reforming business structure</td>
</tr>
<tr>
<td></td>
<td>Establishment of operating companies for bridges, environment, etc.</td>
</tr>
<tr>
<td></td>
<td>Transfer of TMP* operations</td>
</tr>
<tr>
<td></td>
<td>Restructuring of small-scale businesses</td>
</tr>
<tr>
<td></td>
<td>Improving order management</td>
</tr>
<tr>
<td></td>
<td>(avoiding unprofitable construction projects)</td>
</tr>
<tr>
<td></td>
<td>Reinforcing compliance</td>
</tr>
<tr>
<td></td>
<td>(including business companies)</td>
</tr>
<tr>
<td>2007</td>
<td>Establishment of all-round steel structure business company</td>
</tr>
<tr>
<td>2007</td>
<td>1/2007 Chimney operations transferred</td>
</tr>
<tr>
<td>2008</td>
<td>4/2008 Gas turbo and other operations transferred</td>
</tr>
<tr>
<td>2008</td>
<td>4/2008 Environment equipment operations transferred</td>
</tr>
<tr>
<td>2008</td>
<td>4/2008 TMP operations transferred</td>
</tr>
</tbody>
</table>

*MHI Bridge & Steel Structures Engineering Co., Ltd.

Mitsubishi Heavy Industries Environment Engineering Co., Ltd.

Mitsubishi Heavy Industries Parking Co., Ltd.

Mitsubishi-Hitachi Metals Machinery

*TMP: Turbo-molecular pumps (transferred to Shimazu)
1. Progress with Business Reform

(3) Second Phase of Reforms (2008 - 2010)

- Reinforcing all-round steel structure engineering framework
- Establishing consistent business system
- Increasing market share
- Stepping up global operations and moving into upstream areas
- Further improving profitability and establishing foundations for growth
- Nurturing next generation businesses
- Expanding core product operations
- Reinforcing medium-scale product operations

Main Business

Order management and compliance

Established

Business companies (dedicated)

- MHI Bridge & Steel Structures Engineering Co., Ltd.
- Mitsubishi Heavy Industries Environment Engineering Co., Ltd.
- Mitsubishi Heavy Industries Parking Co., Ltd.
- Mitsubishi-Hitachi Metals Machinery

1. Progress with Business Reform
2. Business Domains
(1) Business Structure and Global Operations
## 2. Business Domains
### (2) Area Covered under main Businesses

<table>
<thead>
<tr>
<th>Social infrastructure</th>
<th>Transportation Systems</th>
<th>Environmental and Chemical Plants</th>
<th>Metals Machinery</th>
<th>Compressors</th>
<th>Medium-scale Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>[Image of transportation systems]</td>
<td></td>
<td></td>
<td>[Image of bridges]</td>
</tr>
<tr>
<td>Industry/logistics</td>
<td></td>
<td>[Image of chemical plants]</td>
<td></td>
<td>[Image of compressors]</td>
<td>[Image of buried tunnel]</td>
</tr>
<tr>
<td>Environmental Preservation</td>
<td></td>
<td>[Image of desulfurization plants]</td>
<td></td>
<td></td>
<td>[Image of electrostatic precipitator]</td>
</tr>
<tr>
<td>Global warming prevention</td>
<td></td>
<td>[Image of CO₂ recovery CCS]</td>
<td></td>
<td>[Image of cold rolling mills]</td>
<td>[Image of rubber tire machinery]</td>
</tr>
<tr>
<td>Resource and energy development</td>
<td></td>
<td>[Image of CO₂ recovery Crude oil EOR]</td>
<td></td>
<td></td>
<td>[Image of organic EL]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Image of combined casting/hot rolling mills]</td>
<td></td>
<td></td>
<td>[Image of next generation businesses]</td>
</tr>
</tbody>
</table>
3. Overall Strategy

First Phase of Reforms

- Reconfiguring product operations and carrying out restructuring to create a business entity with sustained growth potential
- Improving profitability and reinforcing compliance

Second Phase of Reforms

Further improving profitability and establishing foundations for growth

- Expanding core product operations
- Reinforcing medium-scale product operations
- Nurturing next generation businesses

- Focusing on added value
- Making effective use of management resources
- Reinforcing risk management
4. Growth Strategy for Core Product Operations (1) Transportation Systems

Vehicle production + Control systems + Track construction

Airport APM
Moving into O&M business

New Urban Transportation Systems
Developing large-scale business

High Speed Railway
Developing advanced technology

Integrated control systems

Large-scale project management technology + Civil engineering and construction expertise

All-round APM Business
Large-scale Urban Transportation Systems
Dubai Metro

Next Generation Urban Transportation Systems
Electromagnetically levitated HSST
Low-floor LRT

Bullet trains in Taiwan
Bullet trains in Brazil
Bullet trains in Vietnam
Bullet trains in California

(Note) APM: Automated People Mover, LRT: Light Rail Train, HSST: High Speed Surface Transport
4. Growth Strategy for Core Product Operations (1) Transportation Systems

Expanding markets in Asia, the Middle/Near East and the United States
⇒ Offering products and services tailored to suit individual markets

18 Projects up and running, 6 projects under construction (10 in Japan)

- Planned urban transportation system projects
- Planned APM projects
- Planned high-speed railway projects
4. Growth Strategy for Core Product Operations (2) Environment, Chemical Plants

[Increasing focus on air quality preservation market]

Integrated Coal Gasification Combined Cycle (IGCC)

Creating integrated value chains
(Power Systems + Machinery & Steel Structures)
IGCC + CO₂ recovery
Underground storage (To be proved by National Project)

CO + H₂O
⇒ CO₂ + H₂

Expanding desulfurization business
- Tightening of environmental regulations
  ⇒ US: Mercury/SO₃ regulations
  ⇒ Europe, China & India: General tightening of regulations
- Bolstering alliances
  ⇒ US: ADVATECH
  (joint venture with URS)
  Europe: Partnership with DF (Spain), etc.

Developing CO₂ recovery business
- Targeting fertilizer plants
  ⇒ 6 orders
- EOR (increasing crude oil production)
  ⇒ 5 projects under negotiation
- CCS (underground storage)
  ⇒ 5 projects under negotiation
Air quality preservation
<Global operations>

Desulfurization/CO\textsubscript{2} recovery

Advatech
(Joint venture with URS)

Duro Felguera (DF)

Supplies from 194 plants
### Reinforcing operations at chemical plants

**<Market trends>**

![Graph showing global demand (petrochemicals/gas) and orders received from 2000 to 2010.]

- **Socioeconomic development in BRICs and other countries**
  - Long-term increase in demand for petrochemical products
- **Food shortages due to increased population**
  - Demand for fertilizer
- **Long-term increase in crude oil prices**
  - Demand for alternative energy

**<Basic medium- to long-term strategy>**

<table>
<thead>
<tr>
<th></th>
<th>Focusing on added value</th>
<th>Making effective use of management resources</th>
<th>Reinforcing risk management</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Focusing on specialist models and markets</td>
<td>—</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>(2) Shifting from EPC to EPCm-oriented* operations</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>(3) Project implementation capabilities (Reinforcing design and procurement capabilities)</td>
<td>—</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>(4) Stepping up development of independent technology</td>
<td>☐</td>
<td>—</td>
<td>☐</td>
</tr>
</tbody>
</table>

*EPCm: E+P+Construction management*

Examples of specialist models:
- Methanol plants
- Fertilizer/ammonia plants

- Increase in plant negotiations relating to ethylene, fertilizer, LNG, etc.
  - Shortage of construction workers and other issues
- Larger plants
  - Greater risk involved in construction

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(2) Environment, Chemical Plants
(2) Environment, Chemical Plants

Global operations

Oil, gas or petrochemicals

Supplies 286 plants
(3) Metals Machinery

Establishment and development of Mitsubishi-Hitachi joint venture

- Continuing with R&D
- Improving design capabilities
  - 3D CAD/PDM*
  - Standardization (MD)
- Increasing/training technical production staff

Market status

Worldwide raw steel production

Raw steel production in China

Number of competitors

Endless Rolling by Bar Joining Method
(New products stemming from R&D)

* Product Data Management

Global business development

Supplies approx. 2,200 plants + plants under construction/manufacturing = approx. 80 plants

- Proceeding with standardization
  - Enhancing cost competitiveness
  - Rectifying processes
  - Reducing delivery times

- Sustained investment of resources
  - Increasing scale of operations and offering excellent reliability*
  - Improving in-house production capabilities (personnel and equipment)

* E.g. Installing extra large testing facilities

<Strategy for further growth>
- Moving into growing gas market

<Business growth to date>
- Shifted focus to world market in 1990s
- Established independent technology and penetrated markets
- Secured top global share of ethylene market
  ⇒ Increased orders from larger ethylene plants and increase in projects

Global operations

Figures

Performance according to country
(compressors and turbines)

Supplies from approx. 3,500 plants
5. Reinforcing Medium-Scale Product Operations (1) Steel Products

Mitsubishi Heavy Industries Bridge & Steel Structures Engineering

A shift in domestic social infrastructure business

<table>
<thead>
<tr>
<th></th>
<th>New projects</th>
<th>Renovation of aging structures</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public sector demand</td>
<td>None</td>
<td>Low-reasonable</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Private sector demand</td>
<td>None-low</td>
<td>Reasonable</td>
<td>High</td>
</tr>
</tbody>
</table>

- Shift towards private sector demand
  ⇒ Improving cost competitiveness
- Trend towards multi-polar business
  ⇒ Bridges, chimneys, gas holders, etc.
- Improving renovation/AS technology capabilities
- Adopting a more engineering-oriented approach
  ⇒ Applying advanced design capabilities and erection expertise know-how
- Exploring alliances (economics of scale merit)

Mitsubishi Heavy Industries Parking Co., Ltd.

Increasing market share
(Maintaining position as top domestic group)

- Strengthening sales and service networks
  ⇒ Increasing personnel, computerization
- Cultivating markets through new products
- Improving maintenance technology capabilities
5. Reinforcing Medium-Scale Product Operations (2) (3)

(2) Environmental Equipment (Waste Disposal System Equipment etc.)

Domestic market
- Close proximity to steel structure products
- Demand for renovation of aging structures and energy-saving technology

Domestic
- Expanding AS based on supply track record
  ⇒ Improving prolonging-life and energy-saving technology
  ⇒ Improving differentiating technology as part of renovation of aging structures
- Cultivating new fields such as biomass

Overseas
- Engineering and core component supply business (Operations revolving around Chinese market)

(3) Advanced Payment Systems (ITS)

- Defending leading share of overall domestic market at all costs
  ⇒ Increasing ETC share

- Increasing exports
  ⇒ Developing next generation ERP* systems for Singapore market
  ⇒ Cultivation of next market to Singapore

* Electronic Road Pricing
5. Reinforcing Medium-Scale Product Operations (4) (5)

(4) Material Handling Machinery

Stepping up iron and steel logistics initiatives
- Maintaining position as top brand for large ladle cranes
- Increasing orders for coils and other conveying systems

Increasing sales of fully automatic port terminals

Handling coal and iron ore
- Renewing and improving AS among domestic suppliers
- Strengthening alliances with Chinese manufacturers

(5) Rubber Tire Machinery

Further reinforcing tire curing machine business
- Maintaining leading worldwide share
  ⇒ Shifting from a three pronged structure (Japan, Europe and the US) to a four pronged structure (Japan, Europe, the US and China)

⇒ Improving differentiating technology (pressure-free tire curing systems, etc.)
6. Next Generation Business Initiatives (1) Organic EL

Applications for proprietary MHI technology
- Precision film forming technology (linear evaporation via metal machinery)
- Large precision product manufacturing technology (various types of industrial machinery)

Successfully developing in-line film forming equipment

Business in partnership with leading manufacturers

Lighting market
- Domestic: around 500 billion yen
- Global: estimated at around 7-8 times the scale of domestic market

MHI Manufacturing equipment
ROHM Devices
Toppan Printing Finishing processing
Mitsui & CO. Marketing
Professor Kido R&D support, IP
6. Next Generation Business Initiatives
(2) Medical Instruments

Radiotherapy equipment

Integration of proprietary technology

- **High precision positioning**
  - Machine tool technology
    - Posture and vibration control technology
    - Precision position detection technology

- **Image processing**
  - Newspaper printing press technology
    - Image processing technology
    - Precision pattern recognition technology

- **High rigidity mechatronics**
  - (ring structure)
  - Machine processing and general assembly technology
    - Manufacturing technology for micron-level finishing of large metal machinery and other steel structures

- **High quality x-ray**
  - (compact acceleration tubes)
  - Accelerators and radiation generators
    - Ultrahigh-vacuum, microwave and radiation technology
    - Acceleration tube manufacturing technology
      (manufacturing patent obtained)

- Precision micron-level assembly of 10-ton machinery

- Positioning control to one tenth of a second

January 2008: Obtained pharmaceutical approval from Japanese Gov.
and commenced production and sales

May 2008: Treatment commenced using first system at the Institute of Biomedical Research and Innovation in Kobe
7. Summary

**2008 Business Plan (2nd phase of reforms)**

**Further improving profitability and establishing foundations for growth**

- Expanding core product operations
- Reinforcing medium-scale product operations
- Nurturing next generation businesses

**Achieving FY2010 consolidated targets as soon as possible**

- Net sales: 540.0 billion yen
- Operating income: 15.0 billion yen (2.8%)

**Quick transition to a highly profitable business entity with strong growth potential**

- Establishing large-scale and global core product operations
- Improving the profitability of medium-scale product operations
- Boosting revenue through next generation businesses

**Next stage (envisioned)**

- Net sales: 600.0 billion yen