Air-Conditioning & Refrigeration Systems
Business Operation

June 18, 2008

MITSUBISHI HEAVY INDUSTRIES, LTD.

Kiyonobu Toma
Senior Vice President,
General Manager,
Air-Conditioning & Refrigeration Systems Headquarters
1. Business Outline  (1) Product Overview

* Both net sales and percentage of domestic/overseas sales based on results in FY 2007 (Consolidated basis)

**Air Conditioning Equipment (PAC/RAC)**

- **PAC**
- **RAC**

**Automotive thermal systems (CAC)**

**Transport Refrigeration Units (TRU)**

**Centrifugal Absorption Liquid Chillers (CALC)**

**Mass-Produced Items**

**Ordered Goods**

### Percentage of Domestic/Overseas Sales

- **PAC**: Domestic 64%, Overseas 36%
- **RAC**: Domestic 36%, Overseas 64%
- **CALC**: Domestic 92%, Overseas 8%
- **CAC**: Domestic 67%, Overseas 33%
- **TRU**: Domestic 91%, Overseas 9%
1. Business Outline  (2) Portfolio

FY 2007 Sales (consolidated basis) for Air Conditioning & Refrigeration Systems Headquarters

According to product:
- Commercial use air-conditioning machinery (PAC): 36%
- Residential use air-conditioning machinery (RAC): 24%
- Automotive thermal systems (CAC): 23%
- Centrifugal & absorption liquid chiller (CALC): 8%
- Transport refrigeration units (TRU): 9%

Total: ¥211.8 billion

According to region:
- Asia, Oceania: 54%
- Americas: 7%
- Europe: 20%
- China: 13%
- Japan: 6%

Percentage of overseas sales: 46%
1. Business Outline (3) Business Summary

Margin: 3%

Business scale: ¥210 billion
2. Operating Environment  (1) Overview of the Air Conditioner Market

✔ The air conditioner market is on an expansionary track mainly in Europe, China and emerging nations.

- **Europe**: The market has been on an expansionary track since heat waves took place in 2003.

- **China**: The market is in the midst of a boom thanks to special procurements for the upcoming World Expo and Olympic events, and overall economic growth.

- **North America**: A mature market that is focused mainly on ducted air conditioners.

- **Japan**: With renovations accounting for more than 70% of market activity, growth is stagnant.

- **Asia, Oceania**: The market is seeing moderate expansion in line with economic growth.

- **Emerging nations, other countries**: The demand for infrastructure is expanding in line with rapid economic growth.

* Excludes peripheral equipment and cryogenic systems.
2. Operating Environment  (2) Air Conditioner Manufacturer Trends

- Manufacturers in Europe and the United States focus on ducted air conditioning systems, whereas Japanese manufacturers focus on ductless, individual-type systems.

Europe and Asia are the main battlefields. Market is mainly for RAC and PAC. Growth in high-end products due to improved performance.

The dominant power in central air conditioning, mainly in the United States. Seeks profits through after-sales services.

Japanese Manufactures

- Approx. 2 trillion yen (Market Size)
- Chillers
- Approx. 3 trillion yen
- Approx. 0.1 trillion yen
- Turbo Chillers

European and U.S. Manufactures

- Approx. 0.4 trillion yen
- Absorption Chillers

Chinese and Korean Manufactures

- Approx. 0.1 trillion yen
- Leveraging cheap prices to achieve rapid expansion. In recent years performance and quality have vastly improved.

Indicators the scope of application

- High
- Price per One Unit
- Low
- Small (household use)
- Midsize (buildings, commercial use)
- Large (industrial use)
3. Medium-Term Business Plan (1) Business Strategy

A build up of resources aimed at reinforcing business foundations is underway.

STEP 1 Restructuring business
- Independent-driven Approach
- Domestic Market
- 2006 business plan
  - Scaling back mass domestic RAC sales
  - Shifting control of PAC production overseas
  - Enhancement of overseas group companies

STEP 2 Reinforcing foundations
- Consolidation-centered approach
- World Markets
- 2008 business plan
  - Bolster production capacity
  - Increase number of employees
  - Expansion of operations in Europe

STEP 3 Expanding business
- 2010 business plan
  - Global expansion of all operations
  - Increase in profitability

2003 - 2006
2007 - 2009
2010 -
3. Medium-Term Business Plan  (2) Business Scale

✔ Seek to increase the scale of operations through aggressive expansion into overseas markets

- Overseas Net Sales: 46%
- Domestic Net Sales: 54%

Expansion primarily overseas

- Approx. 230.0 to 250.0
- Approx. 300.0

(In billion yen)

<table>
<thead>
<tr>
<th>Year</th>
<th>Overseas Net Sales</th>
<th>Domestic Net Sales</th>
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<tbody>
<tr>
<td>2005</td>
<td>192.1</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>198.5</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>211.8</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
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<tr>
<td>2012</td>
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Even within overseas markets, expansion will focus on Europe and China.
3. Medium-Term Business Plan   (4) Business Development

- Further expansion of overseas operations
- Expansion of compressor business
- Expanded sales of QS compressors, electric compressors
- Engage in capital expenditure
- Full-scale expansion into Europe
- Maintain and expand leading domestic market share
- Expand overseas business
- Maintain and expand leading domestic market share
3. Medium-Term Business Plan  (5) Global Expansion

Europe
- Expand sales of PAC multi-function systems (Enhanced sales structure and technical support)
- Entry into the heat pump market (alliances with major manufacturers)
- Expand sales of truck refrigeration units (expand number of distributors, sales of trailer units)
- Launch RAC high-performance products

Asia, Oceania
- Expand sales of CAC new compressors (QS compressors, electric compressors)
- Cultivate new CAC customers
- Maintain and expand leading market share in CALC and TRU (new product launches)

US
- Expand sales in CALC and TRU (strategic unit launches)
- Expand sales in Australian market for PAC/RAC

Net sales
Index based on 2006 = 100%

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<tr>
<th></th>
<th>2006</th>
<th>2012</th>
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<tbody>
<tr>
<td>Europe</td>
<td>100</td>
<td>240</td>
</tr>
<tr>
<td>Asia</td>
<td>100</td>
<td>180</td>
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Japan
- Expand sales of PAC/RAC (strengthen partnerships with MHISH, MHAQ and MJA)
- Expand sales of CALC and TRU (strategic unit launches)
4. Recent Developments (1) Synergy Effect

- Full deployment of 3D scroll compressors that bring advances in reduced size and weight, improved efficiency and noise reduction.

Conventional radial compression (2D) scroll

By instituting tip and end plate step parts, axial compression has been added to the conventional 2D radial compression (rendering a 3-dimensional compressor), vastly improving compression efficiency.

- Winner of 2006 “Technology Award” from the Japan Society of Refrigerating and Air conditioning Engineers

- Winner of 2007 U.S. Environmental Protection Agency (EPA) Award

- Winner of 2007 “Technology Award” from the Japan Society of Refrigerating and Air conditioning Engineers

- Reduced Size and Weight
- Improved Efficiency
- Reduced Noise

All achieved through the adoption of a 3D compressor.
4. Recent Developments   (2) New Model Centrifugal Liquid Chillers

✔ Aiming to generate new demand and capture new markets, a line of new centrifugal liquid chiller products was launched (event held May 19, 2008 to announce new products)

**New Product**
(Launched May 2008)

![eco-turbo ETI](image)

With an inverter equipped as standard, the small-capacity centrifugal liquid chiller achieves unparalleled high-performance! With this new product with an eye towards general-purpose air conditioning as well as plant air conditioning, MHI seeks to retain and further expand its leading domestic market share (60%).

**New Product**
(Launched October 2008)

![eco-turbo Heat Pump ETH](image)

With this product offering an expanded area of use ranging from a conventional heat sources for cooling to dual heating and cooling (heat pumps), along with the penetration of hot water supplies that utilize factory heat to play a part in all-electric factories, by switching from conventional combustion heaters to electric heaters MHI is seeking to drastically reduce CO2 emissions and expand the field of operations for its centrifugal liquid chiller units.
4. Recent Developments  (3) Transport Refrigeration Units

✔ Commencement of full-scale sales activities through European Zone distributors in Germany, Britain, France, Spain and Italy

Attracting such a great deal of attention as to be featured in local magazines
4. Recent Developments   (4) European Training Center

An air conditioning equipment training center in Europe is scheduled to begin operation from June of this year.