Machine Tool Business Operation

June 9, 2009

Akihiko Fujiwara
General Manager,
Machine Tool Division
1. Machine Tool Division Product Portfolio  P3
2. Summary of FY2008 and Forecast for FY2009  P4
4. Emergency Measures for FY2009  P6-10
5. Medium- and Long-Term Initiatives  P11-16
1. Machine Tool Division Product Portfolio

- Precision cutting tools
- Engine valves
- Power transmissions
- Gear cutting machines
- Large machines
- Machining centers
- Room temperature wafer bonding machines
- μ V1 micro milling machines
- Special-purpose machines
2. Summary of FY2008 and Forecast for FY2009

**Orders**
- A sharp decline in orders after November 2008 like postponement and/or cancellation due to a drastic market down turn
- Same level of export as previous year by means of increase of manpower for sales in overseas and proactive support from Japan

**Sales**
- Plans to enhance product appeal through expanded line-up in order to secure some precious and quality customers amidst continuing slow market conditions
- Major focus on potential markets like Environment and energy and Hybrid-related areas
- Maintain export at same level as FY2008 by stepping up sales promotion primarily in China and India where we can anticipate infrastructure-related demand

**JMTBA Demand Forecast (Billion yen)**
- Demand expected to slip to 850 billion yen in FY2009 and FY2010, down 35% compared to FY 2008 (40% decline in domestic demand, 30% decline in export demand)
- Demand expected to increase to 1.1 trillion yen in FY2011, up 30%
3. Machine Tool Business Summary

### Breakdown of Orders

<table>
<thead>
<tr>
<th>Machine tools</th>
<th>2007</th>
<th>2008</th>
<th>2009 forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precision machinery products</td>
<td>(50 billion yen)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special-purpose machines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large machines/Machining centers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gear cutting machines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New sectors</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 1. General
Machine tool orders during April remain at 25.2 billion yen (down 80% year on year)

#### 2. Gear cutting machines
No prospect of recovery in orders in the near future due to ongoing production adjustments in Auto industry
Sales talks are gradually starting up in overseas countries
Inquiries from Environmental and Energy sectors are increasing in Japan as well

#### 3. Large machines
Signs of recovery in Shipbuilding, Railways and Energy sectors
Active sales talks are coming after Beijing trade fair in April

#### 4. Special-purpose machines
Orders in the domestic Auto sector is not expected for the time being, but can be from overseas customers
Increase in inquiries of large special-purpose machines from Construction equipments and the Energy sector

#### 5. Precision machinery products
Orders in Auto sector remain sluggish (Main uses are Auto sector companies.)
Allocate major resources to Energy sector, in relation to Gear cutting tools
4. Emergency Measures for FY2009 (1)

1. Cost reduction initiatives
   - Step up and accelerate Innovative Activities in Manufacturing
   - Relocate staffs within the division as well as MHI other divisions

2. Securing orders and sales
   - Provide machining technology support for customers in order to generate demand
   - Cater to a diverse range of in-house machining needs
   - Focus on increasing export to potential markets

3. Increasing local presence
   - Expanding global procurement through standardizing optional equipments based on MD (Modular Design)
   - Increasing local procurement of peripheral equipments and transferring more roles to overseas subsidiaries
4. Emergency Measures for FY2009 (2)

1. Cost reduction initiatives

**Machine Tools**
- Push ahead with Innovative Activities in Manufacturing and implement extensive cost reduction initiatives at all stages including design changes by the project team.
- Adopt standard manufacturer products and increase the number of common components between models.
- Focus on production efficiency through KIT* placement and establishment of JIT** processing for components.
- Utilize under-used Gear cutting machines space and personnel as a part of assembly of Large machines.
- Relocate personnel between products so as to promote multi-skilled worker development.

**Precision Machinery Products**
- Review manufacturing process and production method so as to improve production efficiency.
- Shorten lead time as a strategy to differentiate MHI from competitors.
- Achieve the lowest manufacturing cost of Engine valves by the world's fastest production line.
- Maximize overall efficiency based on optimum specialization with overseas plants.

*KIT: Kits/sets of components for assembly  **JIT: “Just In Time”*
2. Securing orders and sales

Generate demand by providing machining know-how to customers

Launch **machinging technology seminar** for providing expert tuition in areas such as "basic machining techniques" with Large machines and "computer aided design (CAD)" in conjunction with **19 tool and cutting oil manufacturers** in April.

<table>
<thead>
<tr>
<th>MHI</th>
<th>The others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduce machining technology for Wind power generation system components and Vacuum chamber for Solar panels</td>
<td>Introduce machining expertise (tool selection, drilling, etc.), types and special features of cutting oils</td>
</tr>
</tbody>
</table>

Support customers to make it easier to do manufacturing through organized technical seminar involving companies in each special area.

**Actively generating demand by helping customers to cultivate markets**
2. Securing orders and sales

Cater to a diverse range of in-house machining needs

Match existing Seeds with unsolved Needs through “Innovative Activities in Manufacturing”

Support other divisions through introducing manufacturing methods and developing new type of machine tools

- Establish world-leading machining systems
- Provide total solutions combining tangible and intangible support

Focus on equipments for Power systems within MHI (FY2009)

Increasing sales to domestic and overseas Energy-related companies over medium term
2. Securing orders and sales

Focus on increasing export to potential markets

Sales talks are increasing on Infrastructure-related products in China and India

- Promoted HK base to Control center for Asian market (establish a set up not to miss any business opportunities)
- Dispatch another two members of division sales staff to China on a long term basis
- Send out design engineers to initiate sales talks so as to ensure faster, more effective responses, including special-purpose machines

Secure large orders for General machinery in China and Infrastructure-related products in India
3. Increasing local presence

**Machine Tools**

- Hold local component exhibitions to identify vendors (promising vendors already identified at the exhibitions held in Vietnam and India)
- Expand global procurement through standardization of optional equipments based on MD (Modular Design)
- Local tie-ups in relation to peripheral equipments for Gear cutting machines in India

**Precision Machinery Products**

- Promote integrated operations between overseas plants and Ritto Plant in Shiga prefecture, Japan
- Enhance price competitiveness within domestic market
5. Medium- and Long-Term Initiatives (1)

◆ Establish a robust management framework capable of adapting to drastic changes in the environment

- **Target scale of business**
  - New sectors
  - Precision machinery products
  - Machine tools
  
- **Continuous investment to target sectors for the future**
  - **Personnel**: Relocate personnel to prioritized sectors and maintain the overall number of personnel (human resources focused on overseas sales, services and new product development)
  - **Investment**: Commercialize Gearbox business for Wind turbines
  - **R&D**: Establish a line-up of large Infrastructure-related products

- FY2008 = 100

- Chart showing business scale from 2008 to 2012 with distinct investments and trends.
5. Medium- and Long-Term Initiatives (2)

**Machine Tools**

**Gear cutting machines**
- Reduce weighting towards Auto industry (especially major manufacturers)
- Cater to accelerated growth of Hybrid-car
- Measures corresponding to decline of the market due to reducing number of gears
- Step up capabilities in Energy and Infrastructure-related sectors

**Priorities**

- Cater to growing demand for Hybrid technology and higher quality gears (complete line-up of gear grinding machines for internal and external gears)
- Launch modified products for job shops*
- Develop large Gear cutting machines for Construction equipments and Wind power generation systems (testing underway with an eye to launching before end of year)

**Large machines**
- Focus on in-house Power systems and Wind power generation products in response of growing demand in Energy sector
- Concentrate more on Special-purpose machines rather than primarily on standard models

**Priorities**

- Build up expertise and expand products through responding to high level in-house needs
- Develop extra-large Horizontal boring machines for power systems
- Cultivate Portal machine markets in Europe

◆ **Build up a solution business based on manufacturing expertise as a future source of revenue**

* Job shop: Plants handling orders for high-mix, low-volume production
5. Medium- and Long-Term Initiatives (3)

**Precision Machinery Products**

**Precision cutting tools**

- Reduce weighting towards auto industry
- Launch new products
- Step up integrated operations with Indian plant
- Enhance price competitiveness for exports

- Launch new tools for power systems
- Consolidate general products, including operations at Indian Plant, new product development and high-value added products under Ritto Plant
- **Penetrate world market and double sales** based on collaboration between Japanese and Indian Plant

**Mitsubishi Heavy Industries India Precision Tools, Ltd. (MHI-IPT)**

- **Share in Indian market**
  - 2008: 43%
  - 2009: 48%
  - 2010: 50%
  - 2012: 52%
- **Sales**
  - Export
  - Domestic

- **Ranipet Main Plant** (Tamil Nadu)
  - New plant completed in August 2007 (3,500m²)
  - Total capacity: Same as Ritto Plant
- **Delhi Plant**
  - Commenced operations in December 2007
  - Northern after-sales service center
5. Medium- and Long-Term Initiatives (4)

Precision Machinery Products

Engine valves

- Enhance price competitiveness
- Re-establish operation at Chinese Plant (entry to local car manufacturers)

- Increase productivity based on newly-introduced world’s fastest production line
- Reinforce sales capabilities and increase productivity at Chinese plant
- Solution-based sales harnessing in-house expertise in relation to products for environmentally friendly high-performance engines

Shenyang Aerospace Xinguang Mitsubishi Heavy Industries Engine Valve Co., Ltd.

Sales

- 2008
- 2009
- 2010
- 2011
- 2012

Shenyang Plant
Commenced operations in April 2006

Inside plant
Japanese standard production management
5. Medium- and Long-Term Initiatives (5)

New sectors

Gearboxes for Wind turbines

- Maintain manufacturing expertise accumulated through Power transmission and Gear cutting machine operations
- Match seeds to needs with growing in-house demand for Gearboxes

- Branch out into Gearboxes as well as manufacturing equipment (production scheduled to commence before end of FY2011)
- Develop modified low-cost, high-performance Gearboxes
- Establish Gearboxes as a third core business after Machine tools and Precision machinery products

Wind turbines: Market forecast and images

Market is expected to reach 10 trillion yen by 2015, with a 1 trillion yen market for Gearboxes

Source: BTM Consult ApS