General Machinery & Special Vehicle Business Operation

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MITSUBISHI HEAVY INDUSTRIES, LTD.

Katsuhiko Yoshida
Director, Executive Vice President,
General Manager,
General Machinery & Special Vehicle Headquarters
1. Principal business domains

- **Turbochargers**
  - Variable Capacity Turbochargers for diesel vehicles
  - Variable Capacity Turbochargers for gasoline vehicles

- **Forklift Trucks** (Material Handling Equipment)
  - FD25 Forklift Truck
  - ESR15N Electric Reach Truck

- **Engines & Equipment**
  - Small-sized Diesel Engine S4S
  - Marine Diesel Engine S6RG
  - M1203-G Diesel Generator Set

- **Special Vehicles**
  - Type 90 Tank

2. Past performance (consolidated results)

- **Breakdown of sales for FY2007 (consolidated)**
  - Special Vehicles: 8%
  - Turbocharger: 15%
  - Engines: 26%
  - Forklift Trucks (Material Handling Equipment): 43%
  - Net Sales: 474.4 billion yen

- **[Key features]**
  1. Business rapidly growing in scale, particularly private sector products, on the back strong market demand
     - (FY2003: 308.3 billion yen → FY2007: 474.4 billion yen = + 166.1 billion yen)
  2. Noticeable growth in turbocharger and engine products in particular, revolving largely around component operations
  3. Excellent consolidated/non-consolidated ratio thanks to expansion of global operations through active development of overseas production bases (x 1.7 compared to MHI average of x 1.3)
Global GM&SV Operations

We are in the process of setting up production, sales and service bases in locations the world over as we continue to expand our global operations across the board.

Europe
- MHI Equipment Europe (MEE)
- MHI Equipment Alsace (MEA)
- Mitsubishi Caterpillar Forklift Europe (MCFE)
- Rocla

North America, Central & South America
- Mitsubishi Engine North America (MENA)
- Mitsubishi Caterpillar Forklift America (MCFA)
- MHI Sul Americana Distribuidora de Motores (MSA)

Asia, China
- MHI-VST Diesel Engines (MVDE)
- MHI Pornchai Machinery (MPM)
- Mitsubishi Turbocharger Asia (MTA)
- Mitsubishi Caterpillar Forklift Asia (MCFS)
- MHI Engine System Asia (MHIES-A)
  (MHIES-H/MHIES-SZ/MHIES-P/MHIES-V/MHIES-I)
Market Environment

Creation of a multi-polar global market due to the rise of emerging markets in addition to the existing three core markets in Japan, Europe and the United States

Increasing trend towards tightening of regulations as a result of growing levels of environmental awareness on a global scale

Business-specific market trends
(1) Growth in demand for vehicular engines and turbochargers for passenger vehicles on the back of tighter regulations on emissions and CO₂, primarily in advanced nations
(2) Growth in demand for generators in spite of soaring oil prices, primarily in emerging countries struggling to cope with power supplies
(3) Divergence and growth in demand for forklift trucks, with advanced nations favoring indoor logistics equipment and emerging markets preferring engine-powered vehicles

Concern regarding North American market, but sustained growth in demand across the global market as a whole
## Business Challenges and Direction

Promoting flexible business operations resilient to changes in the market environment, based around global management via our Sagamihara Plant in its role as “Control Tower” (Mother Factory/Design Center)

1. **Expanding, improving and maintaining production capabilities**  
   (Achieving optimum global production and procurement)

   | Expanding production capabilities at Sagamihara Plant  
   (Leading the way towards increased global production in role as Mother Factory) |
   | Increasing mass production and procurement at overseas bases and increasing production in low-cost countries |

2. **Stepping up product strategies in response to diversification**

   | Increasing revenue and avoiding exchange rate/economic fluctuation risks through active expansion into emerging markets |
   | Increasing market share through highly profitable products with anticipated growth potential |

3. **Stepping up technology and quality strategies**  
   (Promoting product differentiation and strengthening operating base)

   | Improving product reliability |
   | Value chain improvement measures |
   | Developing next generation technology and launching new products |
GM&SV Headquarters 2008 Business Plan

“Expanding, improving and maintaining our production structure in anticipation of business growth and promoting global operations”

1. Establishing optimum value chains and improving manufacturing capabilities in order to increase revenue
2. Generating customer value in line with changing market environments and manufacturing highly reliable products
3. Working with affiliated companies and suppliers to establish a business entity capable of achieving an optimum strategic supply chain

[Sales projections]

(In billion yen)

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
<th>Business Plan for 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>156.5</td>
<td>285.2</td>
</tr>
<tr>
<td>2004</td>
<td>173.0</td>
<td>308.3</td>
</tr>
<tr>
<td>2005</td>
<td>209.1</td>
<td>363.0</td>
</tr>
<tr>
<td>2006</td>
<td>230.5</td>
<td>393.2</td>
</tr>
<tr>
<td>2007</td>
<td>253.7</td>
<td>431.1</td>
</tr>
<tr>
<td>2008</td>
<td>274.1</td>
<td>474.4</td>
</tr>
<tr>
<td>2009</td>
<td>280.0</td>
<td>460.0</td>
</tr>
<tr>
<td>2010</td>
<td>320.0</td>
<td>520.0</td>
</tr>
<tr>
<td>2012</td>
<td>(370.0)</td>
<td>(600.0)</td>
</tr>
</tbody>
</table>

Foreign Exchange Rates
Dollar: ¥122/$, ¥113/$, ¥107/$, ¥113/$, ¥117/$, ¥115/$, ¥100/$, ¥100/$
Euro: ¥120/€, ¥132/€, ¥135/€, ¥138/€, ¥149/€, ¥161/€, ¥150/€, ¥150/€
Expanding, Improving and Maintaining Production Capabilities (1)

Steps to expand production capabilities at the Sagamihara Plant

1. Acquiring former Shin Caterpillar Mitsubishi Parts Distribution Center (land and buildings) and setting up a dedicated turbocharger plant in order to establish an enhanced production structure (investment of 18 billion yen)
2. Creating more space due to the transfer of existing turbocharger production facilities (establishing a three-plant structure)
3. Changing the layout of engine, vehicular and other facilities and investing in increased capacity
4. Streamlining logistics between plants and increasing capacity in order to restructure plants to make them more profitable
Expanding, Improving and Maintaining Production Capabilities (2)

Improving production capabilities at overseas bases to enhance flexibility and improving functional capabilities in order to achieve optimum production and procurement

**Basic Position**

1. Although business expansion has enabled us to secure a large enough volume of orders to enjoy the benefits of mass production, we can only increase production capacity in Japan up to a certain point. Efforts to increase production over the medium to long term will therefore be focused overseas.

2. In addition to minimizing distribution costs based on market proximity and reducing exchange rate and other risks wherever possible, we intend to actively promote increased local production overseas, including production in low-cost countries.

<table>
<thead>
<tr>
<th>Absorbing exchange rate/economic fluctuation risks</th>
<th>Improving production flexibility to suit multiple markets via existing bases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catering to growing overseas demand</td>
<td>Starting production for South American markets at MCFA (USA), etc.</td>
</tr>
<tr>
<td>Spreading risks through specialized production and increasing production</td>
<td>Expanding production capabilities at existing overseas bases in order to provide support for production at Sagamihara</td>
</tr>
<tr>
<td></td>
<td>Increasing engine production at MEA (France), etc.</td>
</tr>
<tr>
<td>Catering to demand in emerging markets</td>
<td>Specialized production of core parts at new plant in Thailand (MTA) which has been produced at Sagamihara intensively</td>
</tr>
<tr>
<td></td>
<td>Spreading risks such as cost fluctuations and operational problems</td>
</tr>
<tr>
<td>Achieving stable procurement on a group-wide basis</td>
<td>Increasing production and stepping up activities at overseas bases responsible for emerging markets</td>
</tr>
<tr>
<td></td>
<td>Stepping up activities at MHIES-A (Asia), MVDE (India) and MSA (Brasil)</td>
</tr>
<tr>
<td></td>
<td>Establishing an overseas procurement network aimed at achieving optimum worldwide procurement</td>
</tr>
<tr>
<td></td>
<td>Improving local procurement capabilities at overseas bases and establishing a global supply chain</td>
</tr>
</tbody>
</table>
Securing Resources

Securing resources appropriate for the growth strategy and establishing a strong business constitution

Securing Human Resources

Bolster the ability to pursue business that will deliver growth.
1. Recruit the people needed for expansion, and actively train core personnel.
2. Overseas group companies will also recruit new workers in step with production growth.

Capital Expenditure

Proactively investigate growth businesses, including turbochargers.
1. Strengthen the capabilities of Sagamihara factory by acquiring an adjacent SCM site and establishing a three-factory system.
2. Construct a global production system, bolstering the production capabilities of overseas bases by establishing a Thai MTA factory etc.

Investment in R&D

Secure a technological edge and strengthen product development capabilities.
1. Develop products and strengthen environmental technology to meet market needs.
2. Accelerate the development of next-generation products.
3. Improve the design process and promote standardization and sharing.

Make major capital investments to improve production capacity
To double from the period from 2006 to 2007

Expand R&D investment to secure advanced technology
Up approx. 35% compared with the period from 2006 to 2007.
The Turbocharger Business Environment

Market Trends

Increase in diesel engine sales due to tighter environmental regulations and the growth of the auto market
- Increase in the percentage of diesel vehicles and a surge in demand for vehicles fitted with turbochargers due to tighter environmental regulations on emissions and CO₂ in the European and US markets
- Trend towards increased demand in Asian markets too due to increased auto production

Growing trend towards downsizing of gasoline engines
- Increase in manufacturers fitting turbochargers in order to downsize gasoline engines, thereby reducing fuel consumption and increasing efficiency

Shift in customer requirements towards production capabilities
- Number one quality that customers look for in a manufacturer increasingly shifting towards “production capabilities” in line with growing demand

MHI Initiatives

Increasing orders for diesel turbochargers, and harnessing advanced high-temperature compatible technology to further increase orders for gasoline turbochargers (a field that MHI already leads) in an effort to secure the number one share of the turbocharger market
Main Turbocharger Business Strategy

Increasing scale of business through improved production capabilities and product superiority

<table>
<thead>
<tr>
<th>Improving Production Capabilities</th>
<th>Enhancing Product Superiority</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Establishing a 6.9 million unit structure</td>
<td></td>
</tr>
<tr>
<td>・Increasing facilities at our two production bases in Sagamihara and MEE (Netherlands) and establishing a new base in Thailand (MTA) to create a three-pronged production system</td>
<td></td>
</tr>
<tr>
<td>(2) Establishing a global supply chain</td>
<td></td>
</tr>
<tr>
<td>・Improving local procurement capabilities in order to secure supply capabilities and achieve optimum procurement</td>
<td></td>
</tr>
</tbody>
</table>

(1) Best customer supports and most reliable products
   ・MD* (new design concept) technologies enable to materialize speedy development and to respond various customer requirements.  
   ・QI-I* (innovations in product reliability) and DE-I* (digital engineering processes) activities enable to achieve world-best-in-class reliability

(2) Innovative charging systems
   ・Turbocharging systems for High exhaust temperature gasoline engines (better fuel economy and high response at high exhaust temp. 1,050°C)  
   ・Variable geometry systems for gasoline engines (high reliability with simple structure)  
   ・Two-stage turbocharger systems for diesel engines (new generation technology for high output)  
   ・2-way variable geometry turbo (compressor and turbine) for diesel engines (torque increase 70% at low speeds by flow range enhancement)  
   ・Electric power-assist systems (quick response by eliminating turbo-lag)

* MD: Modular Design   QI-I: Quality Improvement-Initiative   DE-I: Digital Engineering-Initiative
Establishing a Global Turbocharger Business Network

**MHI Equipment Europe (MEE)**
Biggest market at present

- “Outpost” base on the frontline in Europe, where large numbers of major customers are based
- Site area: 50,000m²
- Building area: 21,800m²

**Mitsubishi Turbocharger Asia (MTA)**
Market with anticipated future growth potential
(Largest auto producing country in Southeast Asia)

- Second KD supply base in support of Sagamihara
- Will also provide sales capabilities for Asia region

**Outline of MTA**
- Established: January 2008
- Location: Amata Nakorn Industrial Estate, Chonburi, Thailand
- Business activities: Production and sale of turbochargers and production of cartridges (production of KD parts for shipment to other supply bases)
- Site area: 147,000m²
- Building area: 60,000m²
- Direct/indirect workforce: Approx. 700 workers

**Established a Global Turbocharger Business Network**

<table>
<thead>
<tr>
<th>Units: 10,000 turbochargers</th>
<th>Cartridges</th>
<th>Assembled turbochargers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production volume</td>
<td>690</td>
<td>690</td>
</tr>
</tbody>
</table>

**Business “Control Tower” overseeing all bases**
- Design center/Mother Factory
- KD part supply base for all bases

**Cross-sectional diagram of a turbocharger**

- Cartridge
  - Core part of the turbocharger, consisting of a bearing housing and rotating parts

**KYP (technical partnership)**

- Shanghai MHI Turbocharger Co., Ltd.
  - (SMT), etc.

<table>
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<th>Units: 10,000 turbochargers</th>
<th>Cartridges</th>
<th>Assembled turbochargers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production volume</td>
<td>80</td>
<td>220</td>
</tr>
</tbody>
</table>

**Shanghai MHI Turbocharger Co., Ltd. (SMT), etc.**

- Site area: 50,000m²
- Building area: 21,800m²

**Outpost** base on the frontline in Europe, where large numbers of major customers are based

- Units: 10,000 turbochargers
- Production volume: 100

**Mitsubishi Turbocharger Asia (MTA)**

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**[Product strategy (2)] The Engine Business Environment**

**Mitsubishi's engine line-up**

GM&SV is responsible for high-speed engines with an output of 3700kW or less

**Market Environment**

1. Growth in demand for compact vehicular engines
   - Increase in demand for replacement engines due to tightening of emissions regulations in markets in advanced nations
   - Rapid increase in orders for existing models in emerging markets

2. Growth in demand for generator sets in emerging countries struggling to cope with power supplies, in spite of soaring oil prices

3. Growth in demand for marine engines due to increased marine transport the world over, including energy resource shipments within Southeast Asia and a resurgence in river-based distribution in Europe

**MHI Initiatives**

1. Proceeding with development in line with schedules for environmental regulations in Japan, Europe and the US
2. Catering to growing demand as a result of increased production capacity (including overseas bases)
3. Stepping up service business, including EMS (Energy Management Services) and full maintenance contracts, and responding to an increasingly diverse range of customer needs
4. Securing stable supplies of materials in line with increased production volume
Engine Business:
Complying with Tighter Environmental Regulations

Developing engines compliant with Tier IV emissions regulations
Making the most of Mitsubishi’s strengths as both an auto manufacturer and a manufacturer of key components, we are proceeding with development of both hardware and software in an effort to achieve the optimum power line.

Securing revenue sources by developing core engine technology on an in-house basis
Establishing in-house core technology in areas such as fuel injection and air systems.

Trends in emissions regulations on off-road vehicles in the US and MHI initiatives

Tier III compliant 100kW small-sized engines
- Fitted with common rail system
- Production commenced in March 2007

Tier II compliant 1,000kW medium and large engines
- Fitted with electronic control unit injector (in-house)
- Production commenced in July 2007

Progress with development of engines compliant with emissions regulations

Other environmental initiatives

Highest thermal efficiency in class
Clean mirror cycle gas engines
- Production scheduled to commence in October 2008

Very low noise (70dB) generator packages
Main Strategy for Compact and Meiki Gasoline Engines

Complying with tighter environmental regulations as soon as possible and expanding vehicular engine business

Expanding Business
1. Expanding sales into industrial vehicle and industrial machinery manufacturer markets in North America and Europe, spearheaded by new models compliant with emissions regulations
2. Getting MVDE (India) up and running as soon as possible in order to actively expand business into emerging markets in Asia
3. Proceeding with advance development of new models compliant with emissions regulations and increasing OEM supplies in response to supplementary demand for models from other engine manufacturers as well as industrial vehicle and industrial machinery manufacturers

Reinforcing Service Business
1. Reinforcing regional service structure within Asia, centered around our Asia service company (MHIES-A), in order to offer customers faster service and increase revenue
2. Getting re-manufacturing operations up and running in response to a wide range of customer needs
3. Extending and improving after-sales services for major OEM customers

Increasing Production Capacity
1. Increasing production capacity at our Sagamihara Plant in order to establish a 200,000 unit a year production structure
2. Promoting reduced man-hours and other streamlining initiatives in order to reduce production lead times (from six to four days)
3. Increasing production capacity at MVDE bases and increasing effectiveness by deploying models as soon as possible
4. Improving operational process and establishing of production control system in order to reduce losses from operation.

Main Strategy for Meiki Gasoline Engines

Market Development
1. Developing new customers with new emission-compliant models
2. Developing new sales network collaborating with World-Wide customers
3. Expanding into new fields with the commercial release of cogeneration systems

Sale Projections (In billion yen)

- 2007: 15.0
- 2008: 16.0
- 2010: 21.0
- 2012: 23.0

- 1. Existing models
- 2. Cultivating sales networks
- 3. Cultivating new fields

Compact engine sales projections and increases in production capacity

- Current capacity (145,000 units a year)
- Harnessing resources such as temporary outsourcing
- Production capacity after investment (200,000 units a year)
Main Strategy for Medium and Large Engines

Focusing on growing demand for marine engines and generator sets and reinforcing business profitability

Expanding Business

1. Increasing sales of marine engines on the back of growing demand for shipping in line with increased worldwide distribution.
   - [Europe] Modal shift resulting in more vehicles being transported on low fuel consumption cargo ships
   - [Asia] Increased demand for coal carrier ships from countries such as China and Indonesia
   - [South America] Increase in transportation of resources and demand for container shipping due to economic growth
   
   Arranging sales and service bases in each country in line with demand

2. Increasing sales of generator sets in response to increased global power demand
   - Continuing to supply large volumes of diesel engines to generator manufacturing OEM customers in Europe and the US and establishing base load operations
   - Launching 1MW gas engines onto the market in addition to existing high-output models in response to the current construction boom in oil-producing nations in particular and increased demand for power in China

Expanding Parts and Service Business

1. Establishing an Asia service company (MHIES-A) as part of a service structure designed to increases sales of service packages and spare parts
   - Broadening customer eligibility for extended warranty scheme
   - Setting up parts remanufacturing business, etc.

Increasing Production Capacity

1. Increasing production capacity at Sagamihara (5,200 units a year) and improving capabilities at bases in France (MEA) and Vietnam (MHIES-V) in order to establish a global production system (6,000 units a year)

2. Actively promoting local procurement based around MEA and MHIES-V

Sales projections and increases in production capacity

<table>
<thead>
<tr>
<th>Year</th>
<th>Current capacity (3,805 units a year)</th>
<th>Harnessing resources such as temporary outsourcing</th>
<th>Capacity after investment (5,200 units a year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>4199</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>4644</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>4901</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>5087</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>5200</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Graph showing sales projections and increases in production capacity]

Market share: Establishing position in market as one of the world’s leading companies

[Graph showing market share comparison between 2006 and 2010]
Establishment of new bases to cater to emerging markets in Asia, Central and South America and other parts of the world during FY2007 as a first step towards global business expansion into emerging markets in addition to the three core markets in Japan, Europe and the US.

**MHI-VST Diesel Engines (MVDE)**
- MVDE established as new compact engine production and sales company in India.
- Local production of compact engines commenced in December 2007.
- Established: August 2007.

**MHI Sul Americana Distribuidora de Motores (MSA)**
- Engine sales and service base newly established in Brazil.
- Aiming to increase sales in the rapidly growing South American market.

**MHI Engine System Asia (MHIES-A)**
- Full launch of operations at Asian regional management company for engine business.
- Production commenced at MHIES-V generator set plant in Vietnam (November 2007).
- Full launch of operations at other sales and service bases (MHIES-V, MHIES-L, MHIES-P, MHI Engine System).
Market trends
Increase in demand for engine-powered vehicles in emerging markets and Electric Warehouse Equipment in markets in advanced nations

Counterbalance forklift market
Emerging markets (Thousand units)
2000 2006 2007 2012 (FCT.)
Advanced markets
267 326 345 340
Emerging markets
70 185 233 260

Electric Warehouse Equipment
Emerging markets (Thousand units)
2000 2006 2007 2012 (FCT.)
Advanced markets
210 275 304 340
Emerging markets
270 39 49 60

Goals (Positioning within industry)
Aiming to secure the number three position as a group based on cooperative relationship with Nichiyu and ROCLA

Industry ranking (2007)

(1) Expanding business domain
- Moving into new markets
- Expanding into environmentally friendly fields

(2) Stepping up cooperation with partners
- Offering Electric Warehouse Equipment products

(3) Establishing a global network aimed at optimum overall operations
- Achieving optimum production and procurement at bases located in each market and linking bases together via a powerful supply chain in order to achieve optimum overall operations

MHI’s policy
Harnessing MHI’s strengths in terms of engine-powered vehicles and components to establish a production and sales structure targeted at the three core global markets

Responding flexibly to an increasingly diverse range of needs, including different environmental regulations and product specifications in each market

Improving range of products and establishing a sales network based on strategic partnerships with Electric Warehouse Equipment specialist Nichiyu and other partners

Catering to customer needs by expanding business into all-round logistics services (Battery-powered vehicles, automated warehousing, AGV)

Market trends
- Chinese, Russian and Central and South American markets growing in scale, particularly in terms of engine-powered vehicles
- Growing demand for environmentally friendly products
- Growing demand for Electric Warehouse Equipment and diversification of needs due to shift towards small-lot distribution, particularly in markets in advanced nations
- Growing demand for all-round logistics solutions

Goals
Aiming for number three position in industry

Industry ranking

MHI / MCF
Nichiyu
ROCLA

Aiming to secure the number three position as a group based on cooperative relationship with Nichiyu and ROCLA

Aiming for number three position in industry
Main Forklift Truck Business Strategy

Catering to diverging needs in advanced and emerging markets and implementing initiatives aimed at sustained growth in the global market

<table>
<thead>
<tr>
<th>MHI’s strengths</th>
<th>MHI’s strategy</th>
</tr>
</thead>
</table>
| **1. 100% in-house development**  
  - Distinctive product planning incorporating power, control, IT, communication and environmental technology  
  (1) Controllers (electronic technology)  
  (2) Engines (environmentally friendly technology)  
  (3) Transmission and axles  
  (4) Logistic management technology | **Market strategy**  
  1. Harnessing a competitive edge in terms of cost and environmentally friendly technology to capture emerging markets, particularly with engine-powered vehicles  
  2. Going about business in a customer-oriented manner, focusing on Electric Warehouse Equipment in advanced markets |
| **2. Global business operations**  
  - Business operations on a global scale, focusing on the three core markets in North America, Europe and Asia/Japan  
  - Offering products based on an understanding of world markets and the current situation in the logistics industry  
  - Positioning Japan as the “control tower” acting in the role of mother factory and design center | **Fundamentally strengthening business**  
  1. Stepping up cooperation with partners in order to expand our range of Electric Warehouse Equipment and thereby expand our business domain and scale of operations  
  2. Initiatives geared towards an all-round logistics system (moving into all-round logistics solutions business)  
  3. Stepping up electric vehicle technology (battery technology, etc.) and recycling-oriented design |

- **Stand-alone business operations as MHI**
- **Established overseas business through MCF**
- **Increased scale of operations on back of expansion of the world economy**

(Consolidated Sales Figures)

(In billion yen)

- 1987: 0  
- 1989: 0  
- 1991: 0  
- 1993: 86.0  
- 1995: 190.0  
- 1997: 200.0  
- 1999: 250.0  
- 2001: 300.0  
- 2003:  
- 2005:  
- 2007:  
- 2012:  

(Linked sales growth)

(Consolidated Sales Figures)

(Stand-alone business operations as MHI)

(Established overseas business through MCF)

(In billion yen)

- 1987: 0  
- 1989: 0  
- 1991: 0  
- 1993: 86.0  
- 1995: 190.0  
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- 2001: 300.0  
- 2003:  
- 2005:  
- 2007:  
- 2012:  

(Increased scale of operations on back of expansion of the world economy)
Global Forklift Truck Business Operations

1. Establishing an optimum global production and supply system, including extending standardization of key components and parts
2. Expanding sales and service networks in emerging markets to capitalize on growing demand
3. Stepping up cooperation with strategic partners in order to strengthen and expand indoor logistics equipment operations

Partners
Cooperation on indoor logistics equipment, etc.

Regional headquarters for China and the rest of Asia
- Territory: China, Asia
- Capabilities: Sales and service

“Control tower” overseeing all bases
- Design Center /Mother Factory
- Key component (KD) supply base
- Production capacity: 20,000 units a year

Supplies of finished vehicles
- MCFC
- MCFA
- MCFS

Territory: Europe (including Russia), Africa, Middle/Near East
Capabilities: Production, sales and service
Production capacity: 20,000 units a year

Nichiyu
- Key component (KD) supply base
- Production capacity: 20,000 units a year

Territory: China, Asia
Capabilities: Sales and service

Territory: North America, Central & South America
Capabilities: Production, sales and service
Production capacity: 28,000 units a year

Supplies of finished vehicles
- MCFA
- MCFS

Central & South America
North America
Russia, CIS
Asia, Oceania
MCFC
MCFS
MCFA
MCFE
ROCLA
Europe
Middle/Near East

Partners
Cooperation on indoor logistics equipment, etc.
Forklift Truck Business Partnership Strategy

[Stepping up business ties with Nippon Yusoki (Nichiyu)]

1. Vision for partnership

A mutually complementary relationship between MHI, with its global operations (and partnerships) and expertise in engine-powered vehicles, and Nichiyu, with its powerful domestic sales capabilities specializing in Electric-powered vehicles, aimed at creating the leading manufacturer in the forklift truck industry with the support of both companies’ shareholders, customers, employees and other stakeholders

2. Specific measures

(1) Commencing sales of Nichiyu electric vehicles via MHI’s brand network
(2) Joint development of next generation electric vehicles
(3) Strengthening sales and service network through integration of domestic sales operations
(4) Establishing a Partnership Promotion Committee to look into other potential partnerships

3. Desired effect

(1) Developing a full range of counterbalance vehicles and Electric Warehouse Equipment in order to cater to a diverse range of customer needs
(2) Aiming to become the number three group in the world with Nichiyu and ROCLA
[Product Strategy (4)] Progress with Development of New Tanks

### Development theme

- Compact and lightweight tanks that still offer superior firepower and mobility to respond to requirement of urban security
- Harnessing IT to enable improved combat capabilities as part of tank warfare

<table>
<thead>
<tr>
<th>Name</th>
<th>New tank</th>
<th>Type 90 Tank</th>
<th>Type 74 Tank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total weight</td>
<td>Lighter than Type 90</td>
<td>Approx. 50t</td>
<td>Approx. 38t</td>
</tr>
<tr>
<td>Capacity</td>
<td>Same as Type 90</td>
<td>3 crew</td>
<td>4 crew</td>
</tr>
<tr>
<td>Main gun</td>
<td>More powerful than Type 90</td>
<td>120 mm smooth bore gun</td>
<td>105mm tank gun</td>
</tr>
<tr>
<td>Top speed</td>
<td>Same as Type 90</td>
<td>Approx. 70km/h</td>
<td>53km/h</td>
</tr>
<tr>
<td>C4I capabilities*</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

*(C4I: Command, Control, Communication, Computer, and Intelligence)*

### Development Flow

- Improved firepower
- Improved mobility
- Improved penetration and automatic guidance capabilities
- Additional C4I capabilities
- Linked to regimental command and control systems, etc.
- Compact and more lightweight
- Approx. 44t

**Development theme**

- Compact and lightweight tanks that still offer superior firepower and mobility to respond to requirement of urban security
- Harnessing IT to enable improved combat capabilities as part of tank warfare

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**Development Flow**

<table>
<thead>
<tr>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prototypes (ammunition/turret)</td>
<td>Prototypes (for engine testing)</td>
<td>Prototypes (body)</td>
<td>Prototypes (evaluation test vehicle)</td>
<td>Prototypes (vehicle 4)</td>
<td>Technology testing</td>
<td>Service testing</td>
<td>Equipped</td>
<td></td>
</tr>
</tbody>
</table>

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*1 Ability to assess position and share data with other tanks, etc.*
## Technology and Quality Strategy

### Strengthening our operating base through promoting product differentiation and supply chain improvement measures

<table>
<thead>
<tr>
<th>Improving product reliability</th>
<th>Establishing processes that strike a balance between development speed and quality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Stepping up front-loading</td>
</tr>
<tr>
<td></td>
<td>2. Using 3D data to improve development processes</td>
</tr>
<tr>
<td></td>
<td>3. Reinforcing management at points of design change (stepping up design reviews)</td>
</tr>
<tr>
<td></td>
<td>4. Promoting global quality management in order to improve product quality on a consolidated basis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value chain improvement measures</th>
<th>Working on reducing lead times, cutting material costs and improving development costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Improving all operational processes from accepting orders through to development and product launch</td>
</tr>
<tr>
<td></td>
<td>2. Cutting costs through standardization and parts commonization</td>
</tr>
<tr>
<td></td>
<td>3. Using 3D data to optimize facilities and processes (Increasing efficiency of production preparations and streamlining production)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Developing next generation technology and launching new products</th>
<th>Developing elemental technology and new products in order to secure a technological edge</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Turbochargers] High added value VG/VFT, next generation turbocharger systems</td>
<td>1. [ Engines] Technology compliant with emissions regulations (Tier IV), natural gas engine generator sets, multi-fuel (biofuel, etc.) compatible technology</td>
</tr>
<tr>
<td>2. [Forklift trucks] Lithium battery technology, recycling-oriented design, initiatives aimed at all-round material handling systems (automatic warehousing, all-round AGV control, etc.)</td>
<td></td>
</tr>
</tbody>
</table>