

Business Briefing on General Machinery & Special Vehicles

Atsushi Maekawa

Head of General Machinery & Special Vehicles

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MITSUBISHI HEAVY INDUSTRIES, LTD.

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Relations Between General Machinery & Special Vehicles and Business Domains

Business domain	Customers/ Markets	Segment					
		Shipbuilding & Ocean Development	Power Systems	Machinery & Steel Infrastructure Systems	Aerospace Systems	General Machinery & Special Vehicles	Others (Air-Conditioning/ Machine Tool)
Energy & Environment	<ul style="list-style-type: none"> • Power companies • Gas companies • Resource companies (oil, chemicals, steel) 		<ul style="list-style-type: none"> • GTCC • Large-scale thermal power plants • Nuclear power plants 	<ul style="list-style-type: none"> • Environmental plants • Chemical plants 			
Machinery, Equipment Systems	<ul style="list-style-type: none"> • Core industries (steel, etc.) • Automotive industry • Logistics, etc. 		<ul style="list-style-type: none"> • Stationary engines 	<ul style="list-style-type: none"> • Compressors • Metals machinery • Crane & material handling systems 		<ul style="list-style-type: none"> • Turbochargers • Forklift trucks • Engines 	<ul style="list-style-type: none"> • Air-conditioning equipment • Machine tools
Transportation	<ul style="list-style-type: none"> • Airlines (air) • Shipping companies (sea) • Railways (land), etc. 	<ul style="list-style-type: none"> • Commercial Ships 		<ul style="list-style-type: none"> • Transportation system 	<ul style="list-style-type: none"> • Commercial aircraft 		
Defense & Aerospace	<ul style="list-style-type: none"> • Ministry of Defense (land, sea, air) • JAXA 	<ul style="list-style-type: none"> • Destroyers & submarines for the Ministry of Defense 			<ul style="list-style-type: none"> • Defense aircraft • Missiles • Space Systems 	<ul style="list-style-type: none"> • Special vehicles 	

1. Business Outline
2. Revival Plan
3. Q-jump 12 (FY 2012 Action Plan)
 - Turbochargers
 - Engines
 - Forklift Trucks
 - Special Vehicles

1. Business Outline: Product Lineup

Intelligent Technology for Vehicles & Energies

- Contributing to social infrastructure development and the energy/environment sectors -

Main Products

Turbochargers



For diesel vehicles



For gasoline vehicles

Forklift Trucks (Material Handling Equipment)

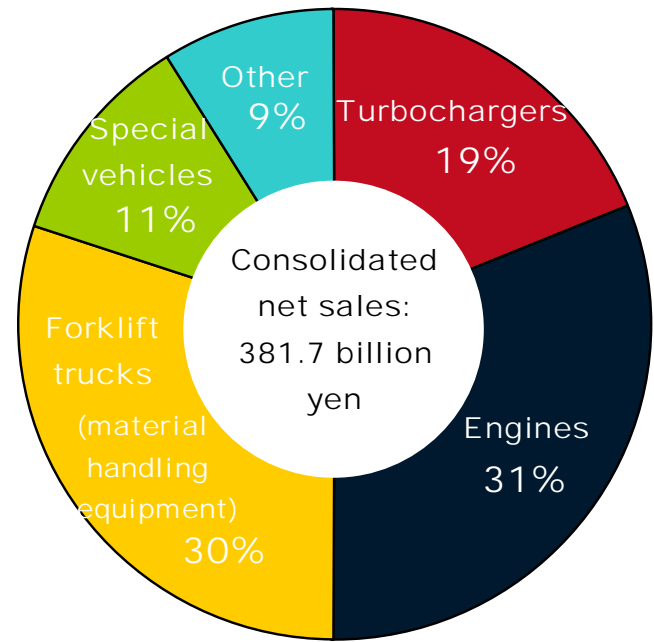


Internal combustion trucks



Electric trucks

Breakdown of sales for FY 2011



Engines (for industry, for power generation, for ships)



Gas co-generation system: 210 to 1,000 kW



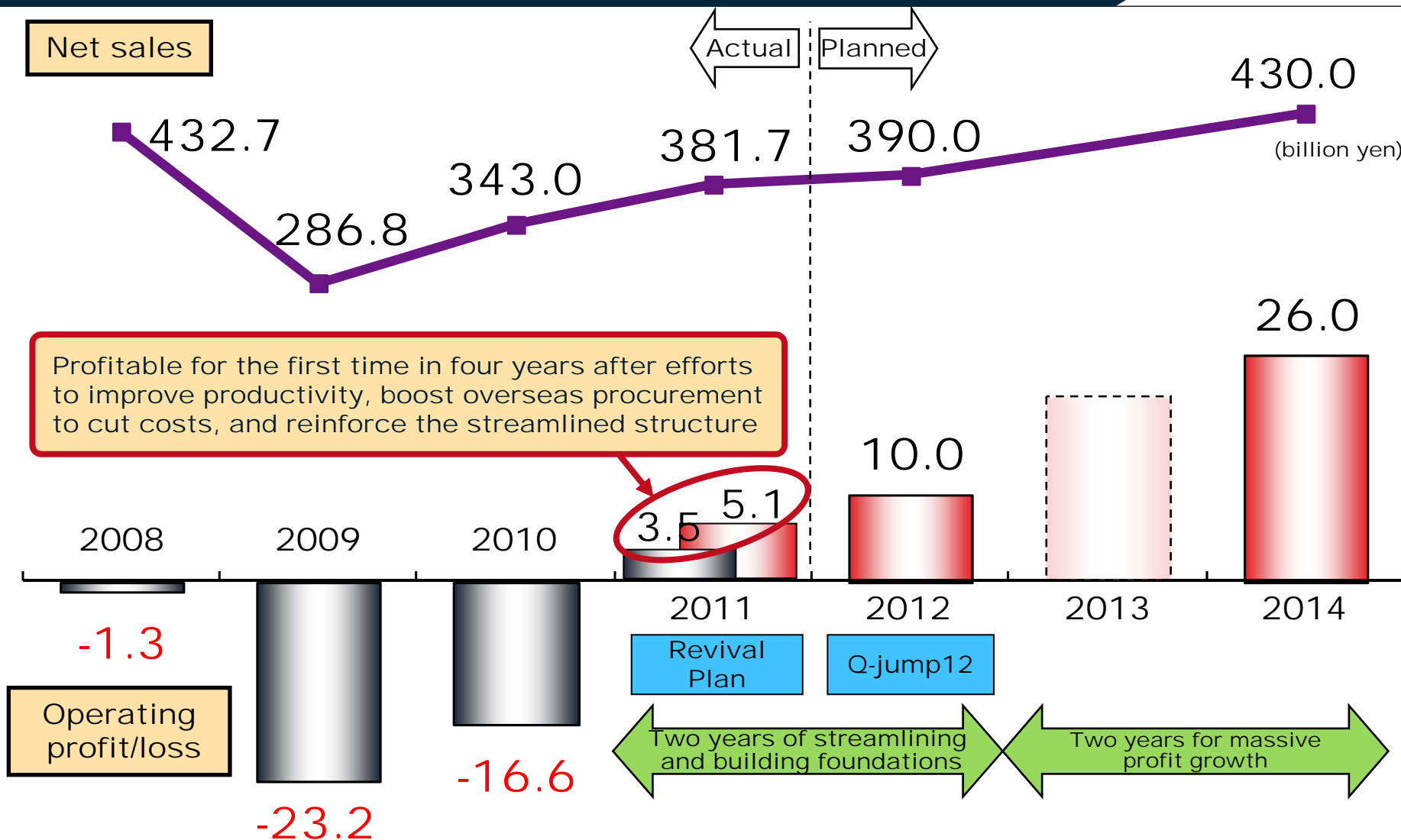
Diesel engines: Up to 3,800 kW

Special Vehicles

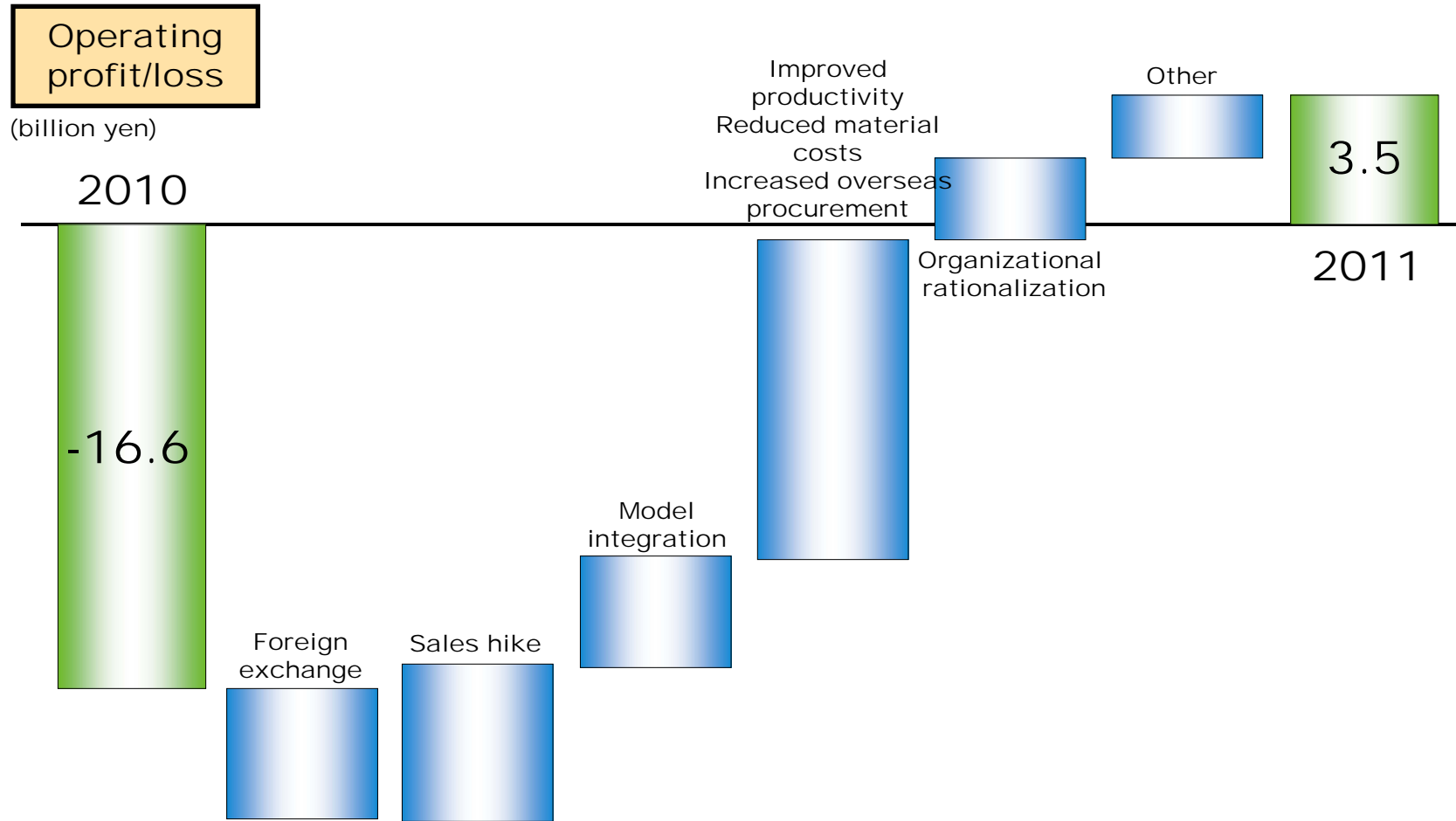


Type 10 tank

1. Business Overview: Business Standing



A profit rise of more than 20 billion yen achieved by different actions for improvement



Policy

Execute the revival plan (Q-jump 12) without fail.

2011-2012



**Two years of streamlining
and building foundations**

2013-2014



**Two years for
massive profit growth**

Q-jump 12

Q-jump stands for “Quality management system, Quick, Quantum-jump.” “12” means FY 2012.

Establish a streamlined structure.

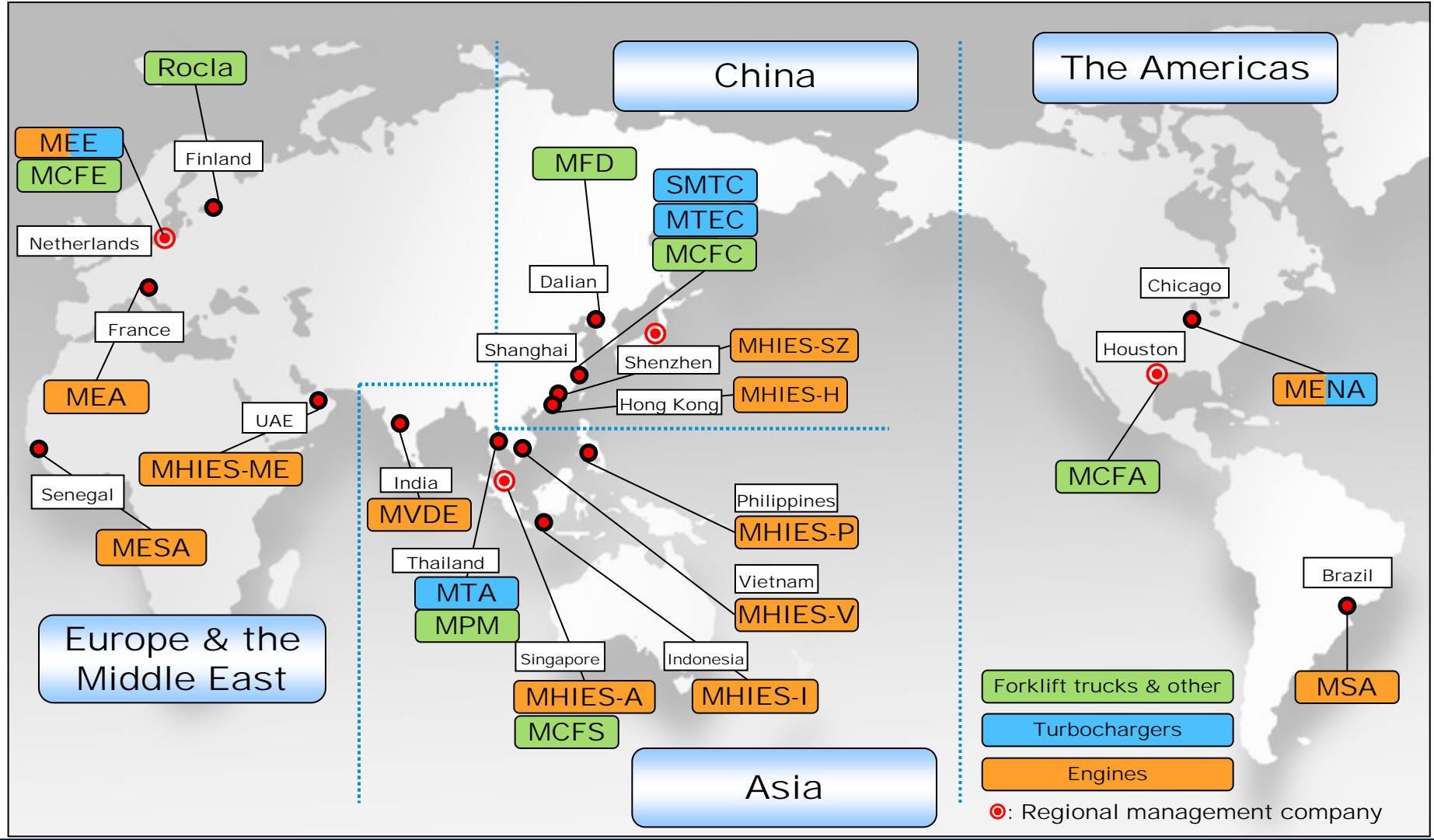
Upgrade the service business.

Build up the global business (in development, production, sales and procurement).

3. Q-jump 12: Strengthening Global Operations

Make full use of overseas bases to step up the global business.

(Respond to growing demand, lower foreign exchange risks, streamline the production structure.)



3. Q-jump 12: Turbochargers

Policy

Build a system to produce 10 million units in a bid to hold a leading market share of 30%.



Development: Create a turbocharger with high levels of efficiency and reliability.

Sales: Establish a customer-based sales model.

Production: Build a global production system.

Porsche Panamera
550 HP V8 - 4.8L Gasoline Engine

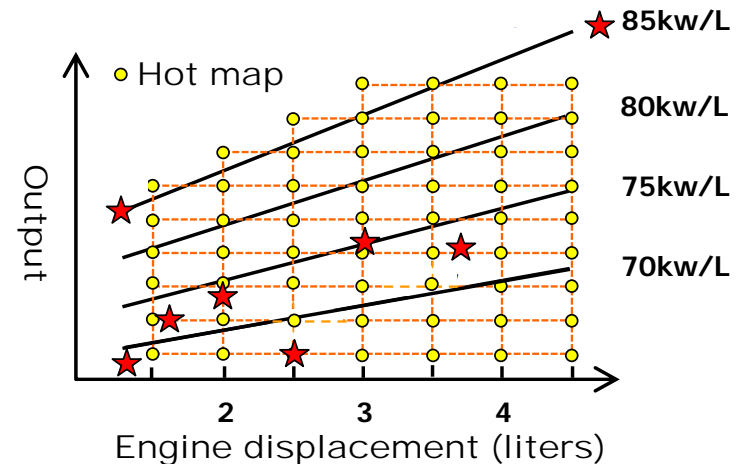


Development

- Use the simulation technology to create a hot map and to shorten the time for engine development.
- Develop a two-stage turbocharger and an electric compressor ahead of competitors.

Hot map: A method of estimating turbocharger specifications matched with the customer's engine specifications by means of simulation

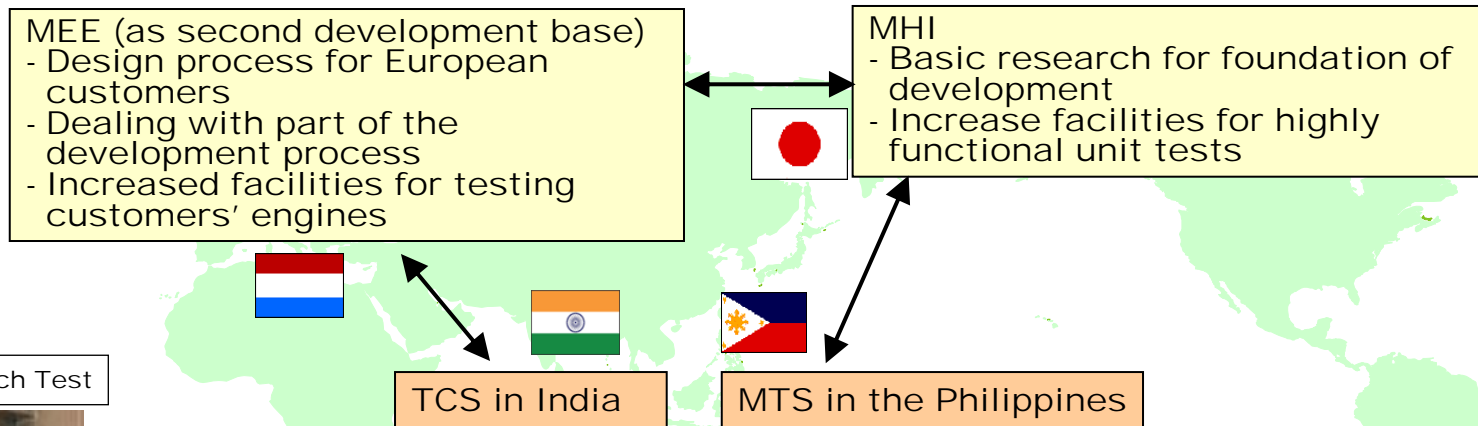
Hot map Engine output / displacement



3. Q-jump 12: Turbochargers

Swiftly propose a turbocharger that suits the customer's needs and participate in the development stage in an attempt to gain more orders

Development Support Close to Customers

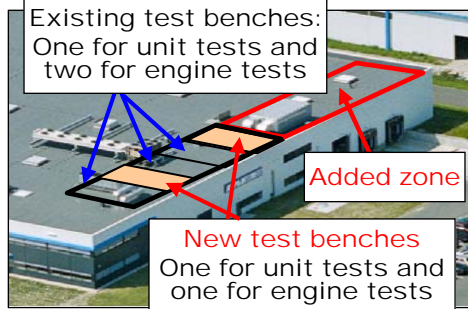


Taking advantage of the time difference between Europe, Japan, and Asia to make rapid proposals.

Swift response by capitalizing on the engineering companies in India and in the Philippines

TCS: Tata Consultancy Services
 MTS: MHI Technical Services Corp.

MEE Engine Bench Test



3. Q-jump 12: Turbochargers

Sales

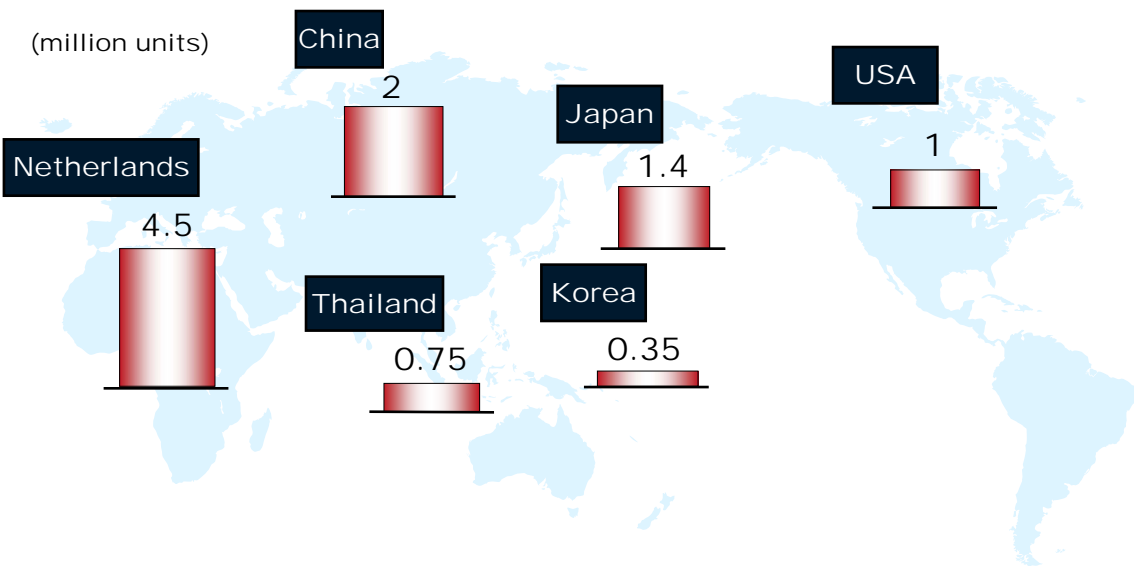
Establish a customer-based sales model in Europe, the largest market.

- ⇒ Provide increased support for customers at the development and subsequent stages.
- ⇒ Design personnel are stationed at MEE, as turbocharger production base in Europe, to enhance production and services close to customers.

Production

Global production system in 2016 (for 10 million units)

(million units)

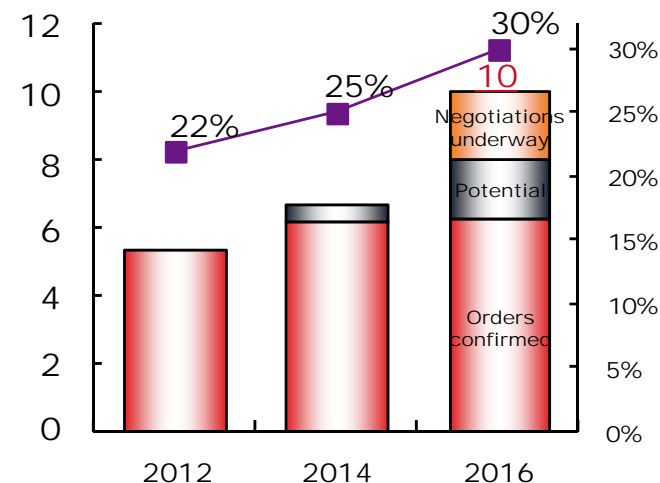


MHI Equipment Europe (MEE)



Trends in sales quantity and market share of General Machinery & Special Vehicles

(million units)



3. Q-jump 12: Engines

Policy

Shift from sales of standalone engines to sales of power generation systems in line with changes in energy demand.

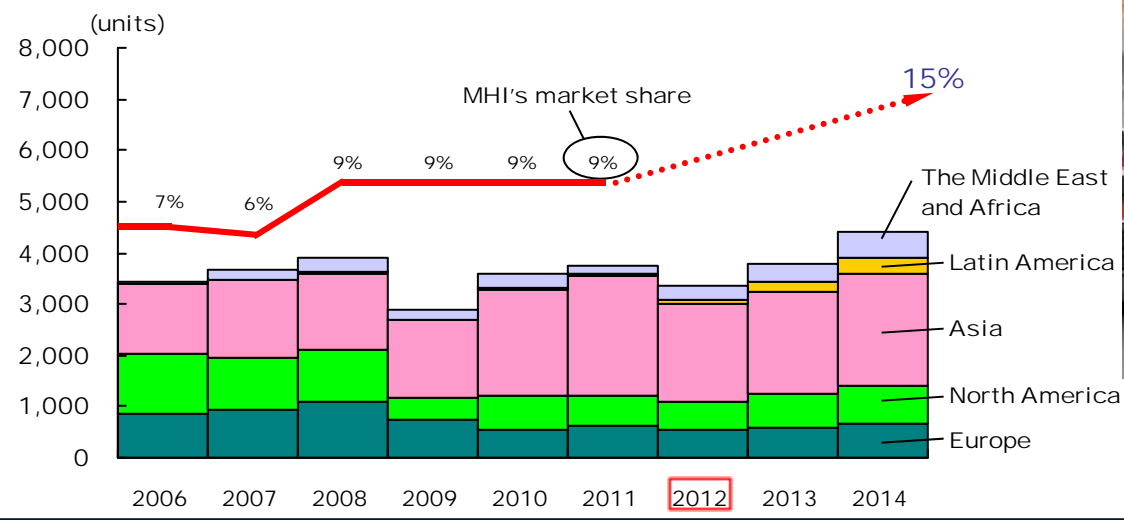
Development: Create highly efficient gas engine power generation systems and container-type gas power generation systems.

Sales: Make active sales efforts to respond to Chinese demand for distributed power sources and meet needs in Japan for private power generation.

Production: Accelerate the transfer of production to locations close to customers, i.e., China and India.

Lower the break-even point in preparation for a slowdown in emerging countries' markets and economic fluctuations in European and other markets.

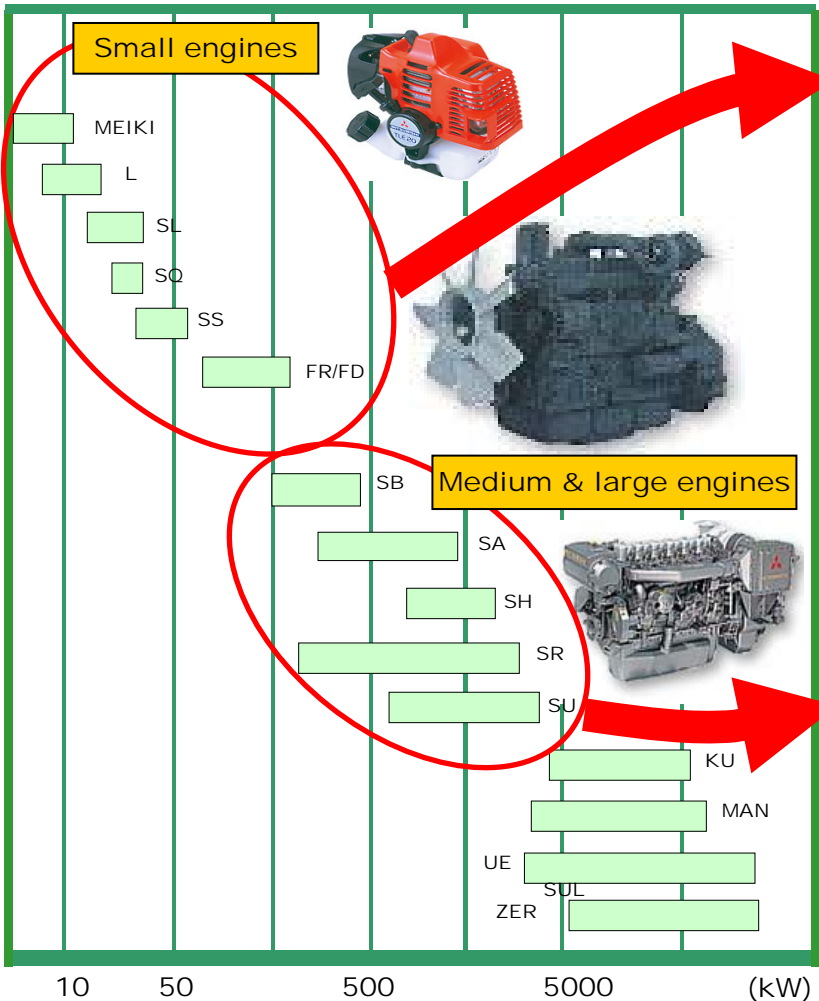
Trend in sales volumes of medium and large engines



A container-type gas power generation system: As its installation is finished just by placing it, it can be put into operation in a day at the shortest.

3. Q-jump 12: Engines

Range of engines produced



Stepping up global business

Small engines

Production capacity increased at MVDE
 To respond to orders from Japanese and foreign construction equipment manufacturers operating in India, MVDE's production capacity is increased.



MVDE: engine production base in India

Medium & large engines

A joint venture set up with China's Shanghai Diesel Engine Co., Ltd.
 In response to China's distributed power source policy, a joint venture is set up with Shanghai Diesel Engine to undertake local production of large and midsize engines.



Signing ceremony with Shanghai Diesel Engine

3. Q-jump 12: Forklift Trucks

Policy

Push ahead with the shift to electric forklift trucks, bolster the global collaboration and service business, and establish a streamlined structure through reorganization of the production system.



Hybrid forklift truck

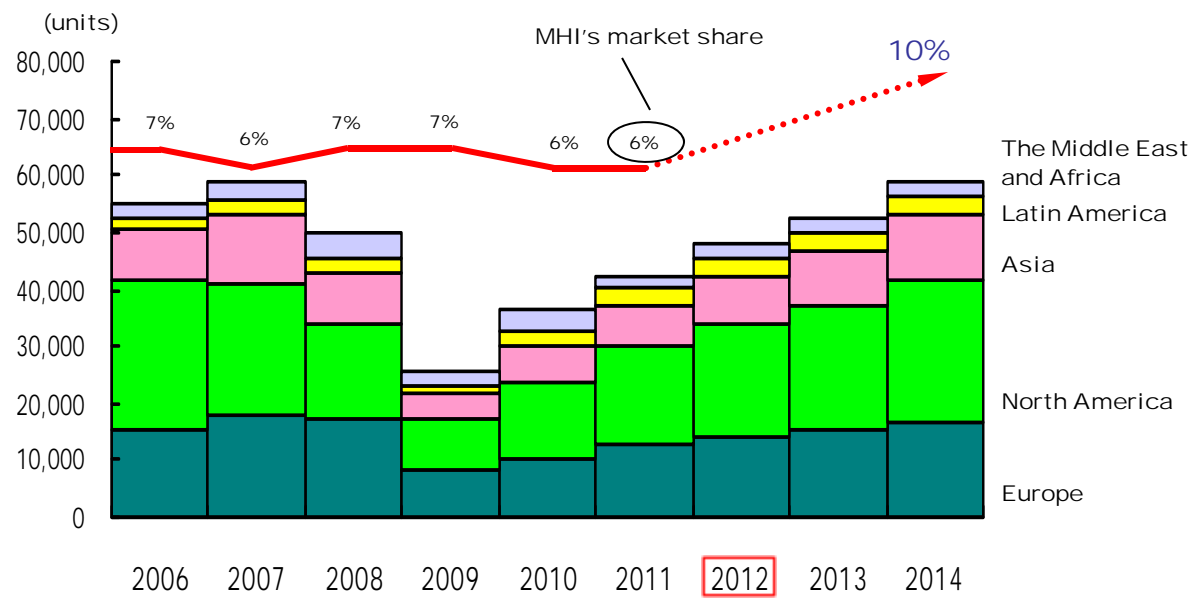


Electric forklift trucks

Market environment

- Engine forklift trucks: The major market is shifting from the West to emerging countries.
- Electric forklift trucks: Demand growth is expected due to increase in logistical volume in Europe, in which our share accounts for more than 50% of the market.

Trends in sales quantity and market share



Business Model Reform

Restructuring the production system

- Reduce the number of global operation bases from six to four.
- Shift production from production bases in Sagamihara and the Netherlands.
- Split production with an alliance partner to boost cost competitiveness.

Focusing on electric forklift trucks

- Adopt MHI's high capacity lithium-ion batteries.
- Concentrate European operations on the indoor material handling equipment base in Finland.
- Replace lead batteries in turret trucks with MHI's lithium-ion batteries.

Launching the service business on a full scale

- Introduce the advantage of the North American service business (RPI*) to locations worldwide.
- Expand the direct sales model to increase contacts with customers.



*RPI: Rapidparts Inc., a U.S.-based company selling forklift parts and servicing forklift trucks.

3. Q-jump 12: Special Vehicles

Policy

Maintain and solidify the defense business foundation.

Embark on disaster control and security businesses using technologies nurtured in the defense sector.

- Work intensively to attract orders, especially for anti-terrorism and disaster control solutions.
- Press ahead with product development to divert special vehicle technologies to civilian use.

Examples of products developed



Type 10 tank



Our Technologies, Your Tomorrow

A red arrow graphic pointing to the right, positioned below the tagline.

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