Industry & Infrastructure Business Plan

Kazuaki KIMURA
Senior Executive Vice President,
President and CEO of Industry & Infrastructure,
and Head of Marketing & Innovation Headquarters

June 5, 2018
Mitsubishi Heavy Industries, LTD
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2. 2018 Medium-Term Business Plan
3. Individual Business Strategies
4. Promotion of MHI FUTURE STREAM
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   1-1. Overview
   1-2. FY2017 Major Projects

2. 2018 Medium-Term Business Plan
3. Individual Business Strategies
4. Promotion of MHI FUTURE STREAM
5. Summary
1-1. FY 2017 Sales Overview

FY2017 Net sales ¥1,898.9 billion

Mitsubishi Shipbuilding Co., Ltd./Mitsubishi Heavy Industries Marine Structure Co., Ltd.
Mitsubishi Logisnext Co., Ltd.
Mitsubishi Heavy Industries Machine Tool Co., Ltd.
Mitsubishi Heavy Industries Thermal Systems, Ltd.
Mitsubishi Heavy Industries Environmental & Chemical Engineering Co., Ltd.
Mitsubishi Heavy Industries Engineering, Ltd.
Primetals Technologies Limited
Mitsubishi Heavy Industries Machine Tool Co., Ltd.
Mitsubishi Heavy Industries Engineering, Ltd.
Mitsubishi Heavy Industries Engine & Turbocharger, Ltd.
Mitsubishi Heavy Industries Engine & Turbocharger Holdings, Ltd.
Mitsubishi Shipbuilding Co., Ltd./Mitsubishi Heavy Industries Marine Structure Co., Ltd.

M-FET: Mitsubishi Heavy Industries Forklift, Engine & Turbocharger Holdings, Ltd.

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1-2. FY2017 Major Projects

**Material Handling Equipment**

Establishment of Mitsubishi Logisnext (October 2017)

**Metals Machinery**

Received order for Continuous Slab caster from India’s JSW Steel (December 2017)

**Commercial Ships**

Himawari RORO ship delivered to Nippon Express (August 2017)

**Land Transportation Systems**

APM System began operations at Tampa Airport in US (February 2018)

RORO: Roll-on/Roll-off  APM: Automated People Mover
1-2. FY2017 Major Projects

Operations reorganized into 7 business groups with the new companies for commercial ships and engineering businesses completing the transformation of all operations into individual business corporations in January, 2018.

Launched new structure enabling growth strategies with flexibility and appropriate asset allocation based on a simple portfolio and enlarged management unit for each operating company.
1. Business Overview

2. 2018 Medium-Term Business Plan
   2-1. Summary of 2015 Medium-Term Business Plan
   2-2. Strategies of 2018 Medium-Term Business Plan

3. Individual Business Strategies

4. Promotion of MHI FUTURE STREAM

5. Summary
Review of 2015 Business Plan

Main factors for challenges remained:

Commercial Ships: Profitability deteriorated due to LNG carriers.
Engineering (EPC): Profitability deteriorated due to lower sales (delay of projects. Provisions for the future risk of transportation projects.)
Metals Machinery: Profitability deteriorated due to lower sales (market downturn).

LNG Carriers; No further deterioration expected by taking countermeasures.
Transportation systems; Schedule recovered, progressing ahead of schedule.
Metals Machinery; PMI completed ahead of schedule.

As Turbochargers, Thermal systems and Environmental systems achieved the original target, I&I segment maintained stable sales and earnings. As for Commercial Ships, Engineering (EPC) and Metals Machinery, completed taking countermeasures against the factors behind the deterioration in FY2017.

Orders received (In billion yen)

<table>
<thead>
<tr>
<th>Year</th>
<th>Original target</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,900.0</td>
<td>1,590.3</td>
<td>1,711.3</td>
</tr>
</tbody>
</table>

Net sales (In billion yen)

<table>
<thead>
<tr>
<th>Year</th>
<th>Original target</th>
<th>2016</th>
<th>2017</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1,850.0</td>
<td>1,747.0</td>
<td>1,898.9</td>
</tr>
</tbody>
</table>

Operating income (In billion yen)

<table>
<thead>
<tr>
<th>Year</th>
<th>Original target</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80.0</td>
<td>500</td>
<td>408</td>
</tr>
</tbody>
</table>

PMI: Post Merger Integration
2-2. Strategies of 2018 Medium-Term Business Plan (1/3)

Targets

FY2017
Net sales
¥1,898.9 billion

Orders received

<table>
<thead>
<tr>
<th>Year</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,590.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,711.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,950.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,100.0</td>
<td></td>
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</tbody>
</table>

Net sales

<table>
<thead>
<tr>
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<th>2016</th>
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<th>2018</th>
<th>2019</th>
</tr>
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</table>

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### Portfolio Strategies

<table>
<thead>
<tr>
<th>Material Handling Equipment</th>
<th>Increase sales and earnings with multi-brand, global/local strategies for expanding market. Strengthen solution/service businesses and reap PMI synergies.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Systems</td>
<td>Expand business scale with increased production capacity to meet the growth in demand, centered on emerging countries. Differentiate from competitors with environmental friendly technologies.</td>
</tr>
<tr>
<td>Turbochargers</td>
<td>Enhance profitability with advanced production system. Meet new demand for more diversified power-trains with advancement of development capability.</td>
</tr>
<tr>
<td>Engines</td>
<td>Differentiate from competitors by introducing new technology to distributed power systems business for the data center, etc.</td>
</tr>
<tr>
<td>Metals Machinery</td>
<td>Improve earnings with PMI and promote business model reform, expanding after-sales service business. Expand business scale taking advantage of market recovery.</td>
</tr>
<tr>
<td>Engineering (EPC)</td>
<td>Expand business field with the accumulation of MHI's engineering management capabilities. In order to ensure stable profitability, enhance profitability thru advanced APM after servicing and before/after EPC</td>
</tr>
<tr>
<td>Commercial Ships</td>
<td>Expand earnings by shifting to high-density outfitted ships and high value-added ships, and promoting marine engineering.</td>
</tr>
<tr>
<td>Machinery Systems</td>
<td>Realize Synergies of effective use of resources by re-organizing small-medium size businesses. Expand business scale thru ITS and Paper Converting Machinery.</td>
</tr>
</tbody>
</table>

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**Earnings Target**

<table>
<thead>
<tr>
<th>FY2018</th>
<th>FY2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>80.0</td>
<td>160.0</td>
</tr>
</tbody>
</table>

**IFRS**

- Improve profitability with better efficiency and differentiation. Contribute to the domain’s earnings expansion.
- Secure earnings thru reforms and improve business structure for future contribution.
- Pursue earnings with shared resources and better efficiency; represents a “basis of I&I earnings”

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EPC: Engineering, Procurement, Construction  APM: Automated People Mover
Earnings at each business expected to change as shown in the exhibit at right with implementation of initiatives positioned accordingly within the portfolio.

<table>
<thead>
<tr>
<th>Business Area</th>
<th>Business Scale Expansion</th>
<th>Promote Rationalization to Improve Profitability</th>
<th>Increase Added Value to Improve Profitability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Handling Equipment</td>
<td>Maximize integration effects</td>
<td>Further promote and accelerate PMI</td>
<td>Low environmental impact refrigerants</td>
</tr>
<tr>
<td>Thermal Systems</td>
<td>Increase production in Thailand, China</td>
<td>Enhance IoT production</td>
<td>Strengthen development capabilities</td>
</tr>
<tr>
<td>Turbochargers</td>
<td></td>
<td></td>
<td>Expand distributed power systems business</td>
</tr>
<tr>
<td>Engines</td>
<td></td>
<td></td>
<td>Expand after-sales services</td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Engineering (EPC)</td>
<td></td>
<td></td>
<td>Investment ~ O&amp;M</td>
</tr>
<tr>
<td>Commercial Ships</td>
<td></td>
<td></td>
<td>Marine engineering</td>
</tr>
<tr>
<td>Machinery Systems</td>
<td></td>
<td></td>
<td>Expand after-sales services</td>
</tr>
</tbody>
</table>

* bubble size indicates sales scale

Scale of sales

X axis: Profit margin
Y axis/Bubble size: Sales

O&M: Operation & Maintenance
1. Business Overview
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   3-1. Material Handling Equipment
   3-2. Thermal Systems
   3-3. Metals Machinery
   3-4. Engineering(EPC)
   3-5. Commercial Ships
   3-6. Turbochargers
   3-7. Engines
   3-8. Machinery Systems
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3-1. Material Handling Equipment (1/2)

Aiming to become a global leading logistics solutions provider

**Growth of conventional businesses**

Mitsubishi Logisnext established in October 2017 (UC acquisition and management integration completed) ⇒

**Expand business scale and improve profitability**

- **Promote and accelerate PMI**
  (eliminate redundant operations, consolidate sales/production bases, model unification, reduce material costs, etc.)
- **Further strengthen organizational capacity, increase productivity (30%)**
  1. Reduce inventory, reduce direct and indirect labor costs, reduce costs of damages/complaints, etc.
  2. Strengthen service structure
     - Recruit and train highly capable service personnel
     - Carry out troubleshooting and expand sales of supplementary parts, etc.
- **Strengthen business foundation, support growth strategies by improving financial standing**
  (shorten payout time and improve FCF by reducing working capital, CCC, etc.)
- **Increase market share with multi-brand and global/local strategies (volume growth)**

**Transformation of business model**

As Mitsubishi Heavy Industries …
Promotes growth strategies, focuses on resource allocation and invests in growth business

**Respond swiftly to the global logistics revolution and diversification of customer needs**

-『Focus on logistics solutions business』
-『Further expand services business』
-『Differentiate with advanced technologies anticipating megatrends』

**Net sales**

(In billion yen)

- UC: UniCarriers Corporation  CCC: Cash Conversion Cycle  FCF: Free Cash Flow

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3-1. Material Handling Equipment (2/2)

Focus on the logistics solutions business
- Expand solutions business, centered on AGF
- Strengthen and expand sales
  - I&I domain’s Digitalization Group (Jan 1)
  - System Engineering Team (Aug 1)

Laser-guided automated forklift
- “Route Optimizer“ (AI based) for optimal operation
- For multi-tenant delivery centers ⇒ No need for underground installations

Further expansion of services business
- Commence sales of operations information management system LVS (from Jun 2018)
- AI-based troubleshooting system
- Expansion of used car, leasing business

LVS (Logistics Vehicle Support)

Differentiate with advanced technologies anticipating megatrends
- Fuel cell powered forklift (business development under consideration, centered on North American market)
- Li-ion battery forklift (demonstration test completed)
- Differentiation on safety (advanced image processing, etc.)

Customer Locations
- Location A
  - Connect via 3G/Wi-Fi
  - Operation status
- Location B
  - Safety Operation
  - Operation Record
  - Regular Reporting
  - Alerts
- Location C

Data Management Server
- Operations data
- Operator information
- Various information
- Services

Customer Management Division
- Cloud internet
- Shared

Operation monitoring
- Optimize operations
- Connect with delivery system

AGF: Automated Guided Forklift
- Fuel cell powered vehicle
- Li-ion battery powered vehicle
- Full visibility monitor
- Lift Cylinder
- Control Valve
- Accumulator
- Load
- Pressure

3G/Wi-Fi communication
-optimized operations
- connect with delivery system
- various information
- services

Turret forklifts for wholesale markets, etc.
3-2. Thermal Systems (1/2)

Strengthen existing businesses

**[Air-conditioning business]**
Expand sales network globally
Expand market share by offering products tailored to meet regional needs and strengthening sales capabilities

**Europe**
- 2017: <100>
- 2020: <130>

**Asia • Australia**
- 2017: <100>
- 2020: <125>

**China**
- 2017: <100>
- 2020: <125>

**Japan**
- 2017: <100>
- 2020: <110>

**Graph: MHI sales by region**

- **Strengthen sales structure through capital tie-ups with distributors**
- **Boost development capabilities to offer products meeting regional needs**
- **Large Capacity Residential Air-conditioners**
- **Production capacity increased 30% with completion of third plant at Thai JV MACO**
- **Double the number of exclusive distributors (1,000 → 2,000)**
- **Production increase and rationalization realized at Chinese JV MHAQ due to relocation and construction of new plant.**
- **AirFlex diminishes chilliness caused by air-conditioning**

Airflex: panels for directing air emitted from indoor cooling/heating units such that the air does not come in direct contact with users, thereby increasing comfort level; an industry first.

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3-2. Thermal Systems (2/2)

Strengthen competitiveness in growth areas

**[Thermal Solutions Business]**
Expand business scale with environmental friendly refrigerant
Strengthen solutions lineup in low-temperature and high-temperature fields by harnessing air-conditioning technologies

- **Refrigeration**
  - Centrifugal Chiller
  - Refrigeration/Freezing Technologies
  - Refrigerated Transport Technologies

- **Air Conditioning**
  - Centrifugal Chiller
  - PAC
  - RAC

- **High Temperature**
  - Heat Pump Technology
  - Exhaust Heat Recovery

(differentiation from specialty air-conditioner makers)

Develop popular products with distinguishing technologies, which have won various energy conservation awards

1. “C-puzzle HCCV series” refrigeration condensing units using natural refrigerant  38th Excellent Energy-Efficient Machinery Award, Japan Machinery Federation’s Chairman’s Award
2. Highly efficient heat pump-type hot air generator “Neppu-ton”  2017 Energy Conservation Grand Prize, Energy Conservation Center Chairman’s Award
3. Centrifugal Chiller using low environmental impact refrigerant  2017 Nikkei Superior Products and Services Award, Nikkei Sangyo Shimbun Award for Excellence

Reinforce sales expansion, especially for award-winning products

**[Global sales expansion of products for electric vehicles]**
Strengthen technological synergies between electric compressors and heat pumps
Growth of electric vehicle market calls for combination of scroll-type compressor and inverter technologies for automotive air-conditioners; an advantage for MHI

Facility expansion for electric compressors
Increasing EV development pushing up demand for automotive environmental testing equipment

Strengthen global sales of automotive environmental testing equipment

- Electric compressor for EVs
- Automotive environmental testing equipment
- Electricity-driven refrigerator for trucks
Circumstances

- Global steel demand increasing due to strong global economy and growth in demand for steel materials in China (sharp drop in exports)
- Capital investment on recovery trend due to shift to high value-added products, such as high grade steel sheets for automobiles

Large-scale orders received in FY2017

- ArcelorMittal • Lazaro Cardenas (Mexico)
  / Hot Strip Mill (annual production capacity of 2.5 million tons)
- JFE Steel Corp. (Japan)
  / Sinter Plant (annual production capacity 4.8 million tons) • Waste Gas Recirculation System

Position

- From this fiscal year, reap the benefits of PMI activities carried out in the previous years.
- Seize the market recovery as an opportunity to expand business scale with growth strategies in order to capture the No. 1 position in the industry (currently No. 2) in the medium- to long-term.

Market Scale

Orders received & Net sales

- Global steel demand increasing due to strong global economy and growth in demand for steel materials in China (sharp drop in exports)
- Capital investment on recovery trend due to shift to high value-added products, such as high grade steel sheets for automobiles
### 3-3. Metals Machinery (2/2)

#### Improvement in profitability

| Increase productivity (completed) | Consolidate business segments 10→7, organizational functions 26→9, overseas bases 40→26 |
| Personel optimization (completed) | Reduce work force by approximately 8,000→7,000 |

#### Promotion of business strategies

<table>
<thead>
<tr>
<th>Business model reform</th>
<th>Offer Life Cycle services that focus on customer value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expand maintenance and service businesses</td>
<td>Reinforce alliances with customers•partner companies and allocate proper resources</td>
</tr>
<tr>
<td>Establish service JV with China’s Tangshan Iron and Steel Group (completed)</td>
<td>Begin offering comprehensive technical services, including support for plant operations, maintenance, renewal, and operation status monitoring</td>
</tr>
<tr>
<td>Form tie-up with US partner ITR in predictive maintenance services (completed)</td>
<td>Begin offering a broader menu of comprehensive preventive maintenance and solution services</td>
</tr>
<tr>
<td>Leverage key technologies</td>
<td>Attract more orders with wider-reaching digitalization and by expanding lineup of low environmental impact products</td>
</tr>
</tbody>
</table>

#### Strengthen financial standing

<table>
<thead>
<tr>
<th>Initiatives to reduce operating working capital and generate cash</th>
<th>Improved free cash flow in FY2017 by over ¥10 bn YoY</th>
</tr>
</thead>
</table>
### 3-4. Engineering(EPC)(1/2)

<table>
<thead>
<tr>
<th>Business field</th>
<th>Business circumstances /opportunities</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Plants</td>
<td>• Needs of larger scale chemical plants, more complicated and diversifying requests of customers.</td>
<td>• Develop highly profitable project in strategic regions</td>
</tr>
<tr>
<td></td>
<td>• Increasing investment in facilities in the natural gas producing countries (US, central Asia etc.).</td>
<td>• Sponsoring project (Share of know-how from operators. Develop after-sales service market)</td>
</tr>
<tr>
<td></td>
<td>• Expansion of the business field and improve the profitability</td>
<td>• Strengthen Cost+Fee projects</td>
</tr>
<tr>
<td>Land Transportation Systems</td>
<td>• Increasing needs for APM according to the expansion of airport facility in emerging countries.</td>
<td>• Advance technologies for APM vehicles (MIHARA Test Center) and develop O&amp;M service business.</td>
</tr>
<tr>
<td></td>
<td>• Increasing needs for transportation equipment fulfilling safety standard and universal designs</td>
<td>• Accelerate development of technology for transportation equipment that meets the society’s needs (railway platform doors, PBBs, etc.)</td>
</tr>
<tr>
<td>Environmental Systems</td>
<td>• Stagnant new WtE market in Japan.</td>
<td>• Secure orders and execute projects in Japan.</td>
</tr>
<tr>
<td></td>
<td>• Market growth in emerging countries (Southeast Asia) according to the urbanization.</td>
<td>• Exploit opportunity of overseas business by investing in overseas PPPs project.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Strengthen overseas O&amp;M and rehabilitation business.</td>
</tr>
<tr>
<td>CO₂ Recovery Plants</td>
<td>• Increasing awareness of environment by the Paris Agreement/ CCS Tax Incentive in US etc..</td>
<td>• Create new projects with the customers from planning phase.</td>
</tr>
</tbody>
</table>

**Basic Policies of Engineering Group**

1. Improve profitability of large-scale projects
2. Strengthen project management capability
3. New business model and portfolio for diversifying business fields
4. Accelerate development of core technologies and components

![Graph](image)

*APM: Automated People Mover*
*PBB: Passenger Boarding Bridge*
*WtE: Waste to Energy*
*PPP: Private-Public Partnership*
Exploit domestic and overseas infrastructure projects (such as high-speed railways) by integrating MHI group’s core technologies with digital solutions.

“One Stop” support (MHI’s products + devices, utility systems and management of facilities).

Exploit CO2-EOR project considering CCS Tax Incentive in US. (Participation all the phases <FS, FEED, EPC and after-sales services> enables high profitability)

Implement higher EPC performance by focusing on targeting customers, regions and models.

Expand O&M and rehabilitation business around APMs (Engineering after-sales service business).

Exploit overseas projects
Develop value chain business model;
“Project investment → EPC → O&M/rehabilitation.”

Expand O&M and rehabilitation business

Expand R&D for environmental regulations

Proficiency

High

Low

EPC
Planning

Business Investment / Consultant

Technology and Business Development

Components

Compressors

Vehicle, Air brake, Platform Doors + PBB

Dry De-Sox Equipment

Enviromental Systems

CO2 Recovery Plants (License)

MHI Group’s Core Technologies

MHI Group’s Core Technologies

Exploitation

Existing Businesses

Expand O&M Rehabilitation Business

Expand O&M Plant Rehabilitation Business

New Businesses

Environ-mental Systems

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CO2 Recovery Plants (License)
3-5. Commercial Ships

**Circumstances**
- Stable demand for domestic ferries and RORO ships due to ongoing modal shift and for government ships due to strengthening of security along coastal and territorial waters.
- Demand for environmental equipment supported by more stringent environmental regulations.

**Challenges**
- Shift from Cargo Ships to high-density outfitted ferries and government ships
- Strengthen profitability and reduce fixed costs

**Solutions**
In January 2018, the commercial ship business was spun off into two separate companies.
- **Mitsubishi Shipbuilding**
  ① Increase building efficiency for ferries and government ships and expand business scale.
  ② Expand marine engineering business based on environmental solutions and others.
- **MHI Marine Structure**
  ① Reduce fixed costs, strengthen QCD with focus on production to ensure sound management.
  ② Promote reallocation of skilled labor to adapt to the business environment.
- Target business scale exceeding ¥200 bn over longer term

**Market Scale**
- **Domestic ferries•RORO ships**
  Continuous demand expected with increasing domestic cargo and passenger traffic, and replacement demand brought forward due to more stringent SOx regulations.
- **Government ships**
  Demand recognized for larger patrol boats as government expands fleet and demand also noted for replacing outdated ships.
- **Environmental equipment**
  Demand for SOx scrubber systems and equipment for LNG-powered Ships.

**Orders received & Net Sales**
![Graph showing orders received and net sales over years]

- **2015 Medium-Term Business Plan**
  - Ferries, patrol vessels, research vessels
  - Gas carriers
  - Marine structures
  - Marine engineering

- **2018 Medium-Term Business Plan**
  - Ferries, patrol vessels, research vessels
  - Gas carriers
  - Marine structures
  - Marine engineering

QCD: Quality Cost Delivery  RORO: Roll-on/Roll-off
3-6. Turbochargers

Circumstances

- Power trains becoming more diversified as automakers meet demand with both engine-powered and electric vehicles amid tightening environmental regulations.
- Demand for turbochargers is growing in emerging countries due to rising motorization rate.

Challenges

- Short term: Strengthen business with focus on the engine-powered vehicle market.
- Medium- to Long-term: Strengthen development capabilities to offer products to suit a diversified lineup of power trains, and expand sales in emerging markets.

Solutions

**Strengthen business with focus on engine-powered vehicle market**
- Introduce gasoline VG turbochargers in response to shift from diesel-powered vehicles to gasoline-powered vehicles.
- Improve productivity by applying IoT to increase operating ratio, and strive to fully automated production lines.
- Increase orders of industrial machinery(*) and enter fully into market for commercial vehicle-related applications.

**Strengthen development capabilities to offer products for a diversified power train lineup**
- Develop turbochargers designed for hybrid vehicles (HV), which are expected to become the mainstream among fuel-efficient vehicles, and plug-in hybrid vehicles (PHV) by introducing the electric 2-stage turbocharging system and developing a high-efficiency turbocharger.
- Strengthen development capabilities of the European bases, which have leading-edge technologies and serve the largest markets.
- Develop lower-cost turbochargers for emerging markets
  * construction machinery, agricultural machinery, etc.

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**Market Scale**

<table>
<thead>
<tr>
<th>Year</th>
<th>(FY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>(In billion yen)</td>
</tr>
<tr>
<td>2016</td>
<td></td>
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<tr>
<td>2017</td>
<td></td>
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<tr>
<td>2018</td>
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<tr>
<td>2020</td>
<td></td>
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</tbody>
</table>

**Net Sales**

<table>
<thead>
<tr>
<th>Year</th>
<th>(FY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
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<td>2018</td>
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<tr>
<td>2020</td>
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</tr>
</tbody>
</table>

VG: Variable Geometry
3-7. Engines

Circumstances

- Rapid increase in demand for stand-by generators from data centers and distribution centers due to global EC market expansion
- Appearance of new demand for distributed power systems in emerging countries and domestic PPS/urban development
- Moves toward a global decarbonizing society

Challenges

- Reinforcement of core competencies (segment for high output range over 1MW)
- Development of new technologies and services for new markets

Solutions

Concentrate on core competencies
- Development of ultra high-efficiency engines fulfilling the market demand
- Sales expansion of complete engine generator equipment in China, Southeast Asia and India where stand-by generator demand is growing
- Acceleration of local production aiming for optimal, global supply

Expand business scale in the distributed power systems market
- Development of hybrid electric power supply system in a combination of renewable energies, batteries, and engines.
- Development of new services in DR and VPP segments.
- Advancement of service business by utilizing AI and IoT technologies (realization of remote control of engine generator equipment)

EC: eCommerce  DR: Demand Response  VPP: Virtual Power Plant
3-8. Machinery Systems
(Mechatronics Systems•ITS※•Paper Converting Machinery)

**Circumstances**

Mechatronics Systems: Stable with multiple businesses (machinery & equipment, steel structure plants, etc.).
ITS: Stable in domestic, and growing in overseas markets especially in Asia.
Paper Converting Machinery: Market is globally expanding for corrugated cardboard manufacturing machines and Box making machines.

**Challenges**

Mechatronics Systems: Capture the automotive manufacturers’ new needs for testing equipment with the increase in the number of electric vehicles; maintain and expand the earnings of existing businesses, and develop new businesses.
ITS: Domestic Expand business other than toll collection system.
Overseas Complete next-generation electronic road pricing system (ERP) in Singapore and establish new business in Southeast Asia.
Paper Converting Machinery: Strengthen after-sales services and expand business in emerging countries, where the markets are growing.

**Solutions**

Mechatronics Systems (machinery & equipment, steel structure plants, etc.)
- In addition to researching the automotive industry’s needs for testing equipment, provide a total solution for the customer by integrating several technologies of MHI group, such as in the air-conditioning and refrigeration businesses.
- Reinforce after-sales business by cross organizational sharing of resources and customer needs.
- Promote and expand new businesses by generating a synergy effect through business consolidation development.
ITS
- Develop the state-of-the-art system of the traffic management and enforcement based on the next-generation electronic road pricing system (ERP)
- Develop a business model in Southeast Asia providing best suited systems to each country
Paper Converting Machinery (corrugated cardboard manufacturing machines & Box Making machines)
- Aim for early launch of new models meeting the needs of emerging countries, where the markets are growing, and strengthen the sales structure.
- Expand the after-sales service business by strengthening capability to respond to customer service needs globally.

**Key Solutions**

Expand business scale to 200 billion yen and further improve profitability
- Promote resource sharing and personnel mobilization; proactively invest resources into growth businesses and to establish new businesses.
- Cut costs by integrating redundant operations, resulting from business consolidation.
- Cut costs by outsourcing provision of after-sales customer services and through resource sharing; strengthen customer services with use of IoT technologies.

**Orders received & Net Sales**

- GNSS: Global Navigation Satellite System, a next-generation road pricing system using positioning satellite signals.

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1. Business Overview
2. 2018 Medium-Term Business Plan
3. Individual Business Strategies
4. Promotion of MHI FUTURE STREAM
5. Summary
4. Promotion of MHI FUTURE STREAM (1/3)

MHI FUTURE STREAM  In step with society’s needs

Under “MHI FUTURE STREAM,” MHI aims to:
- Resolve complex and difficult social issues of today and the near future
- Take on challenges of the distant future
- Carry out continuous reforms to make MHI a company always in demand by humanity and society

SDGs
Realization of a sustainable world

SUSTAINABLE
DEVELOPMENT
GOALS

New market needs

Social values

Existing market needs

Future mobility and logistics

Logistics and transportation systems

Waste treatment

MHI’s businesses

MHI’s businesses

Today  Near future  Distant future

A new set of initiatives under the 2018 Business Plan focused on MHI’s future

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4. Promotion of MHI FUTURE STREAM (2/3)

**Timeframe**

- Energy Efficiency
- Urban Issues
- Social Infrastructure Innovations

**Industrial and logistics machinery**
- Synergies among businesses within I&I domain

**Logistics & transportation systems**
- Collaboration and alliances with customers and other companies

**Waste treatment**
- Companywide synergies including Defense & Space

**Future mobility and logistics**
- Big data analysis, Remote monitoring, System development
  - Domain provides SBUs one-stop support

- **SL-Lab**
  - Sophisticated Logistics Laboratory
  - Co-creation of next-generation logistics with customers (Design thinking approach)

**Activities**

- **Core technologies**
  - Technology sharing with cross-divisional projects
  - Technology sharing with SalesForce

- **Project Engineering**
  - Project engineering support
  - Project engineering capability development

- **Digitalization**
  - Promotion team in Europe
  - Data analysis
  - Agile development
  - Design thinking
4. Promotion of MHI FUTURE STREAM (3/3)

Advancement of I&I products through dual use of Defense & Space technologies

Energy efficiency
Industrial and logistics machinery
Logistics & transportation systems
Waste treatment
Urban problems
Future mobility and logistics
Social Infrastructure
Innovations

Control System Cyber Security
Application of InteRSePT

InteRSePT®

Application of advanced
image recognition
technology and unmanned
vehicles control
technology

Application of satellite data analysis technology
for optimal operation of plants and transportation systems
1. Business Overview
2. 2018 Medium-Term Business Plan
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5. Summary
5. Summary

Achieve targets ensuring proper execution of I&I Domain Portfolio Strategies by each business group

- Increase sales and earnings to drive growth
- Contribute to earnings expansion
- Improve business structure to enable earnings contribution
- Generate “base load” of earnings

Material Handling Equipment
Thermal Systems

Turbochargers
Engines

Metals Machinery Engineering (EPC)
Commercial Ships

Machinery Systems

Expand business scale and earnings

【FY2020】
Net sales ¥2,000 billion
EBIT ¥160 billion

Seven business groups to implement their own initiatives soundly

Core Technologies
Digitalization
Project Engineering

Proactive investment and resource allocation

Capitalize on MHI’s comprehensive strengths to enhance technological capabilities
MOVE THE WORLD FORWARD