

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

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

1. Business Overview

1-1. Overview

1-2. FY2017 Major Projects

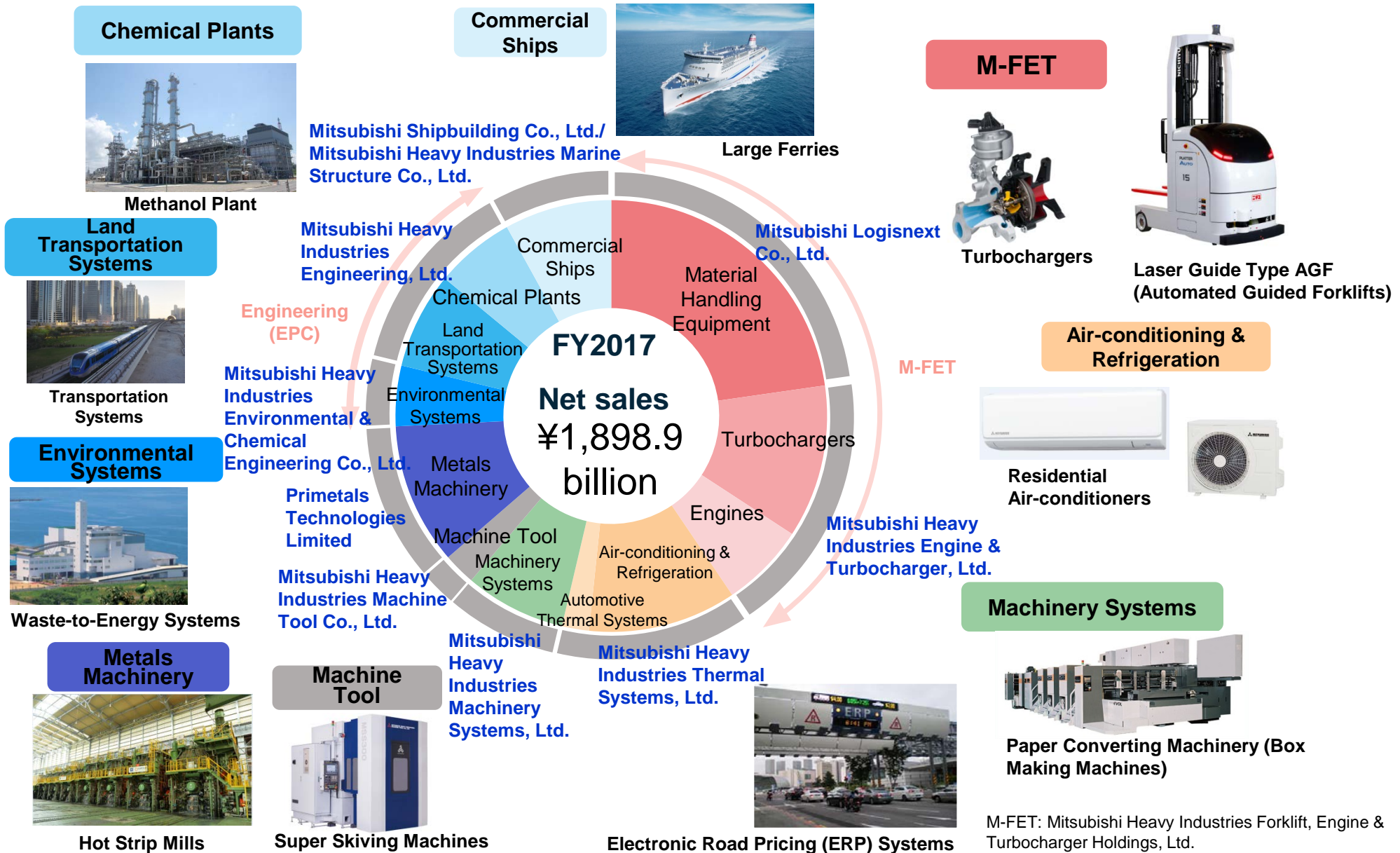
2. 2018 Medium-Term Business Plan

3. Individual Business Strategies

4. Promotion of MHI FUTURE STREAM

5. Summary

1-1. FY 2017 Sales Overview



1-2. FY2017 Major Projects

Material Handling Equipment



Establishment of Mitsubishi Logisnext (October 2017)

Commercial Ships



Himawari RORO ship delivered to Nippon Express (August 2017)

Metals Machinery



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

Land Transportation Systems

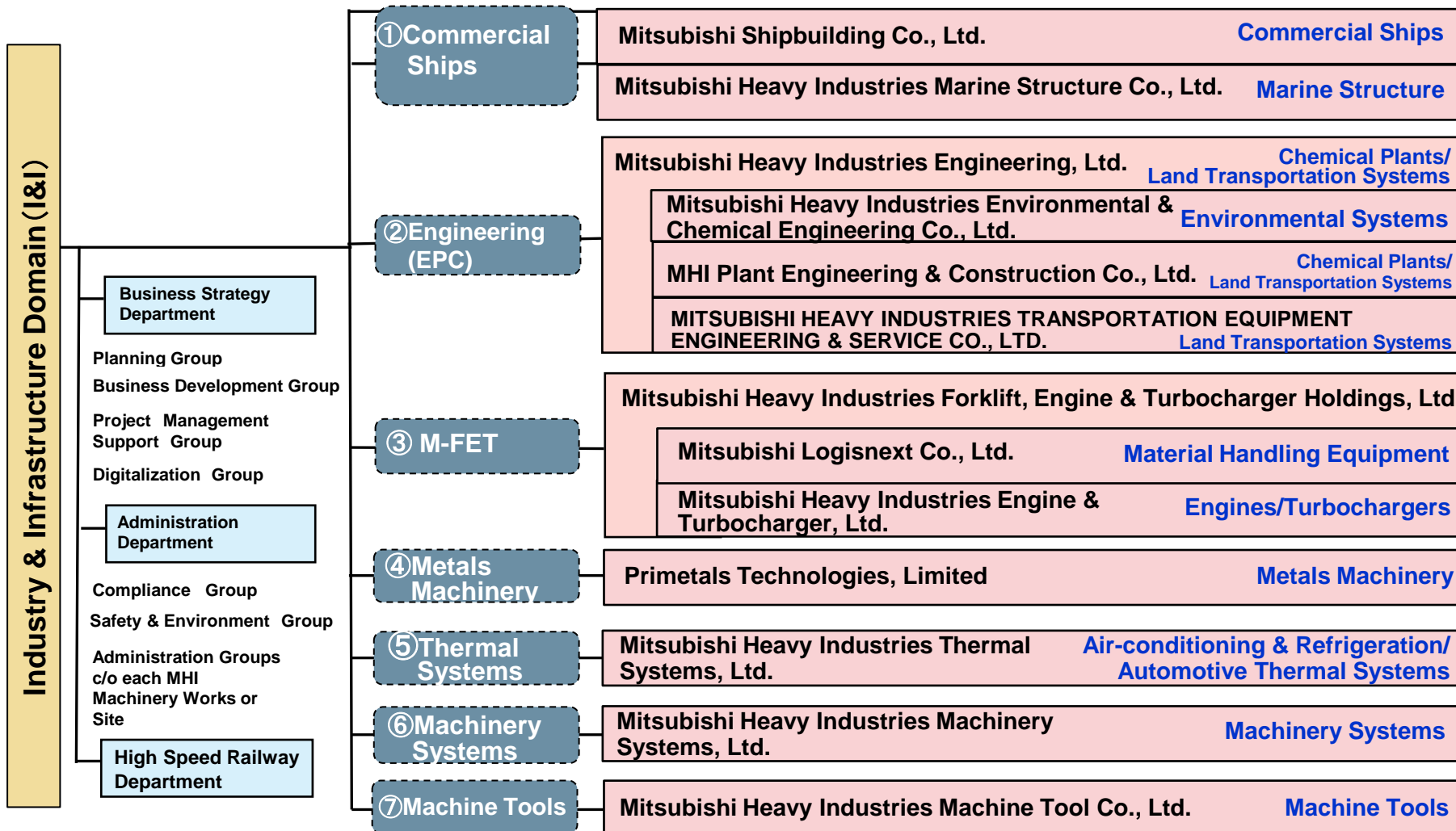


APM System began operations at Tampa Airport in US (February 2018)

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

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

Review of 2015 Business Plan

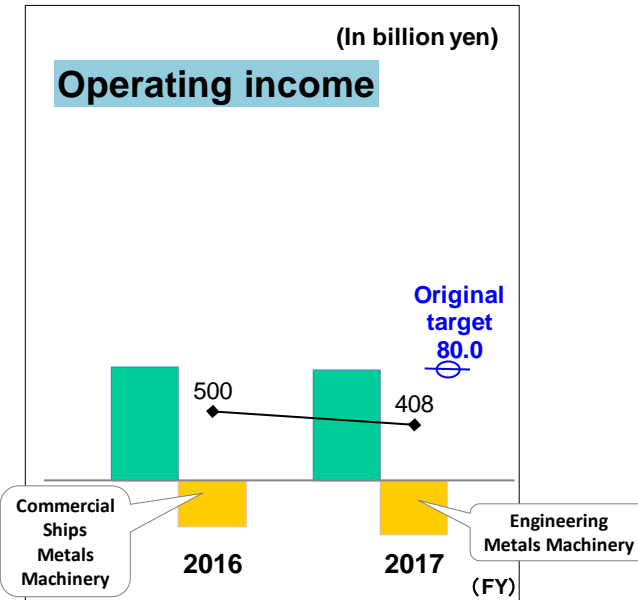
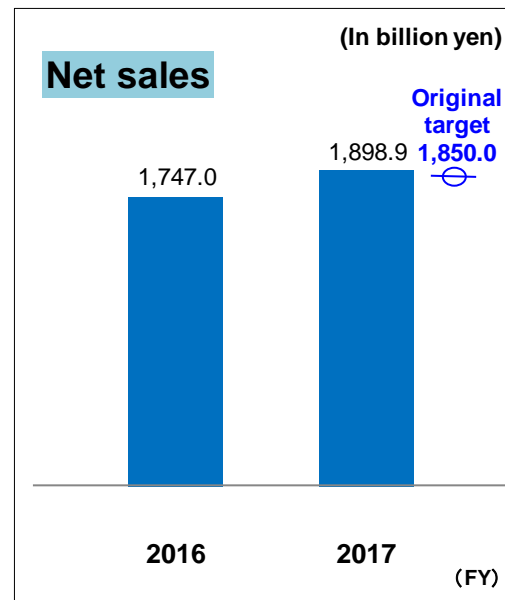
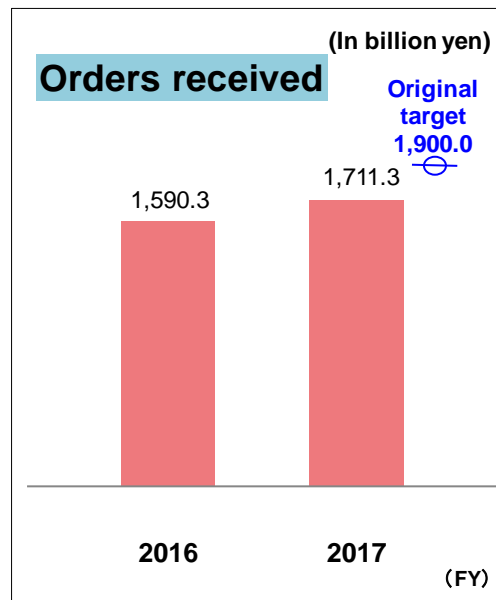
【Main factors for challenges remained】

- 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.

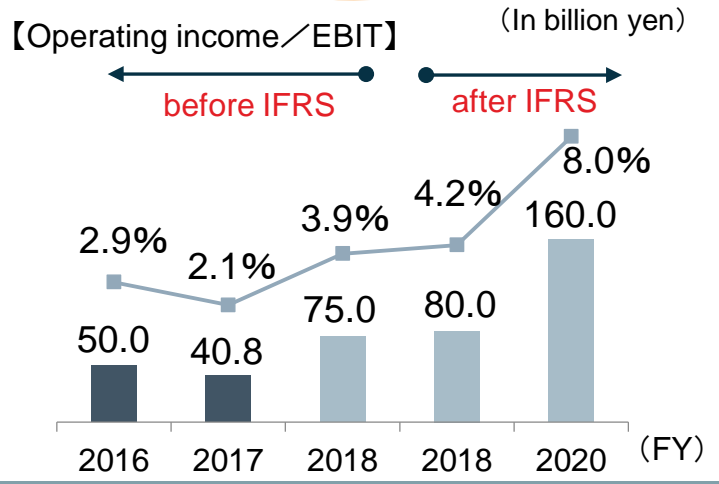
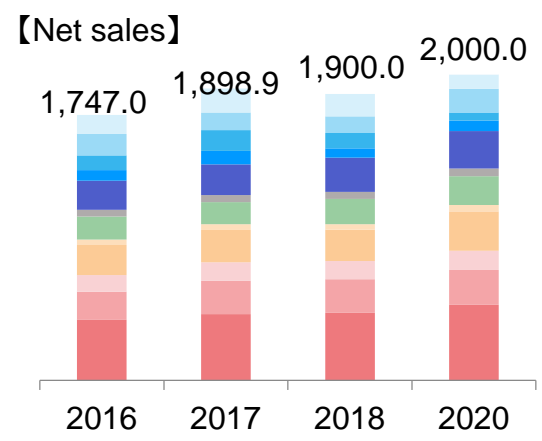
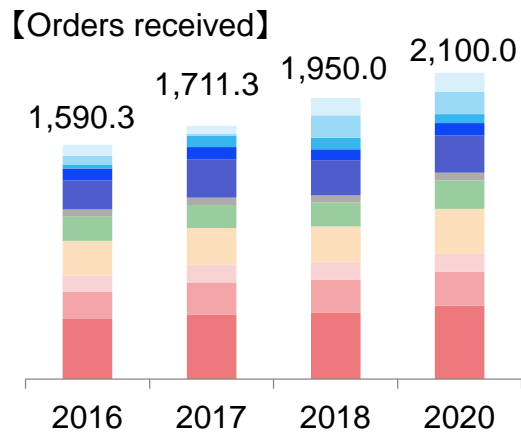
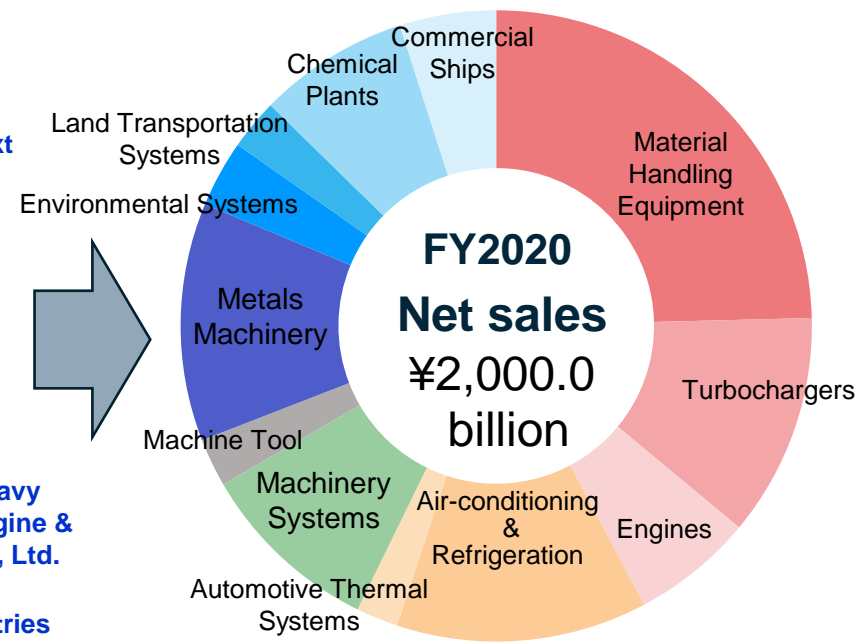
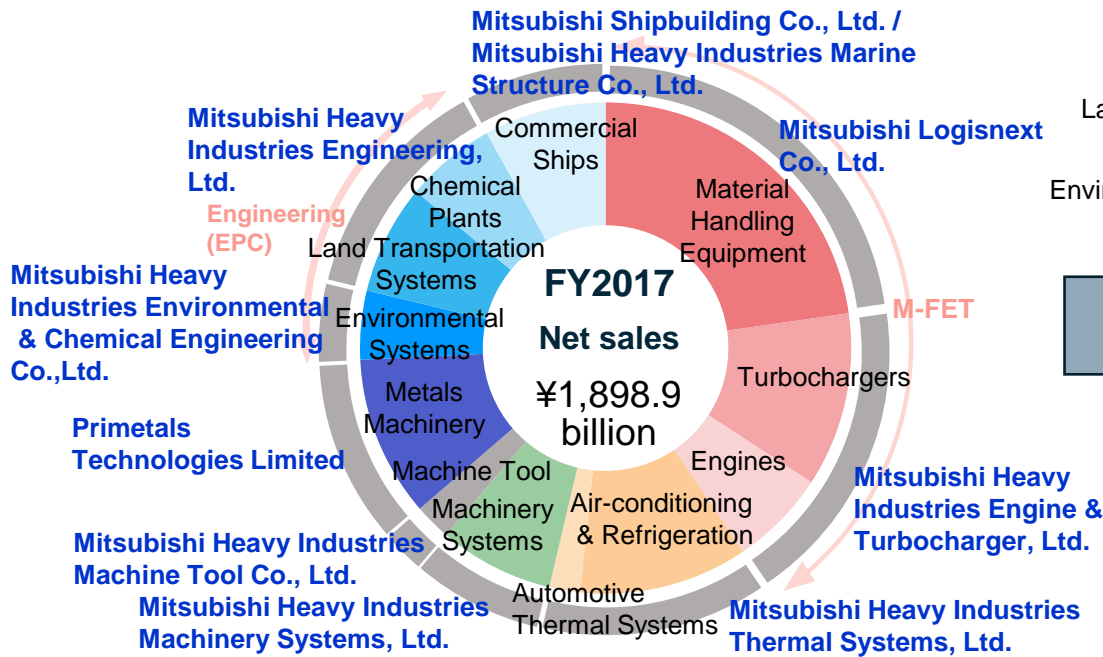
As Turbochargers, Thermal systems and Environmental systems achieved the original target, I&I segment maintained stable sales and earnings. As for Commercial Ships, Engineering (EPC) and Metals Machinery, completed taking countermeasures against the factors behind the deterioration in FY2017.



PMI: Post Merger Integration

2-2. Strategies of 2018 Medium-Term Business Plan (1/3)

Targets



2-2. Strategies of 2018 Medium-Term Business Plan(2/3)

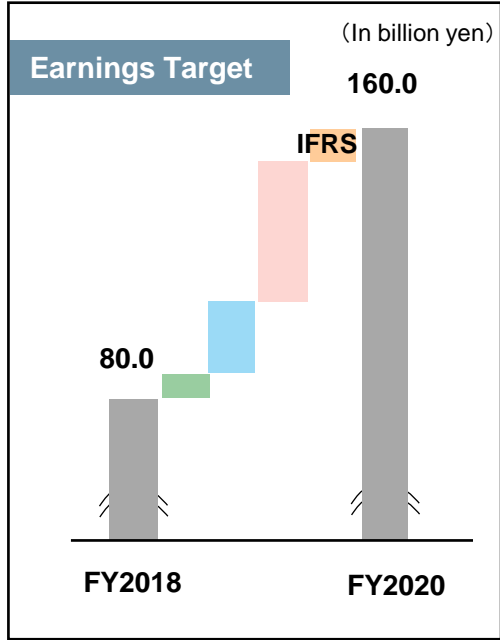
Portfolio Strategies	
Material Handling Equipment	Increase sales and earnings with multi-brand, global/local strategies for expanding market. Strengthen solution/service businesses and reap PMI synergies.
Thermal Systems	Expand business scale with increased production capacity to meet the growth in demand,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

proactively invest in growing markets.
 Drive domain growth with expansion of business scale and earnings.

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.

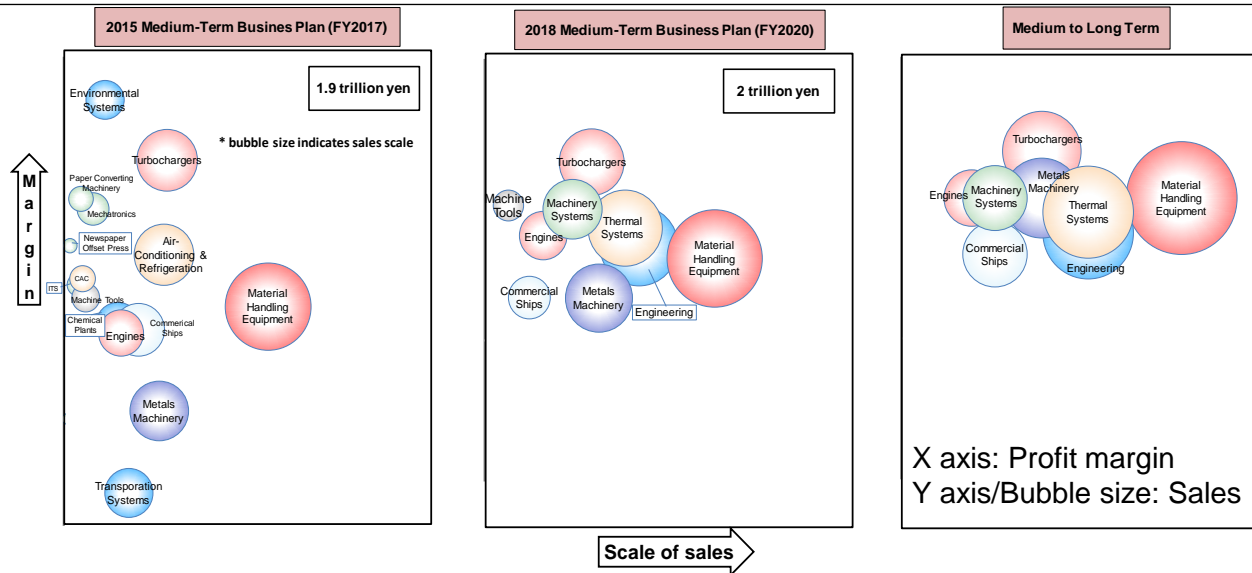
Pursue earnings with shared resources and better efficiency; represents a "basis of I&I earnings"



EPC: Engineering, Procurement, Construction APM: Automated People Mover

2-2. Strategies of 2018 Medium-Term Business Plan(3/3)

Earnings at each business expected to change as shown in the exhibit at right with implementation of initiatives positioned accordingly within the portfolio.



		Business scale expansion Growth in sales, income	Promote rationalization to improve profitability	Increase added value to Improve profitability
	Material Handling Equipment	Maximize integration effects	Further promote and accelerate PMI	Logistics solutions
	Thermal Systems	Increase production in Thailand, China		Low environmental impact refrigerants
	Turbochargers		Enhance IoT production	Strengthen development capabilities
	Engines		Strengthen operations for core machinery	Expand distributed power systems business
	Metals Machinery		Reap PMI benefits	Expand after-sales services
	Engineering(EPC)		Structural reform	Investment~O&M
	Commercial Ships		Structural reform	Marine engineering
	Machinery Systems		Integrate redundant bases	Expand after-sales services

O&M: Operation & Maintenance

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

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)

Expand business scale

Expand money-making stage

Transformation of business model

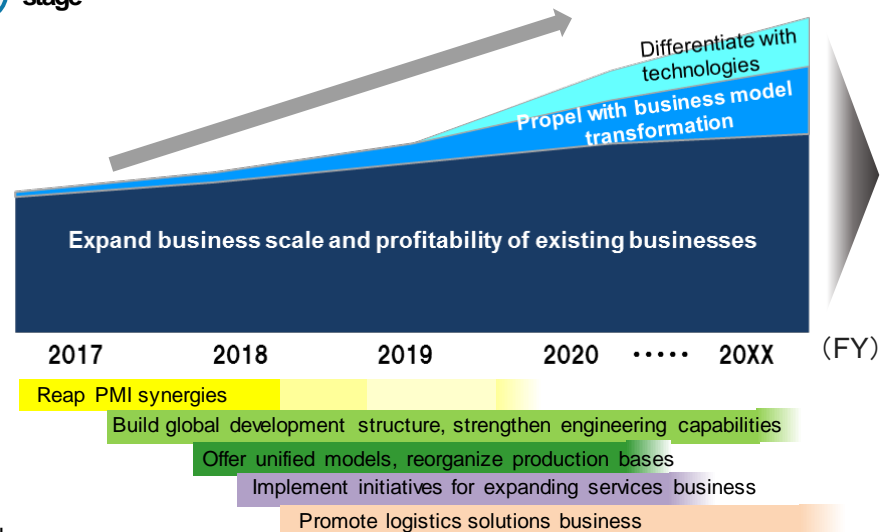
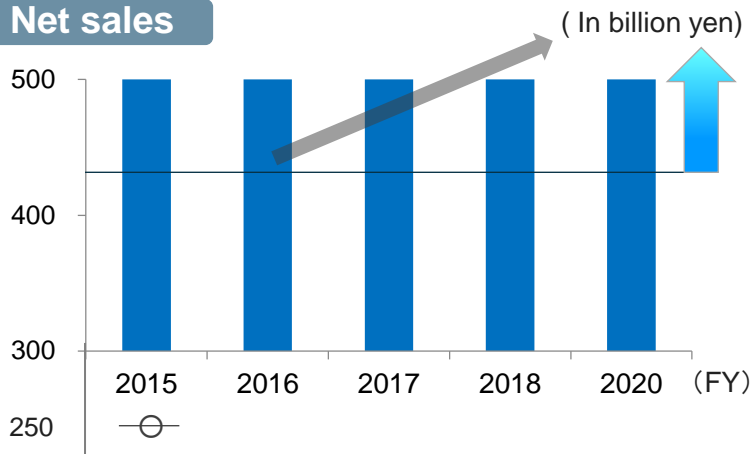
As Mitsubishi Heavy Industries ...

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



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

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)

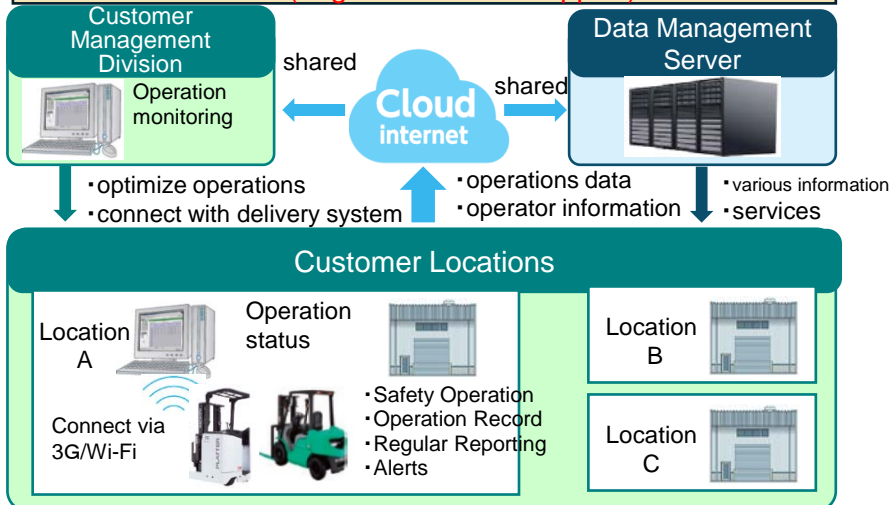
Laser-guided automated forklift

- "Route Optimizer"(AI based) for optimal operation
- For multi-tenant delivery centers
⇒ No need for underground installations

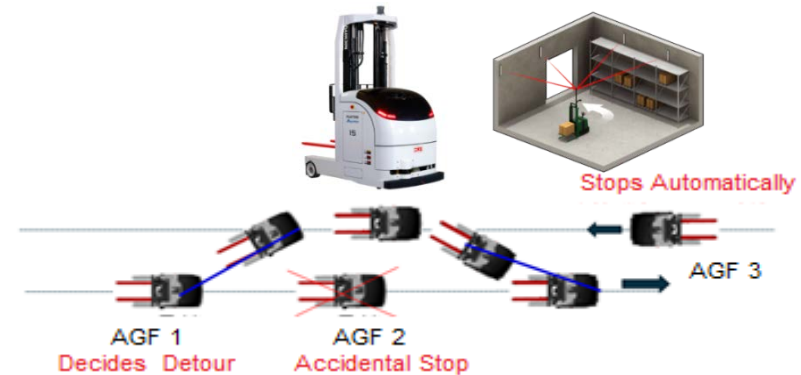
Further expansion of services business

- 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)

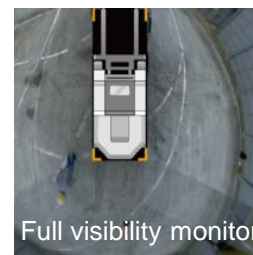


<Laser Guide Type AGF (Automated Guided Forklift)>

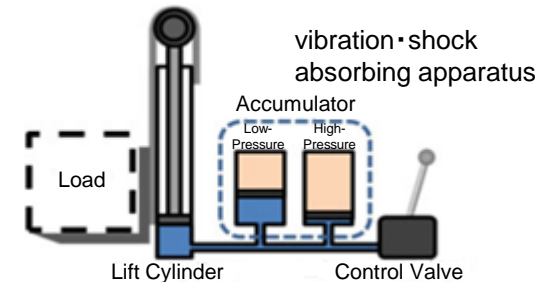


Differentiate with advanced technologies anticipating megatrends

- 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.)

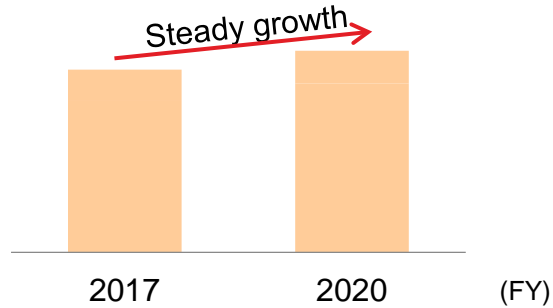


AGF: Automated Guided Forklift

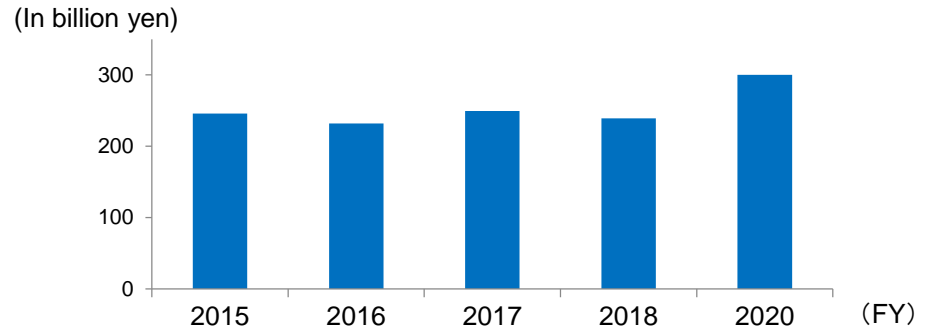


3-2. Thermal Systems(1/2)

Demand forecast
for air-conditioning/refrigeration and
automotive air-conditioning systems



Net sales



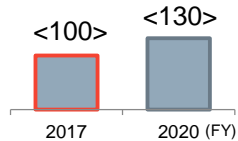
Strengthen existing businesses

[Air-conditioning business] **Expand sales network globally**

Expand market share by offering products tailored to meet regional needs and strengthening sales capabilities

Graph: MHI sales by region <index>

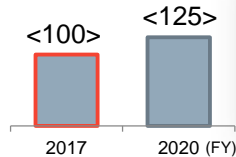
Europe



Strengthen sales structure through capital tie-ups with distributors

•Set up new JV in UK

Asia·Australia



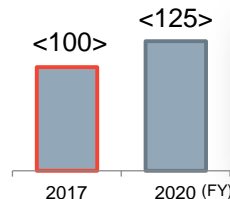
Boost development capabilities to offer products meeting regional needs

•Large Capacity Residential Air-conditioners



Production capacity increased 30% with completion of third plant at Thai JV MACO

China



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.

Japan



Strengthen branding strategies with TV commercials detailing comfort features of products.

•AirFlex diminishes chilliness caused by air-conditioning

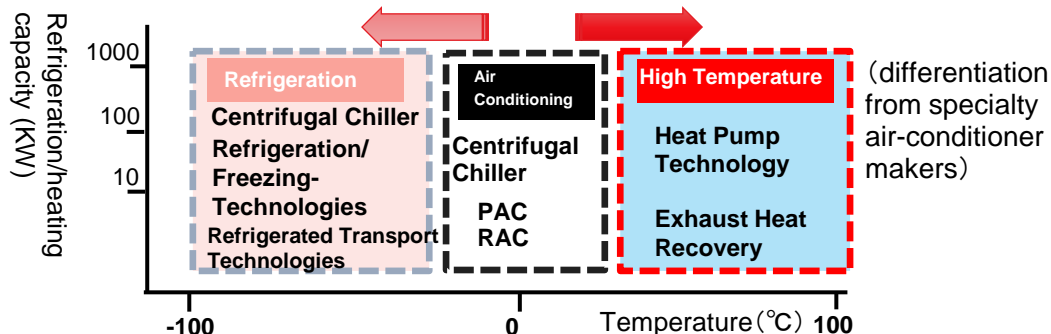
Airflex: panels for directing air emitted from indoor cooling/heating units such that the air does not come in direct contact with users, thereby increasing comfort level; an industry first.

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



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

- Award** ① “C-puzzle HCCV series” refrigeration condensing units using natural refrigerant 38th Excellent Energy-Efficient Machinery Award, Japan Machinery Federation’s Chairman’s Award
- Award** ② Highly efficient heat pump-type hot air generator “Neppu-ton” 2017 Energy Conservation Grand Prize, Energy Conservation Center Chairman’s Award
- 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

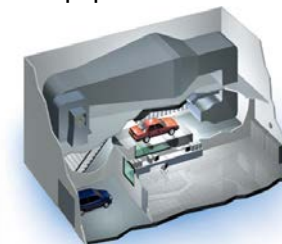
Increasing EV development pushing up demand for automotive environmental testing equipment

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

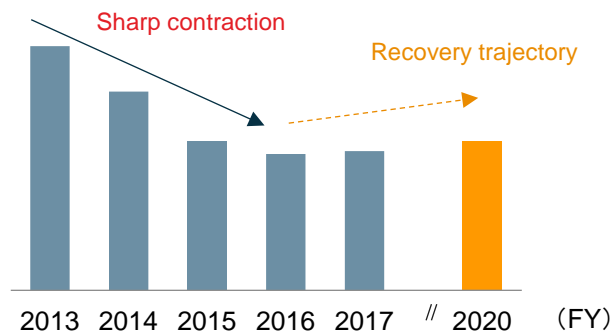
Large-scale orders received in FY2017

- 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

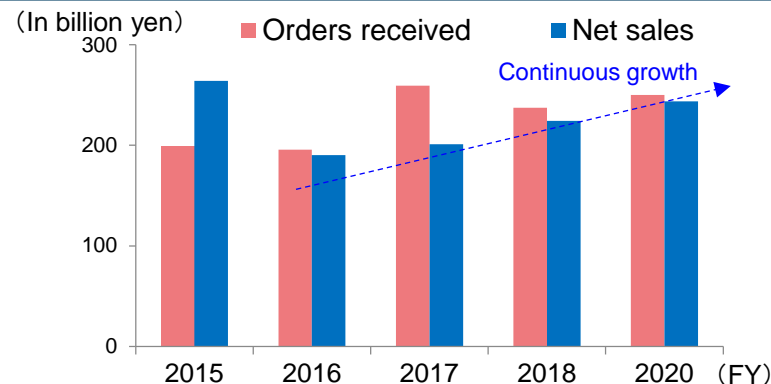
Position

- 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

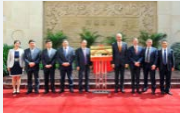



Orders received & Net sales



3-3. Metals Machinery(2/2)

Improvement in profitability Stronger resilience in business scale fluctuations afforded by early completion of PMI		Increase productivity (completed)	Consolidate business segments 10→7、organizational functions 26→9、overseas bases 40→26
		Personnel optimization (completed)	Reduce work force by approximately 8,000→7,000

Promotion of business strategies			
Business model reform	Offer Life Cycle services that focus on customer value		
Expansion of maintenance and service businesses	Reinforce alliances with customers·partner companies and allocate proper resources		
	Establish service JV with China's Tangshan Iron and Steel Group (completed)	Begin offering comprehensive technical services, including support for plant operations, maintenance, renewal, and operation status monitoring	
	Form tie-up with US partner ITR in predictive maintenance services (completed)	Begin offering a broader menu of comprehensive preventive maintenance and solution services	
	Leverage key technologies	Attract more orders with wider-reaching digitalization and by expanding lineup of low environmental impact products	Endless Strip Production Line can reduce plant length by over 50% and cut energy consumption by as much as 45%

Strengthen financial standing	
Initiatives to reduce operating working capital and generate cash	Improved free cash flow in FY2017 by over ¥10 bn YoY

3-4. Engineering(EPC)(1/2)

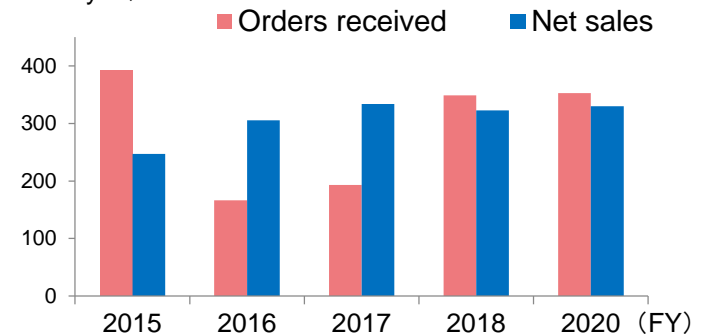
Business field	Business circumstances /opportunities	Strategy
Chemical Plants	<ul style="list-style-type: none"> Needs of larger scale chemical plants, more complicated and diversifying requests of customers. Increasing investment in facilities in the natural gas producing countries (US, central Asia etc.). Expansion of the business field and improve the profitability 	<ul style="list-style-type: none"> Develop highly profitable project in strategic regions Sponsoring project (Share of know-how from operators. Develop after-sales service market) Strengthen Cost+Fee projects
Land Transportation Systems	<ul style="list-style-type: none"> Increasing needs for APM according to the expansion of airport facility in emerging countries. Increasing needs for transportation equipment fulfilling safety standard and universal designs 	<ul style="list-style-type: none"> Advance technologies for APM vehicles (MIHARA Test Center) and develop O&M service business. Accelerate development of technology for transportation equipment that meets the society's needs (railway platform doors, PBBs, etc.)
Environmental Systems	<ul style="list-style-type: none"> Stagnant new WtE market in Japan. Market growth in emerging countries (Southeast Asia) according to the urbanization. 	<ul style="list-style-type: none"> Secure orders and execute projects in Japan. Exploit opportunity of overseas business by investing in overseas PPPs project. Strengthen overseas O&M and rehabilitation business.
CO₂ Recovery Plants	<ul style="list-style-type: none"> Increasing awareness of environment by the Paris Agreement/ CCS Tax Incentive in US etc.. 	<ul style="list-style-type: none"> Create new projects with the customers from planning phase.

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



(In billion yen)

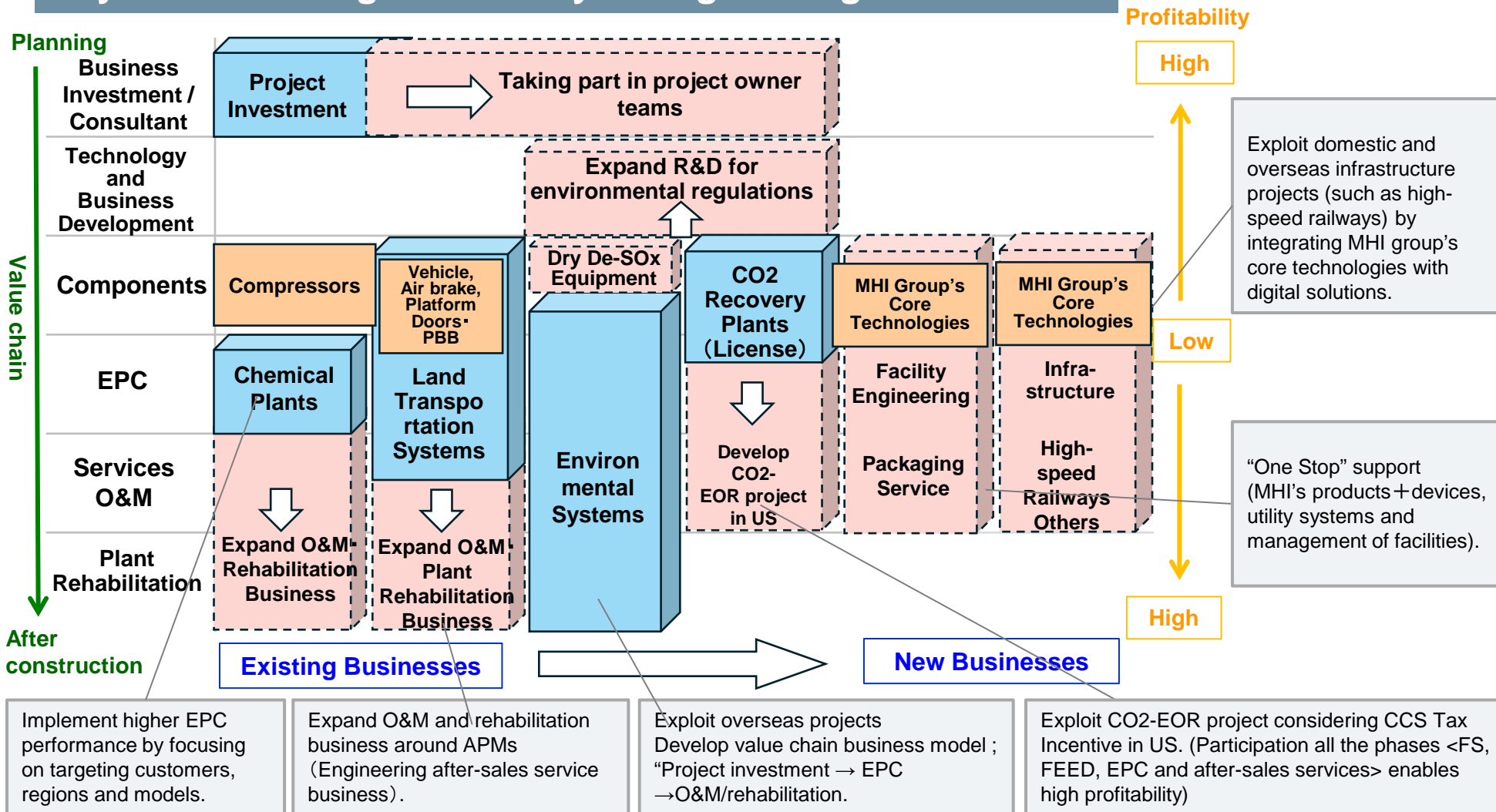


APM: Automated People Mover
PBB: Passenger Boarding Bridge

WtE: Waste to Energy
PPP: Private-Public Partnership

3-4. Engineering(EPC)(2/2)

Keys to Increasing Profitability of Engineering Businesses



APM: Automated People Mover FEED: Front End Engineering and Design FS: Feasibility Study EOR: Enhanced Oil Recovery

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.

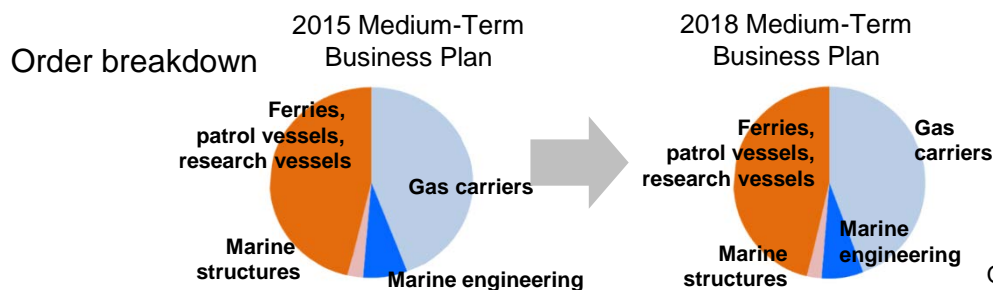
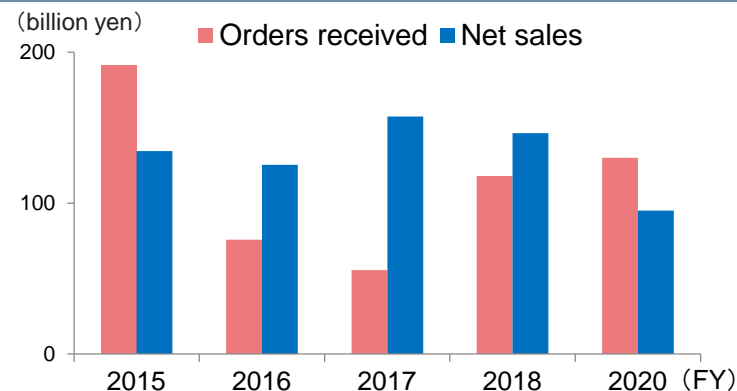
- Mitsubishi Shipbuilding
 - ① Increase building efficiency for ferries and government ships and expand business scale.
 - ② Expand marine engineering business based on environmental solutions and others.
- MHI Marine Structure
 - ① Reduce fixed costs, strengthen QCD with focus on production to ensure 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



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.

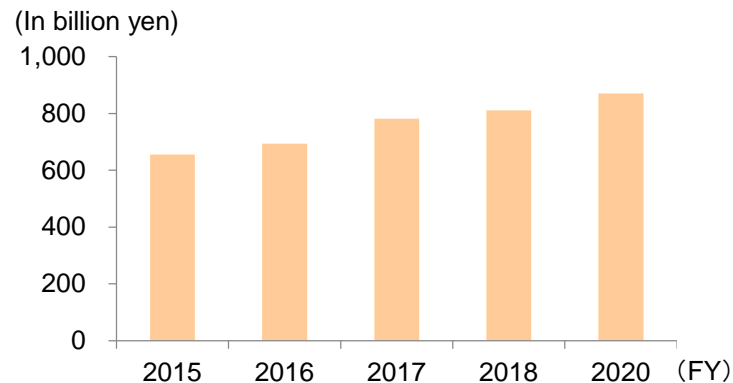
Strengthen development capabilities to offer products for a diversified power train lineup

- 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

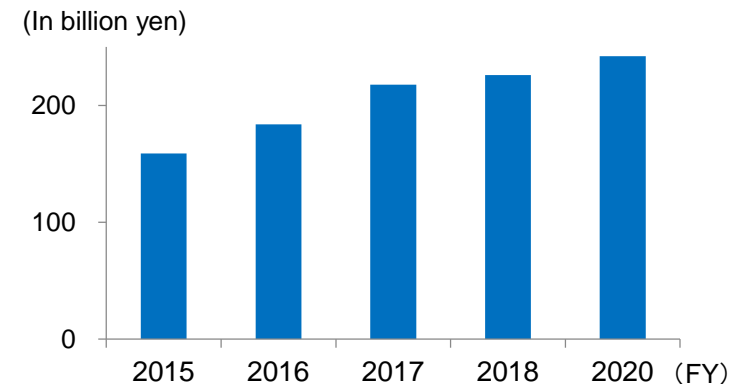
* construction machinery, agricultural machinery, etc.



Market Scale



Net Sales



VG: Variable Geometry

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



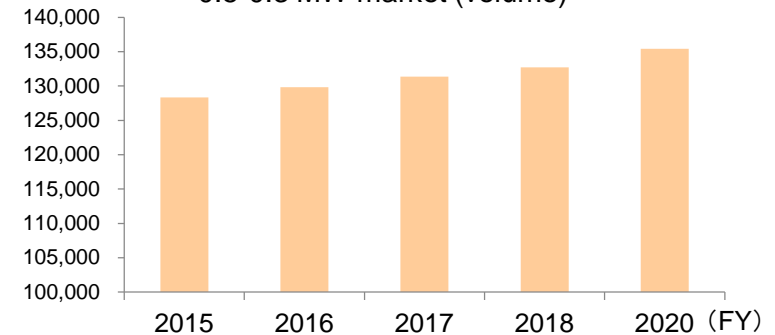
Engine for Generator (2-2.5MW)



Engine Generator Equipment

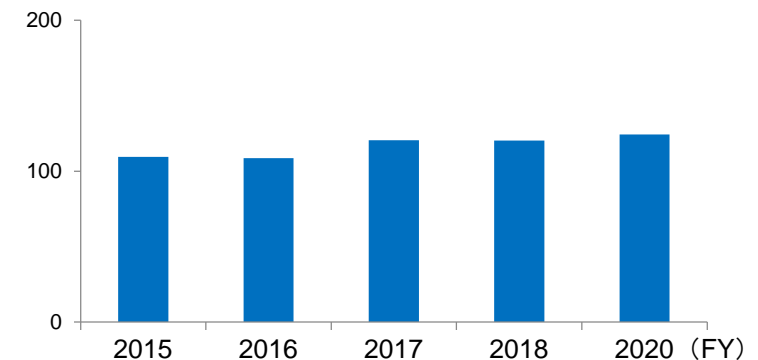
Market Scale

0.5-0.3 MW market (volume)



Net Sales

(billion yen)



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



Mechatronics Systems
(testing equipment)



ITS (electronic toll
collection systems)



Paper Converting
Machinery
(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.

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

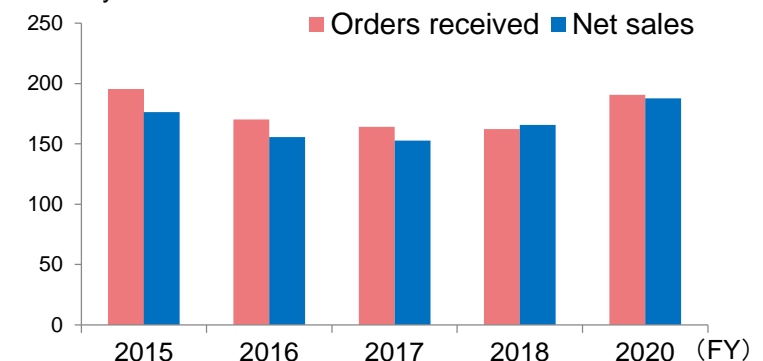
Key Solutions

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.

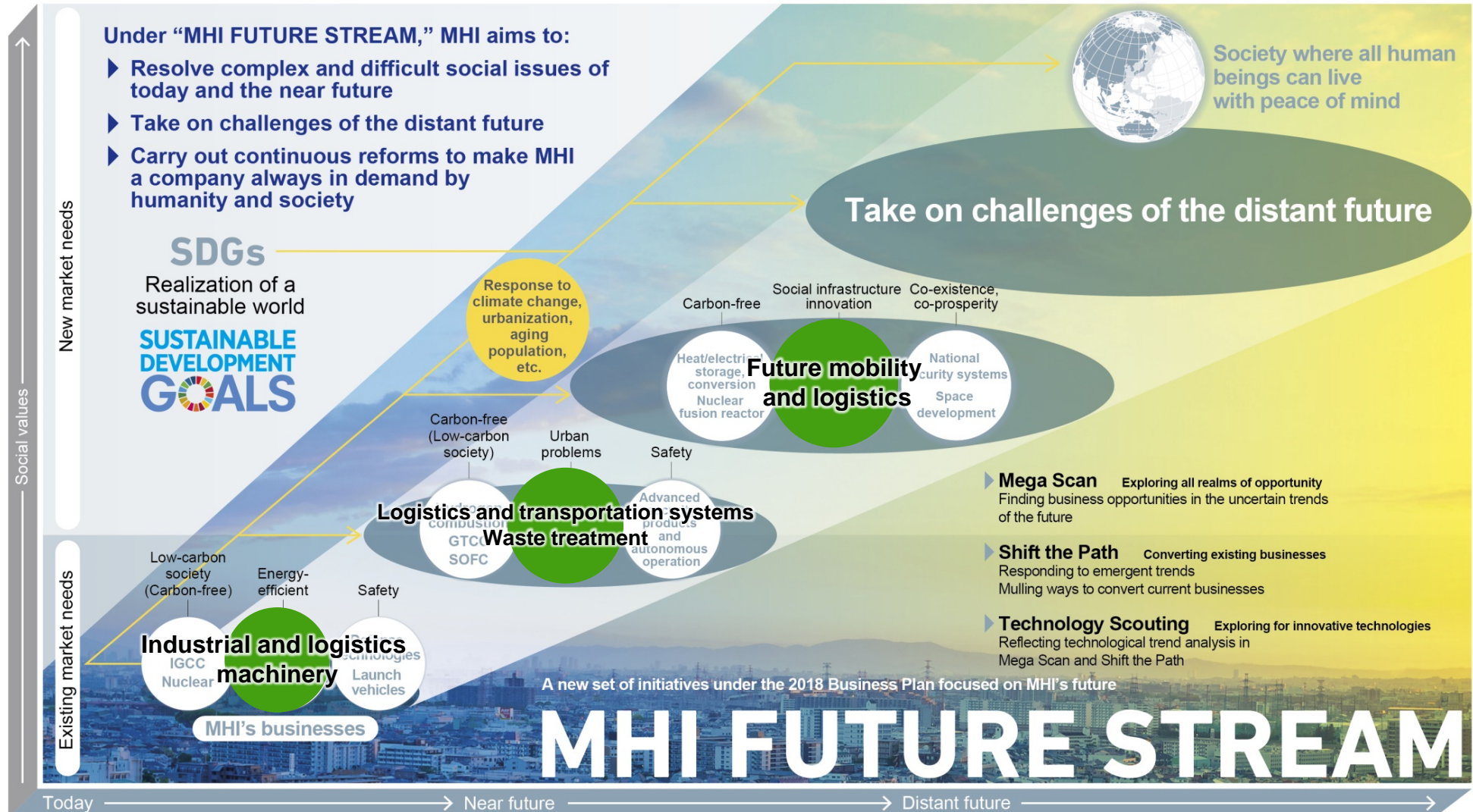
Orders received & Net Sales

(billion yen)

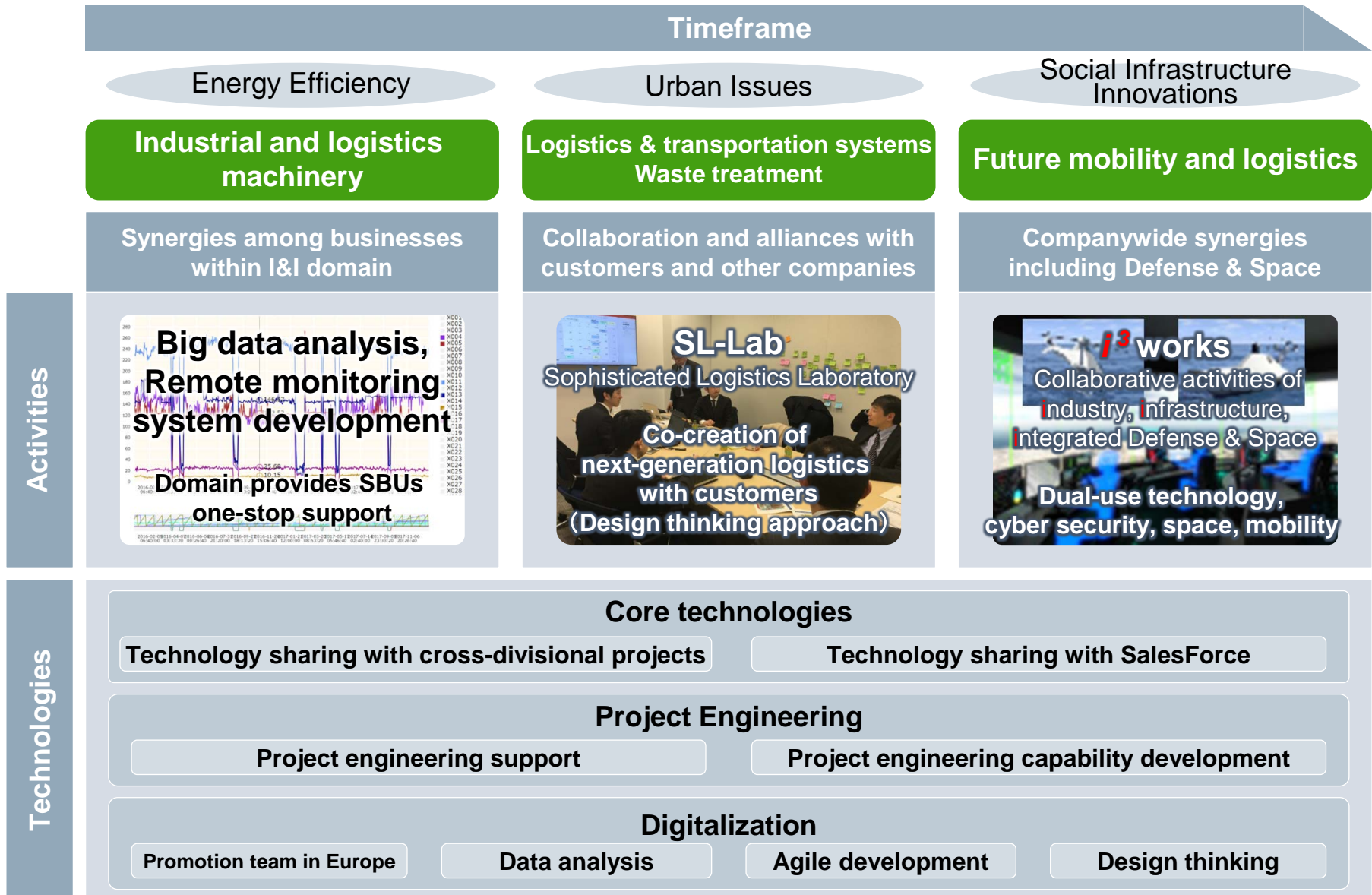


1. Business Overview
2. 2018 Medium-Term Business Plan
3. Individual Business Strategies
- 4. Promotion of MHI FUTURE STREAM**
5. Summary

MHI FUTURE STREAM In step with society's needs



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



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

industry,
infrastructure,
integrated Defense & Space

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

Energy efficiency

Urban problems

Social Infrastructure Innovations

Industrial and logistics machinery

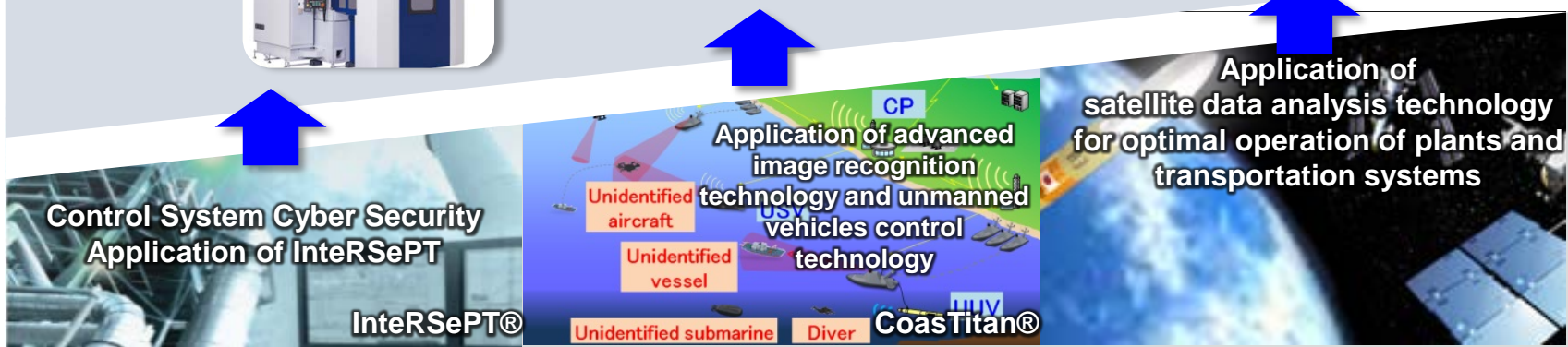
Logistics & transportation systems
Waste treatment

Future mobility and logistics

Industry & Infrastructure



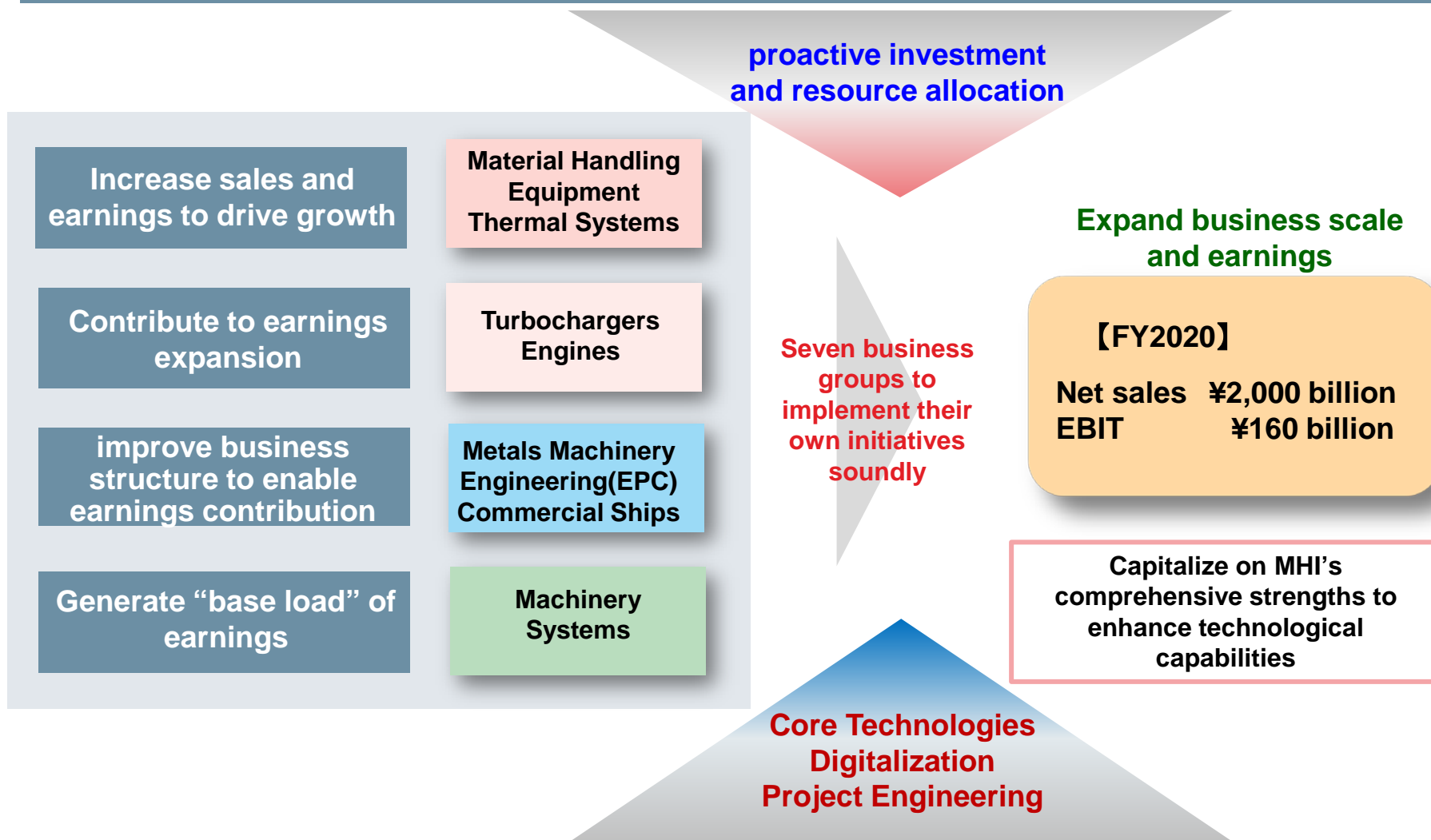
Defense & Space



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

5. Summary

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



MOVE THE WORLD FORWARD

**MITSUBISHI
HEAVY
INDUSTRIES
GROUP**