

Business Strategy of the Magnetic Materials Company

Hitachi Metals IR Day 2017

May 31, 2017

Hitachi Metals, Ltd.

Ryoji Akada

Executive Officer

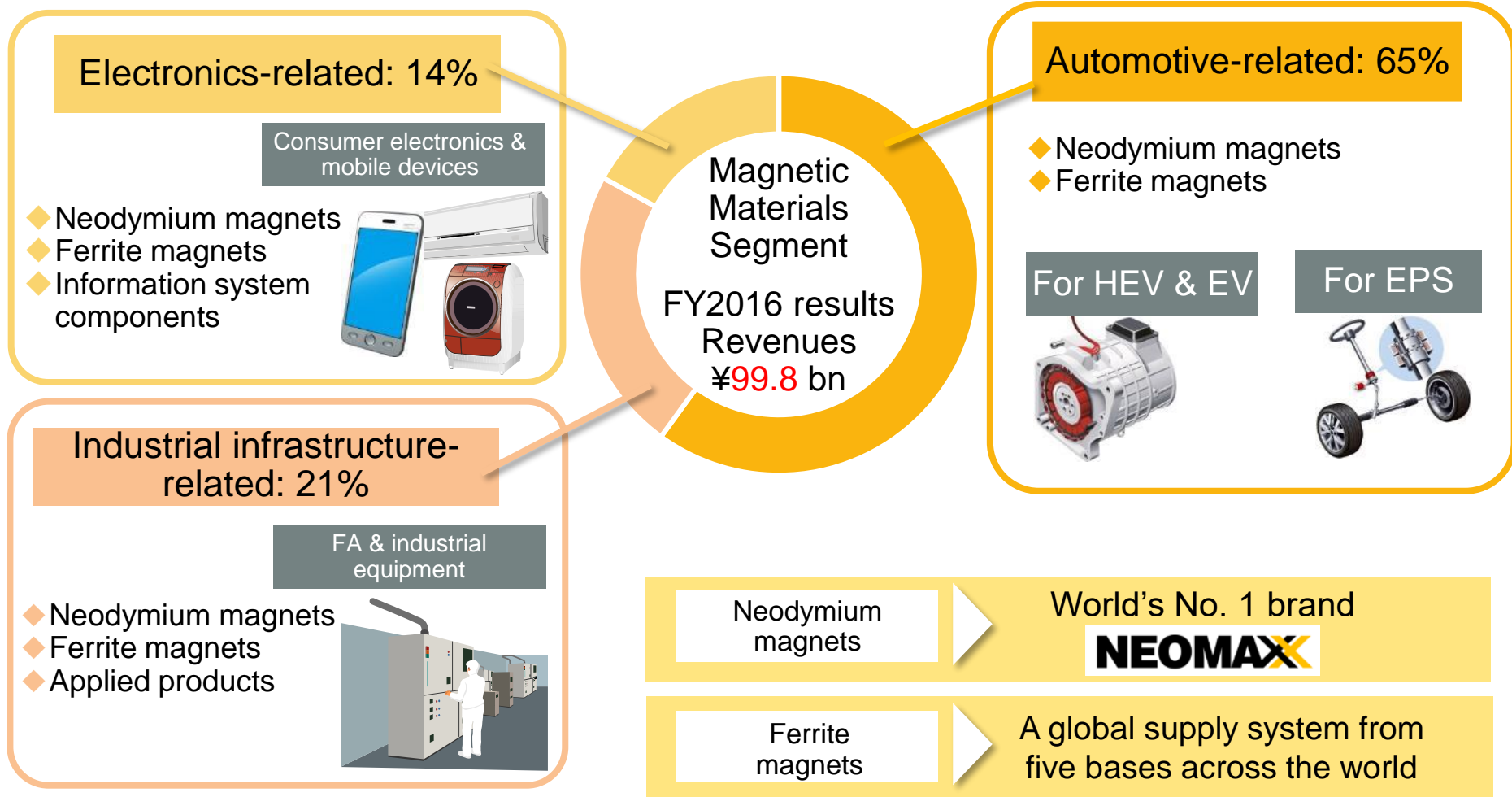
President of the Magnetic Materials Company

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1. Business Overview
2. Basic Policy
3. Overview of Initiatives in FY2016
4. Action Plan for FY2017–FY2018
5. 2018 Medium-term Management Plan Goals

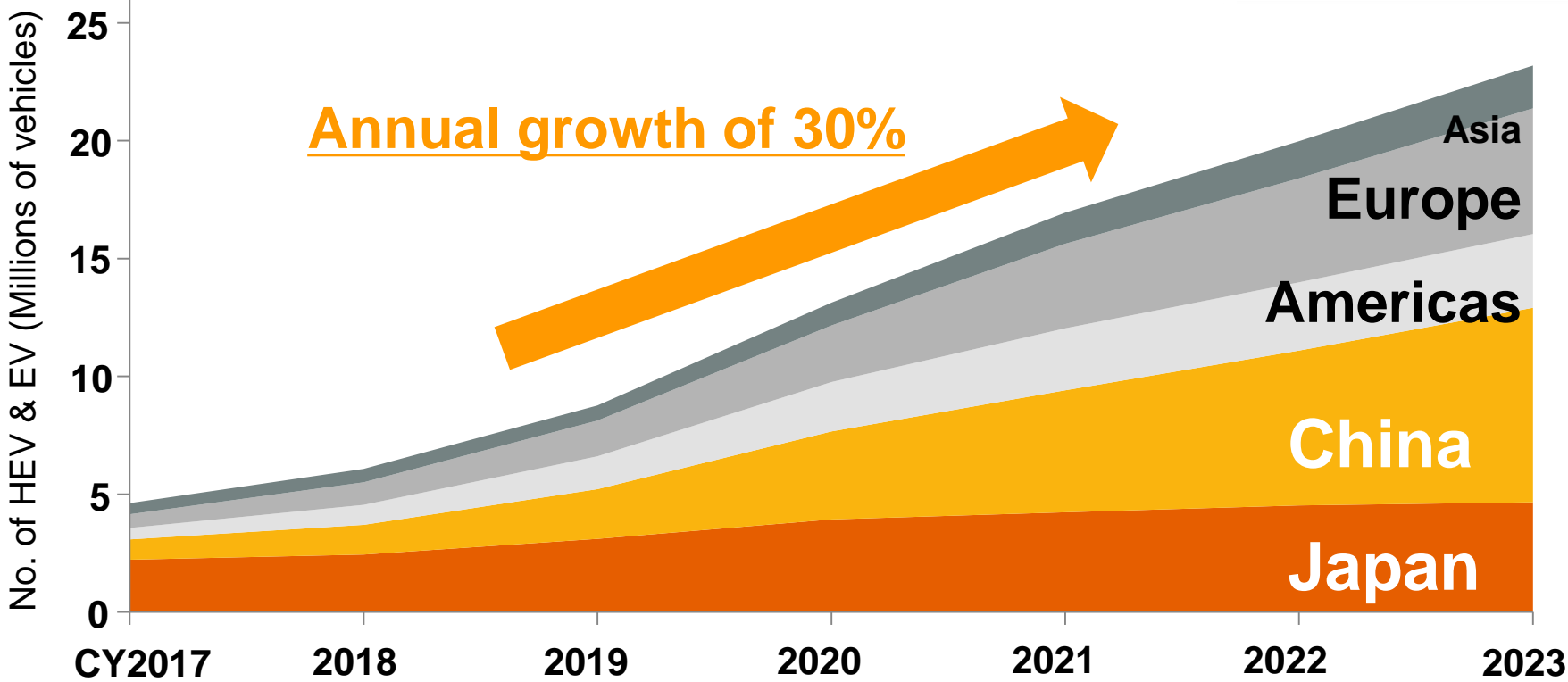
Supplying an extensive line-up of magnet products to the market



Automotive-related Market



- ◆ The production volume of EVs is expected to expand rapidly in China and other countries in the world following the spread of EVs.
- ◆ Projected annual growth rate on a global basis is around 30% (2017–2023).



Projection of production volume for EVs in each country/region

(Source: Hitachi Metals' estimate based on various materials)

*Including term for hybrid electric vehicles (HEV) and plug-in hybrid electric vehicles (PHEV).

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2. 2018 Medium-term Management Plan: Basic Policy and Goals of the Company

■ Basic Policy of the Magnetic Materials Company

Innovate *monozukuri* to pave the way for growth

- ◆ Strengthen global production system
- ◆ Build innovative production line

■ 2018 Medium-term Management Plan: Goals

	FY2016 Results (¥108 = US\$1)	FY2018 Goals (¥110 = US\$1)	Change vs. FY2016
Revenues	¥99.8 bn	¥120.0 bn	120%
Adjusted operating income	¥9.3 bn	¥13.0 bn	+ ¥3.5 bn
Adjusted operating margin	9.3%	10.8%	+1.3%
Overseas sales as a percentage of total sales	53%	58%	+5%

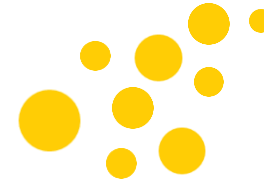
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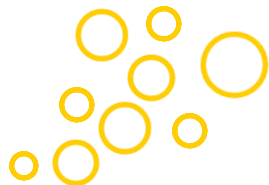
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FY2016

Overview of Initiatives



- Established Hitachi Metals San Huan Magnetic Materials (Nantong) Co., Ltd. Started test run. <Held opening ceremony on April 7, 2017>
- Decided to introduce an innovative production line for Neodymium magnets and ferrite magnets at the Kumagaya Works. Determined the specifications of the line and started construction. <Scheduled for operation in the 1H of FY2018>
- Turned the Kumagaya district into a “mother plant” that integrates plants and research labs, and accelerated development of products that meet customer needs. <Integration to be completed in FY2019>



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4-1. Growth Strategy and Action Plan (1)

“Carry out *monozukuri* innovations: Innovative production line”

Improve quality and maximize productivity through thorough automation and use of IoT

Construct a new, innovative production line for Neodymium magnets and ferrite magnets in the Kumagaya district

Respond to demand of the continuously growing automotive-related market with “quality and quantity”



Image of completed plant

Neodymium magnet plant

(Started construction in Apr. 2017)



Adopt a new method in the heavy rare-earth diffusion process

Ferrite magnet plant

(Started construction in Feb. 2017)



Enhance production lines to address small and thin shapes

“Save energy and resources with the latest magnetic materials”

Neodymium magnets

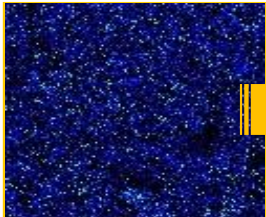
Increase technology to save heavy rare earth elements

Significant reduction in use of heavy rare earth

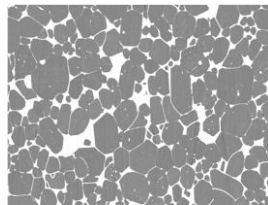
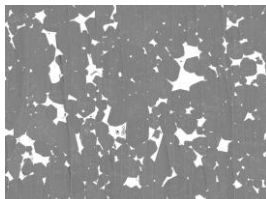
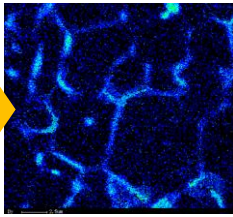
Alloying addition

Grain boundary diffusion

Grain boundary control



(Heavy rare-earth elements are unevenly distributed near the grain boundary)



(Magnetic coercive force significantly increased due to grain boundary control technology)

Ferrite magnets

Contribution to downsizing due to performance improvements

Volume reduction **-20%** **-45%**



NMF-9

NMF-12

NMF-15

New composition development

Microstructure control technology

Grinding technology for thin products

“Integrate domestic bases and create a ‘mother plant’”

Accelerate development of technologies that capture customer needs

Innovative production line

Newly establish in Kumagaya district

Magnetic Materials Research Laboratory

Transfer to Kumagaya district

Information System Component Business

Transfer to Kumagaya district

Integrate plant and laboratory, and establish as a “mother plant” <Kumagaya district>

- Carry out smooth technology application from R&D to mass production, and accelerate overseas expansion.
- Add controlling functions and achieve efficient management.

(Contribute with integration of advanced materials technology and process technology)

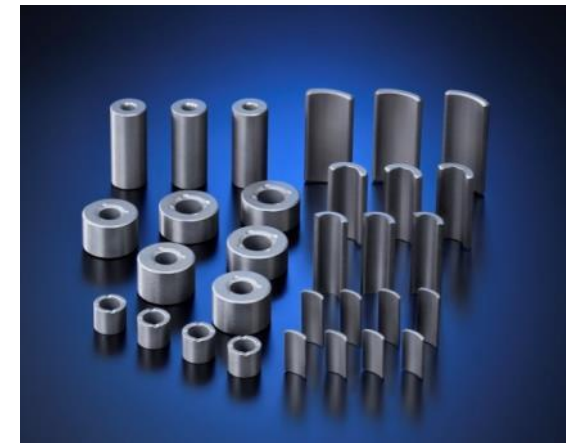
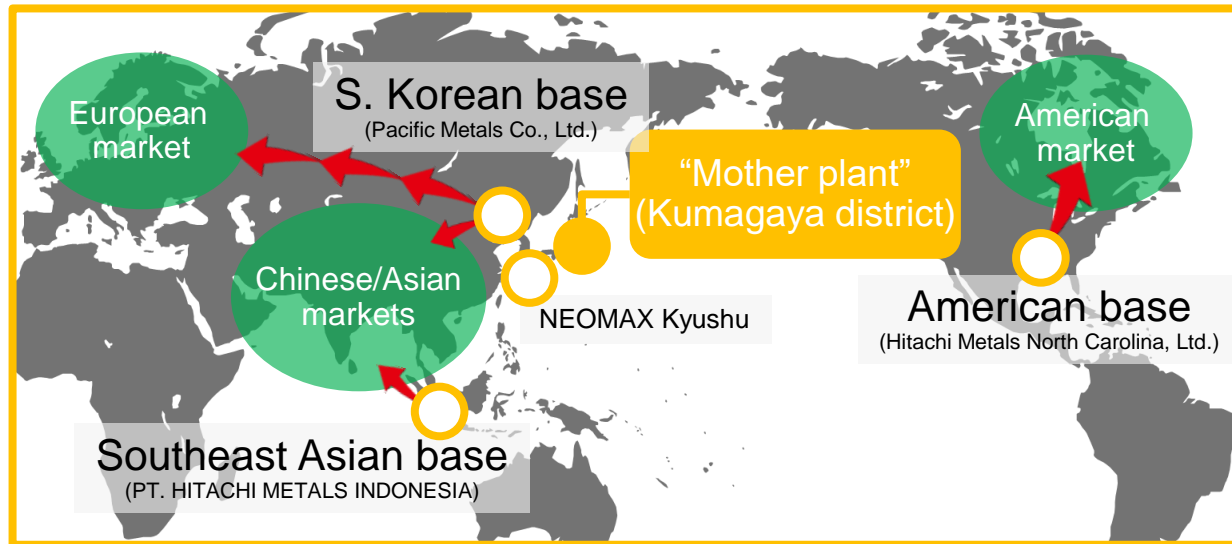
Global Research & Innovative Technology Center



4-4. Growth Strategy and Action Plan (4)

“Strengthen global production system of ferrite magnets, mainly by the ‘mother plant’”

Roll out the innovative production technology of the “mother plant” to domestic and overseas production bases, and promptly supply high-performance, high-quality products to the global market



Ferrite magnets

Roll out the innovative production technology to domestic and overseas bases to achieve the same quality and cost

Meet the requirements of the automotive sector for high-quality components and ultra-thin, small components, which are difficult to manufacture

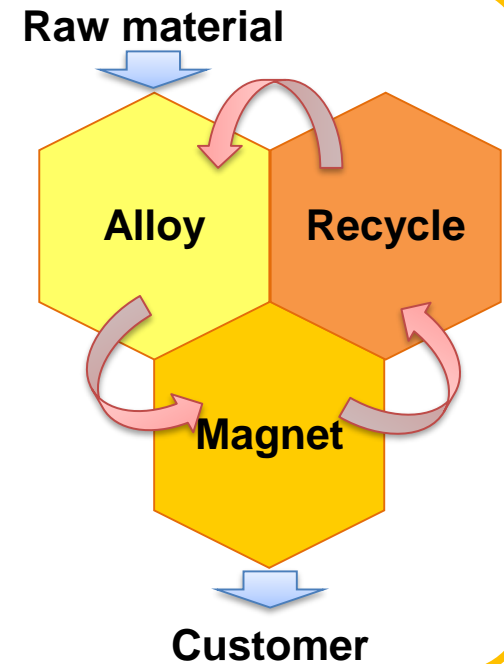
“Optimize material flow”

Conduct unified operation management of manufacturing and recycling process of Neodymium magnets.

Improve efficiency with consistent process design for magnets

Achieve a smooth flow of effectively utilizing recycled materials

Improve quality management through all processes



Aggressive investment in the magnet alloy manufacturing process and recycling process

“Expand China business”

Create competitive products with the same quality as Japan

Hitachi Metals San Huan Magnetic Materials (Nantong) Co., Ltd.

Location: Nantong, Jiangsu Province, China
Inv. ratio: Hitachi Metals: 51% Zhong Ke San Huan: 49%
Production capacity: 1,000 tons/year (FY2017) ⇒ 2,000 tons/year
Sales goal: ¥10.0 billion (FY2018)



Introduce proprietary heavy rare earth diffusion technology



Exterior of plant



Opening ceremony

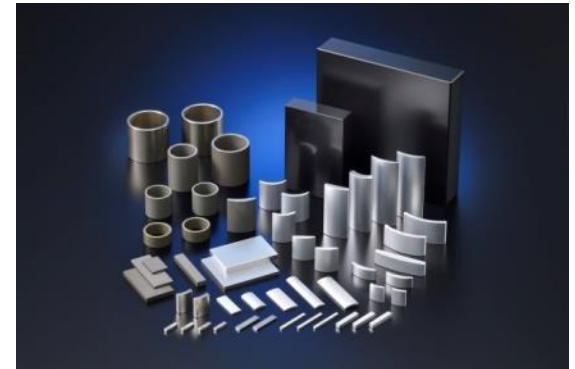


Launch ceremony

Carry out investment necessary to lead “business base innovations”

Cumulative total for 2016–2018: ¥48.0 billion

- Strengthen global production system
 - Enhance production capacity
 - Integrate plant and research lab
 - Introduce innovative production line
 - Optimize material flow



“Increase share in growth markets and expand business scale”

FY2025 sales goal: ¥200.0 billion
(FY2016 result: ¥99.8 billion ⇒ FY2018 plan: ¥120.0 billion)

**Strengthen the Neodymium magnet business,
the market for which is growing**

Further enhancement of production capacity (Goal: Double FY2016 levels)

- Expand innovative production line
- Hitachi Metals San Huan Magnetic Materials (Nantong) Co., Ltd.

Curb use of heavy rare earth

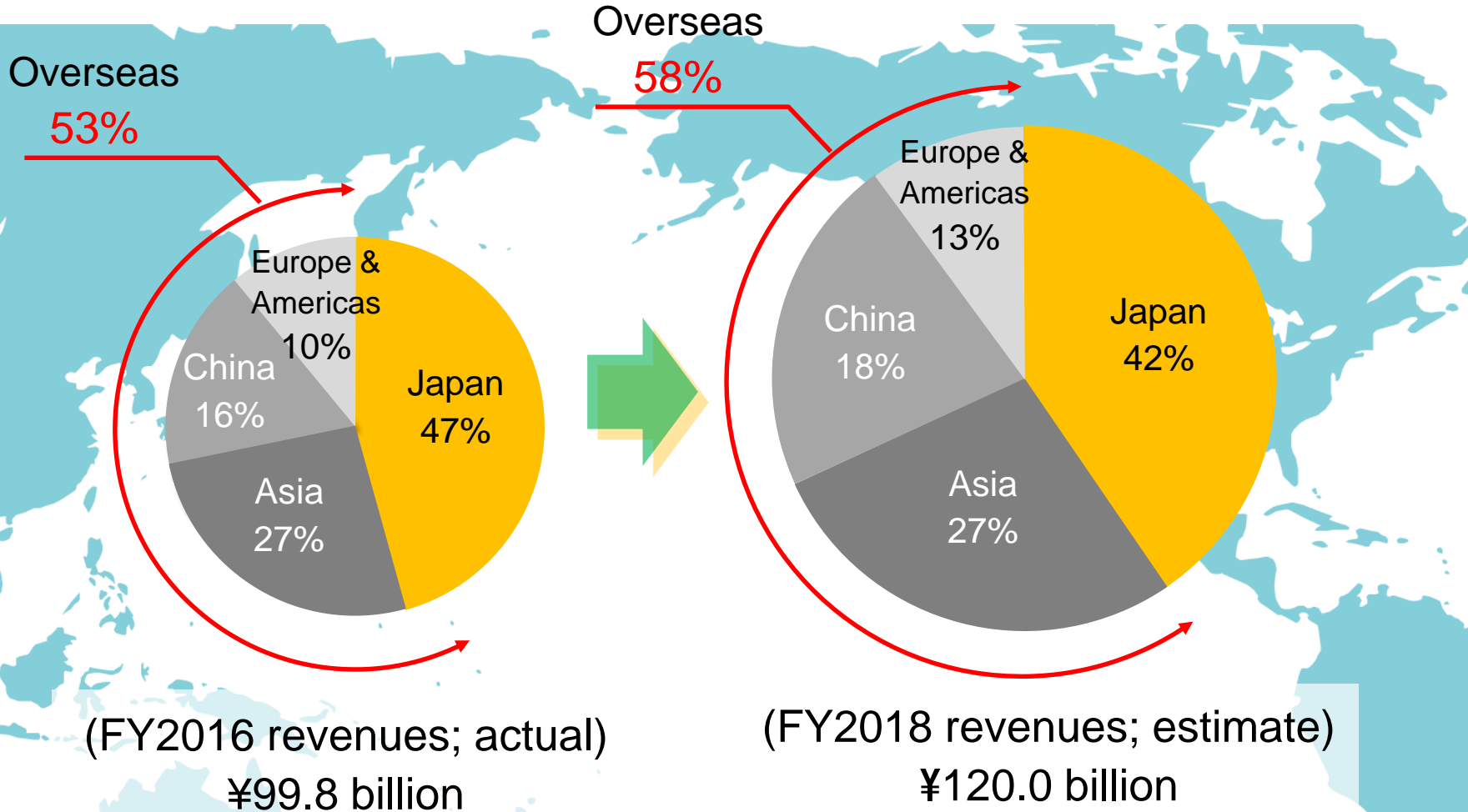
- Heavy rare earth-saving (incl. non-use)
- Heavy rare earth diffusion

Stable production system

- In-house manufacturing of magnet alloy
- Strengthen recycling process

4-9. Regional Sales

Expand revenues in the Chinese, European and American markets



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FY2018 plan	
Revenues	¥120.0 billion
Adjusted operating income (Adjusted operating margin)	¥13.0 billion (10.8%)
Overseas sales as a percentage of total sales	58%

This document contains forward-looking statements—such as results forecasts and management plans—that are not historical facts. All such forward-looking statements are based upon all available information and upon assumptions and projections that were deemed reasonable at the time the Company prepared this document. Changes to the underlying assumptions or circumstances could cause the actual results to differ substantially. The factors causing such differences include, but are not limited to, the following:

- Changes in economic conditions and regulations in the main markets where the Company operates, particularly Japan, the United States, Asia and Europe
- Sudden changes in technological trends
- Changes in competitive advantage and the capabilities of the Company and its subsidiaries and affiliates to develop and commercialize new products and businesses
- Fluctuations in the status of product markets, exchange rates and international commodity markets
- Changes in financing environment
- The capability of the Company and its subsidiaries and affiliates to cope with fluctuations in product supply and demand, the status of product markets, exchange rates and international commodity markets
- Protection of the Company's intellectual property, and securing of licenses to use the intellectual property of other parties
- Changes in the status of alliances with other parties for product development, etc.
- Fluctuations in Japanese stock markets



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