# Strategies for Practicing Value Creation

The Hitachi Metals Group has formulated its Fiscal Year 2018 Medium-term Management Plan, which covers the three-year period through March 2019. Under the plan's basic policies, we will "change to be a competitive business" and "challenge ourselves to meet new targets" to become the world's leading high-performance materials company. By implementing the plan, we will create value for customers while also improving the corporate value of the Hitachi Metals Group.

In this section, we provide an outline of the plan, which represents a milestone in our quest to "become the world's leading high-performance materials company," and we describe the progress of our internal companies' respective medium-term plans.

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# Progress of Fiscal Year 2018 Medium-term Management Plan

In fiscal 2016, the first year of the plan, we got off to a good start building a base for growth by implementing various measures, namely, expanding organic growth, remodeling the portfolio, growing through M&As, and strengthening the business base.

In fiscal 2017, the second year of the plan, we will pursue three innovations under corporate initiatives—*monozukuri* innovation, sales innovation, and R&D innovation—while aggressively making investments to expedite further expansion of organic growth.

## Fiscal Year 2018 Medium-term Management Plan

**Expand the business globally while improving profitability**

**Change to be a competitive business; Challenge ourselves to meet new targets**
Achieving our goal of becoming the world's leading high-performance materials company

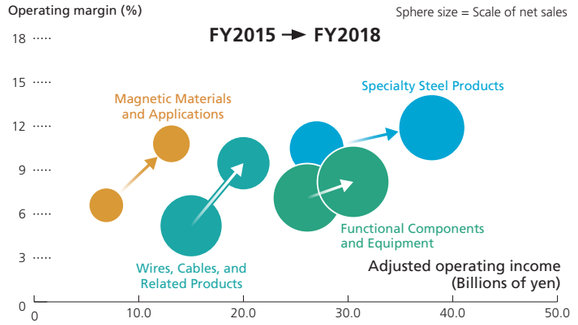
**1 Continuous portfolio remodeling**
- Concentrate on high-profit, high-growth segments
- Use management resources efficiently

**2 Organic growth (from capital expenditure & R&D)**
- Strengthen and accelerate the pace of R&D
- Advance the Corporate *Monozukuri* Innovation Project

**3 Growth through M&As**
- Generate synergistic benefits
- Acquire human resources and achieve rapid commercialization

### Business Portfolio Targets

**Expand business scale and domains while improving profitability**




| | |
|---|---|
| **Specialty Steel Products** | Strengthen the portfolio further as the core business. (Establish materials for industrial equipment as a cash cow, expand aircraft- and energy-related materials, strengthen battery materials.) |
| **Magnetic Materials and Applications** | Enhance and expand business as the core business of the xEV era. |
| **Functional Components and Equipment** | Reinforce casting components for the automobile business and develop new materials that address weight reduction. |
| **Wires, Cables, and Related Products** | Expand the reinforcement of the three focus areas (rolling stock, medical devices, automotive electronic components). Create new business value through synergies with other companies. |

### Fiscal 2018 Plan

(Projected exchange rate: 1USD=¥110)

| | |
|---|---|
| Revenues | ¥1,000.0 billion |
| Adjusted operating income | ¥100.0 billion |
| EBIT | ¥91.0 billion |
| Net income attributable to owners of the parent company | ¥61.0 billion |
| ROA | More than 5% |
| ROE | More than 10% |

### Three-year cumulative targets

| | |
|---|---|
| Operating cash flow | ¥290.0 billion |
| Investment amount (including M&As) | ¥290.0 billion |
| R&D expenses | ¥55.6 billion |

### Dividends

| | Interim dividends | Year-end dividends | Annual dividends |
|---|---|---|---|
| FY2014 | ¥10 | ¥13 | ¥23 |
| FY2015 | ¥13 | ¥13 | ¥26 |
| FY2016 | ¥13 | ¥13 | ¥26 |
| FY2017 | ¥13 (Forecast) | ¥13 (Forecast) | ¥26 (Forecast) |

The numerical targets for the fiscal 2018 plan are based on reviews of foreign exchange assumptions, raw materials prices, and demand trends. With respect to M&As, which involve numerous uncertainties, our targets, announced on April 28, 2017, are the result of conservative reviews.

# Specialty Steel Company

## Basic policy of medium-term management plan

### Achieve growth internationally by focusing on "specialty steel"

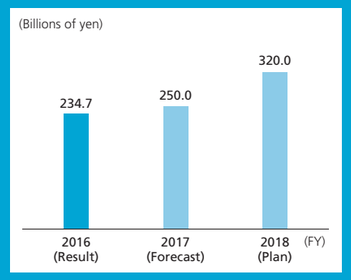
***Monozukuri***: Carry out "eye-opening" manufacturing

**Sales abilities**: Further enhance strength

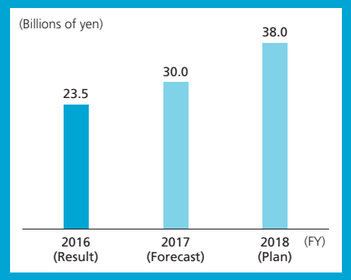
- Reap the benefits of major investments
- Strengthen international locations

## Progress vis-à-vis numerical targets

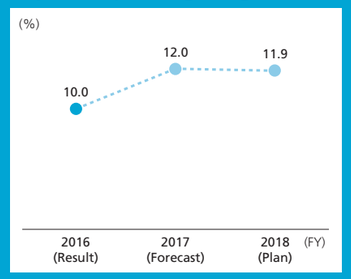
**Revenues**



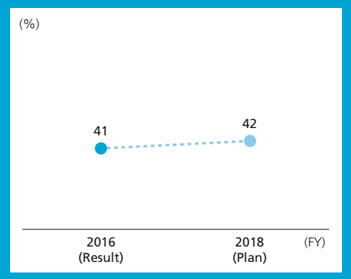

**Adjusted operating income**




**Adjusted operating margin**




**Overseas sales ratio**




## Investment plans

Investment amount: ¥60.0 billion (cumulative total for FY2016–FY2018)

- Key investments in sources of competitiveness
- Strengthen the network for expanding international sales

Secure distribution location in Europe + Expand and strengthen processing locations in the U.S. and Asia

**Koji Sato**
President of the Specialty Steel Company

## Progress of medium-term plan

### Tool steel, aircraft-, and energy-related materials

**Progress**

In tool steel, we acquired the U.S. firm Diehl Steel Company, Inc., centralized our operations, and expanded sales. We are also strongly promoting brand penetration and reinforcement of solution sales in the Americas, Europe, and across Asia, including China.

In aircraft- and energy-related materials, we made large-scale investments, including in a 10,000-ton free forging press and a high-speed radial forging machine. We also formed an alliance with Hitachi Metals MMC Superalloy, Ltd. and Japan Aeroforge, Ltd. Under the alliance, we are setting up a supply system that can handle large components.

**Future priorities**

In aircraft- and energy-related materials, we will promote acquisition of certification and mass production of aircraft engine large disk cases. We will also pursue development of ultra heat-resistant alloys as a new engine material. We have established a research center in collaboration with the National Institute for Materials Science (NIMS), which will work together with our Metallurgical Research Laboratory and GRIT in an organically coordinated manner to pursue R&D initiatives. In addition, we will develop state-of-the-art materials and explore specific applications for them.

**Challenge the world's top three aircraft forging materials manufacturers, and establish a position as the fourth core**

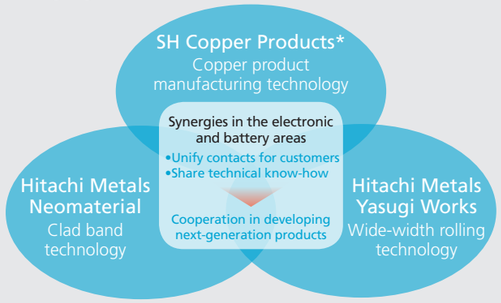
| | | 2010 | 2015 | 2020 |
|---|---|---|---|---|
| Generate synergy among three firms | Hitachi Metals Yasugi Works | | ▼24-ton VIM<br>▼Large VAR | ▼10,000-ton free forging press<br>▼High-speed radial forging machine |
| | Japan Aeroforge | | ▼50,000-ton die forging press | |
| | Hitachi Metals MMC Superalloy | | ▼Made a consolidated subsidiary<br>▼840-ton ring mill | |

### xEV

**Progress**

To address the growing market for xEV, we shifted the business of SH Copper Products Co., Ltd. from the Cable Materials Company to the Specialty Steel Company. Through collaboration between our steel and copper operations, we accelerated development of thin foil, high-strength cladding materials for the battery components market. With respect to soft magnetic components and materials, such as ferrite core, FINEMET®, and Metglas®, we consolidated our materials and components businesses to promote development of xEV drive modules and other products to meet next-generation demand.

**Contribute to customers' increased trust in products and adding higher value**

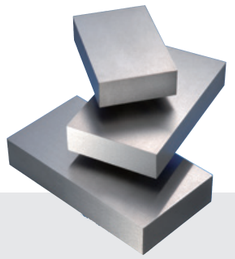



*SH Copper Products Co., Ltd. is scheduled to become Tsuchiura Works of Hitachi Metals Neomaterial, Ltd. in April 2018.

**Future priorities**

Seeking to become a core supplier to the xEV industry, we will focus on battery components, soft magnetic materials, and core materials. We will also invest around ¥7.5 billion in a new supply base for cladding materials at SH Copper Products (which will become the Tsuchiura Works of Hitachi Metals Neomaterial, Ltd. on April 1, 2018). We will also introduce an integrated product line covering everything from materials to processing. By fiscal 2020, we are targeting a threefold sales increase in our cladding materials business, compared with the fiscal 2016 level. To this end, we will implement various growth strategies, such as expanding our product lineup to meet customer needs, boosting production capacity, and strengthening our sales system. In addition, to meet demand for fuel savings in combustion engines, we will make large-scale capital expenditure in Japan and China aimed at increasing production of turbine wheels, piston ring materials, and CVT belt materials.

**YSS**
Yasugi Specialty Steel



**Brand statement**

**YASUGI SPECIALTY STEEL**
OUR HERITAGE, YOUR ADVANTAGE

**By OUR HERITAGE**, we mean the unique manufacturing wisdom and technology that Yasugi Specialty Steel has inherited over many generations, and that is the basis on which we will develop into the future.

**By YOUR ADVANTAGE**, we mean our determination to use our technologies, products, and solutions to bring value, innovation, and growth to our customers all over the world.

Note: YSS is a registered trademark of Hitachi Metals, Ltd.

# Magnetic Materials Company

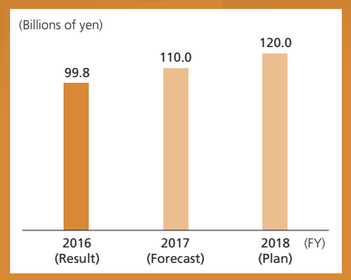
## Basic policy of medium-term management plan

### Innovate *monozukuri* system to pave the way for growth

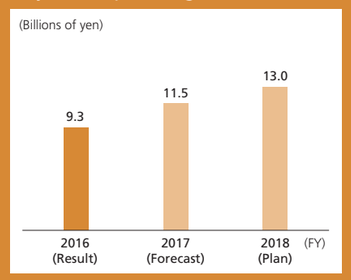
- Strengthen global production system
- Build innovative production lines

## Progress vis-à-vis numerical targets

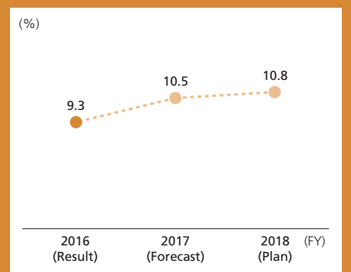
### Revenues



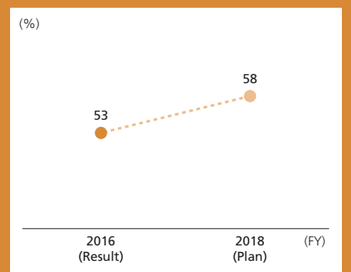

### Adjusted operating income




### Adjusted operating margin




### Overseas sales ratio




**Ryouji Akada**
President of the Magnetic Materials Company

## Investment plans

Investment amount: ¥48.0 billion (cumulative total for FY2016–FY2018)

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

## Progress of medium-term plan

### Progress

In light of increasing environmental awareness, characterized by tightening regulations for $CO_2$ emissions and fuel efficiency in various nations and regions, we expect the production volume of xEV to expand dramatically in China and other countries around the world.

To address such demand, we established Hitachi Metals San Huan Magnetic Materials (Nantong) Co., Ltd., which commenced operations in April 2017. At the Kumagaya Works, meanwhile, we started construction of an innovative production line for neodymium magnets and ferrite magnets.

### Future priorities

At our new innovative production line, we will deploy new production and IoT technologies to realize high production efficiency. At the same time, we will relocate the Magnetic Materials Research Laboratory from the Yamazaki district (Mishima-gun, Osaka) to the Kumagaya district, thus unifying our innovative production line and plant to expedite development of technologies that reflect customer needs.

Through these measures, we will position the Kumagaya Works as a "mother plant" in which the neodymium magnet business and the ferrite magnet business are centrally controlled.

The information system component business of the Magnetic Materials Company will also be centralized within the Kumagaya Works. By consolidating our production bases, we will innovate our *monozukuri* system and speed up development of new manufacturing technologies for our production facilities, including those overseas, and thus expand business.

In technology development, we will increase technology to limit use of heavy rare earth elements for neodymium magnets in an effort to significantly reduce use of heavy rare earth elements. In ferrite magnets, we will develop new compositions and deploy microstructure control technologies and grinding technology for thin products to achieve advances in performance and downsizing.

In addition, we will aggressively invest in magnet alloy manufacturing processes and recycling processes, with the aim of optimizing material flow.

### Carry out *monozukuri* innovations: Innovative production lines

**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

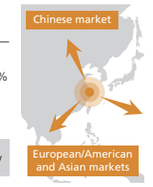
### Expand China business

**Create competitive products with the same quality as those made in 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

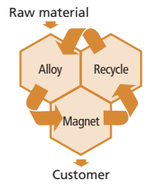
### Optimize material flow

**Conduct unified operation management of manufacturing and recycling process of magnet alloys**

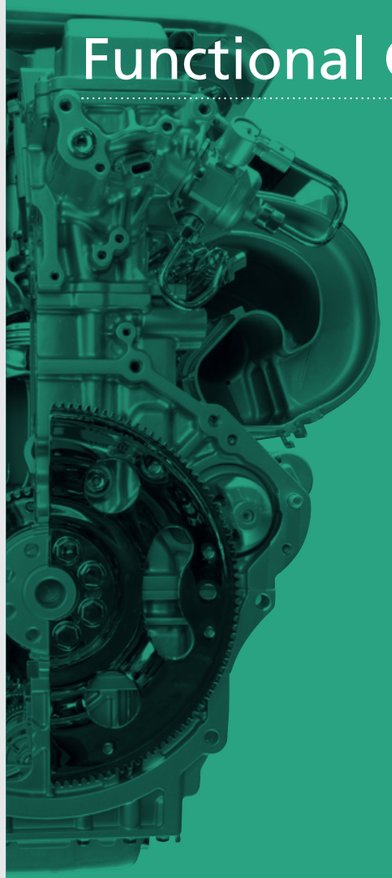
Improve efficiency with consistent process design for magnets

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**



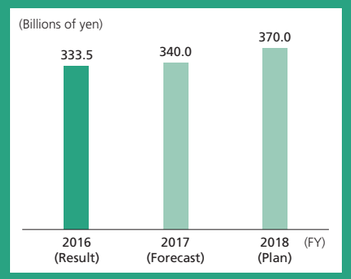
# Functional Components Company

## Basic policy of medium-term management plan

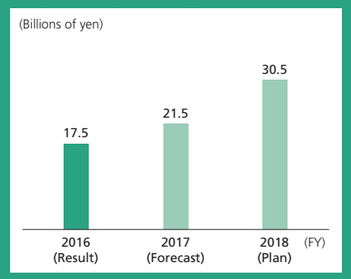
Accept the challenge of creating new value by improving the foundation of *monozukuri* to achieve global growth

## Progress vis-à-vis numerical targets

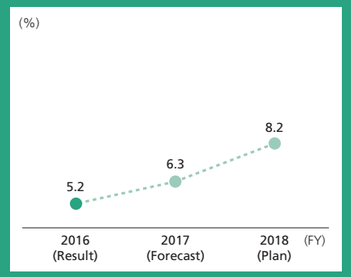
### Revenues



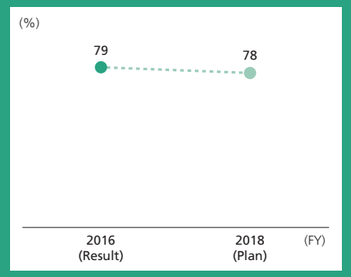

### Adjusted operating income




### Adjusted operating margin




### Overseas sales ratio




## Investment plans

Investment amount: ¥60.0 billion (cumulative total for FY2016–FY2018)

### Cast iron products

- ■ North America (Waupaca Foundry, Inc.)
  - • Horizontal Molding line for large-size cast iron
  - • Ductile cast iron and gray iron
- ■ Asia (Japan, South Korea, India)
  - • Global rollout of high efficiency casting line technology

### Heat-resistant cast components

- ■ Japan (Kyushu Works)
  - • New casting line
  - • New concept machining line
- ■ North America (Waupaca Foundry, Inc.)
  - • New machining line

### Aluminum products

- ■ Japan, North America
  - • Accommodate sophisticated design and large components
  - • Improved productivity and efficiency

### Piping components

- ■ Japan, North America
  - • Enhance flexible piping system capacity
- ■ Japan
  - • High efficiency production line

**Masato Hasegawa**
President of the Functional Components Company

## Progress of medium-term plan

### Cast iron products

**Progress**

In the high-grade ductile cast iron field, we are meeting the need for advances in thinness and lighter weights by deploying our lightweight design, materials, and casting technologies while communicating closely with customers.

In the fields of general-purpose ductile cast iron and gray iron, we have a streamlined production line, thanks to the advanced technological prowess of Waupaca Foundry, Inc., enabling us to utilize distinctive, unique casting equipment to demonstrate our strong competitive edge.

**Future priorities**

At Waupaca Foundry, Inc., we are reconfiguring our ductile cast iron and gray iron factories, transforming both into specialized facilities to achieve enhanced efficiency. We are also planning to introduce large-scale casting machines to strengthen our ability to address heavy-duty needs for commercial vehicles, construction machinery, and agricultural machinery. We will also expand our business domains to address the need for high value-added solutions.

Regarding machine processing technologies, in addition to our existing HERCUNITE™ heat-resistant cast components, we will address the need for materials other than cast iron to increase added value.

**High-Grade Ductile Cast Iron**

■ Ability to design high strength and high tensile strength materials (dialogue with customers and CAE technology)

↓

**Addresses requirements for thin and lightweight products**

**General-Purpose Ductile Cast Iron and Gray Iron**

■ High efficiency, thanks to production technology prowess
■ Huge production volume, thanks to production control technologies

↓

**Further advancement into high value-added products**

### Heat-resistant cast components (HERCUNITE™)

**Progress**

Between 2017 and 2021, the global market for gasoline turbo-powered automobiles is expected to grow 10%, and we look forward to continued steady demand. To meet such demand, we commissioned a new casting line at the Kyushu Works in October 2016. In March 2017, we commissioned a new-concept machining line to improve processing efficiency. We also started a machining line in the Americas.

**Future priorities**

Going forward, we will optimize casting conditions and deploy IoT-based analysis to enhance yields and product quality, targeting a 15% improvement in productivity and operating margin.

**Response to Growing Demand**

■ Enhanced production capacity (+80%) vs. 1H FY2016

| | |
|---|---|
| ● New casting line | Operation Oct. 2016 |
| ● New concept machining line | Operation Mar. 2017 |
| ● Development of Americas machining line | Under development gradually |

**Production capacity**
750 tons/month (1H FY2016)
↓
1,350 tons/month (FY2017)

### Aluminum products

**Progress and future priorities**

There is a growing need for aluminum components for use in xEV and other automobiles with exceptional environmental performance. To meet advanced market needs with respect to lighter weights, thinness, complex form, sophisticated design, high heat dissipation, and the like, we will focus on developing xEV components as part of a plan to expand our business. Here, we will deploy our high-precision CAE technologies and diverse casting methods, as well as our strengths in composite materials and bonding technologies derived through collaboration with GRIT.

# Cable Materials Company

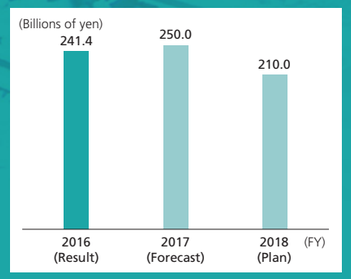
## Basic policy of medium-term management plan

### Change to a high-profit structure by strengthening core products and expanding growth areas

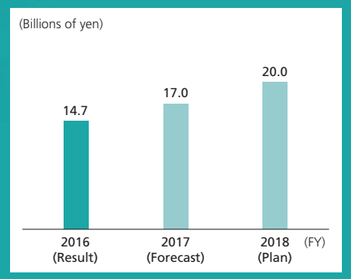
- Enhance competitiveness of core products through technical innovation
- Concentrate injection of managerial resources into three growth areas
- Seek synergies with other companies in the xEV and FA areas

## Progress vis-à-vis numerical targets

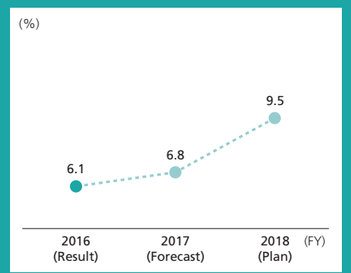
**Revenues**



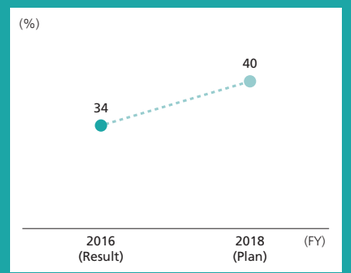

**Adjusted operating income**




**Adjusted operating margin**




**Overseas sales ratio**




**Kazuya Murakami**
President of the Cable Materials Company

## Investment plans

Investment amount: ¥22.0 billion (cumulative total for FY2016–FY2018)

### Investment in growth

- Strengthen the rolling stock and medical devices fields, also keeping M&As in mind
- Enhance an innovative wire and cable manufacturing line (Scheduled for operation in the 2H of FY2017)
- Strengthen global supply system for automotive electronic components

### Strengthening core products

- Introduce a new continuous casting and rolling line (Scheduled for operation in Apr. 2018)
- Introduce an innovative production line for magnet wires (Scheduled for operation in the 1H of FY2018)

## Progress of medium-term plan

### Growth fields (rolling stock, medical devices, and automotive electronic components)

**Progress**

In the process of strengthening our profit structure through portfolio remodeling, we are concentrating injection of managerial resources in the three growth areas of rolling stock, medical devices, and automotive electronic components. In rolling stock, we expanded production facilities in China, commenced mass production of harnesses in the Czech Republic, and worked in other ways to reinforce our global supply system and solution sales system. In medical devices, we started mass production with the opening of a new plant at HTP-Meds, LLC, which we acquired in February 2016. In automotive electronic components, we introduced new production lines for sensors and harnesses in Japan and Mexico.

**Future priorities**

With multiple railway construction projects planned around the world, we expect the rolling stock market to grow an average of 3% annually over the next 20 years. In this field, we will strengthen our manufacturing bases for the global market while expanding sales by reinforcing our consulting capabilities centered on products and solutions. In medical devices, where we anticipate average annual market growth of 5% through 2021, we will expand our tube business and enhance cost competitiveness of probe cables by deploying the strengths of HTP-Meds, LLC in such areas as tubes with irregular forms and pressure-resistant braiding tubes. In automotive electronic components, we will focus on electric parking brake (EPB) harnesses integrated with ABS, where we distinguish ourselves from the competition, while expediting development of new sensors. We will also actively strengthen our global supply system for electronic components by reinforcing bases in Mexico, Thailand, and China.

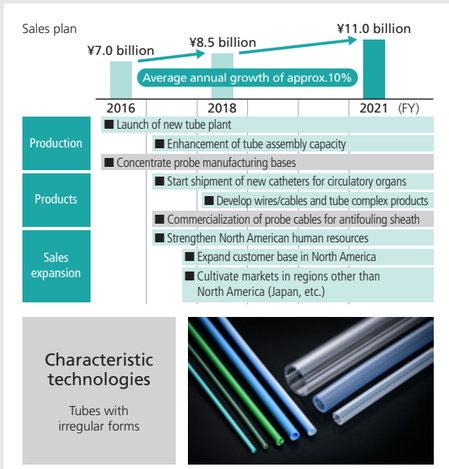
### Core products

**Progress and future priorities**

Our core products include wires and cables for construction and electronics, as well as magnet wires and brake hoses. Seeking to strengthen competitiveness through manufacturing process innovation, we will introduce a new continuous casting and rolling line and an innovative magnet wire production line, both featuring the latest IoT-based control technologies.

The new continuous casting and rolling line, scheduled to start operation in April 2018, will enable full-scale mass production of HiFC™, our proprietary high-performance pure copper. It will also lead to significant improvements in energy efficiency and productivity. Meanwhile, we will exploit the features of magnet wire—which contributes to motors' higher voltage, smaller size, lighter weight, and longer life—to expand our business in the xEV market. In addition, we aim to generate synergies with the Magnetic Materials Company, which also targets the xEV market.

**Business expansion in the medical devices field**

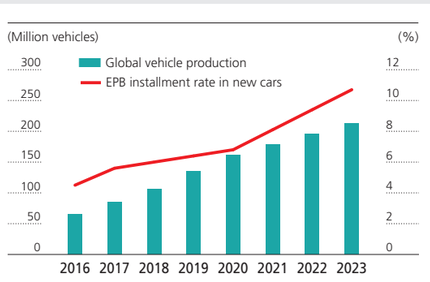



**Characteristic technologies**

Tubes with irregular forms



**Expand the EPB harness business**




Source: Hitachi Metals' estimate based on various materials

**Differential products**

Inject EPB harness integrated with ABS

**Comparison of sales between FY2016 and FY2018**

Sales targets in growth fields (rolling stock, medical devices, and automotive electronic components)
¥44.5 billion (FY2016) ▶ ¥53.5 billion (FY2018)