

# Business Strategy of the Advanced Metals Division

Hitachi Metals IR Day 2019

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Hitachi Metals, Ltd.

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# Business Strategy of the Advanced Metals Division

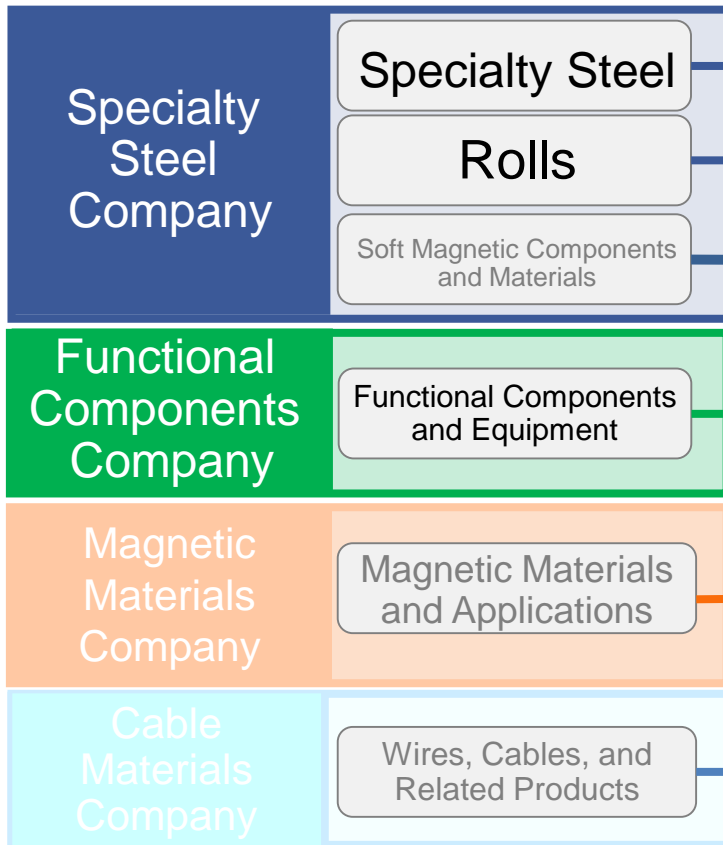
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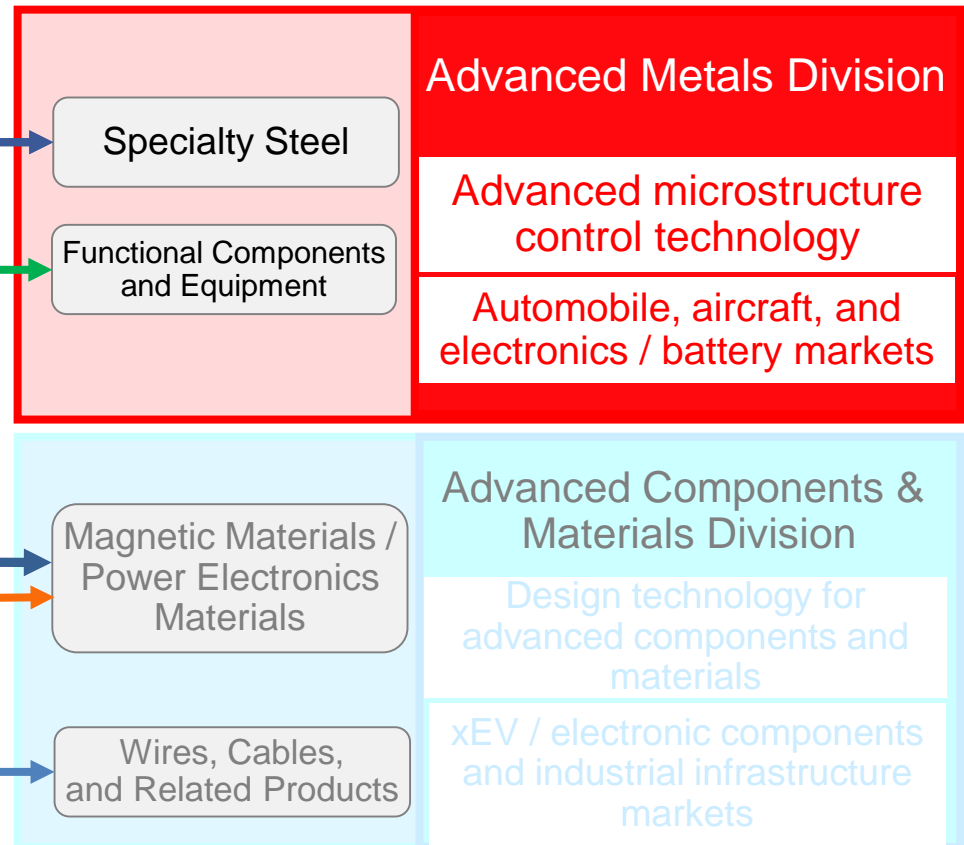
## Shift to divisional organization

- Commonality between markets / customer needs / elemental technologies  
→ Maximize the synergy between segments
- Use resources effectively and enhance the function of strategic management & governance

### ■ Before organizational restructuring

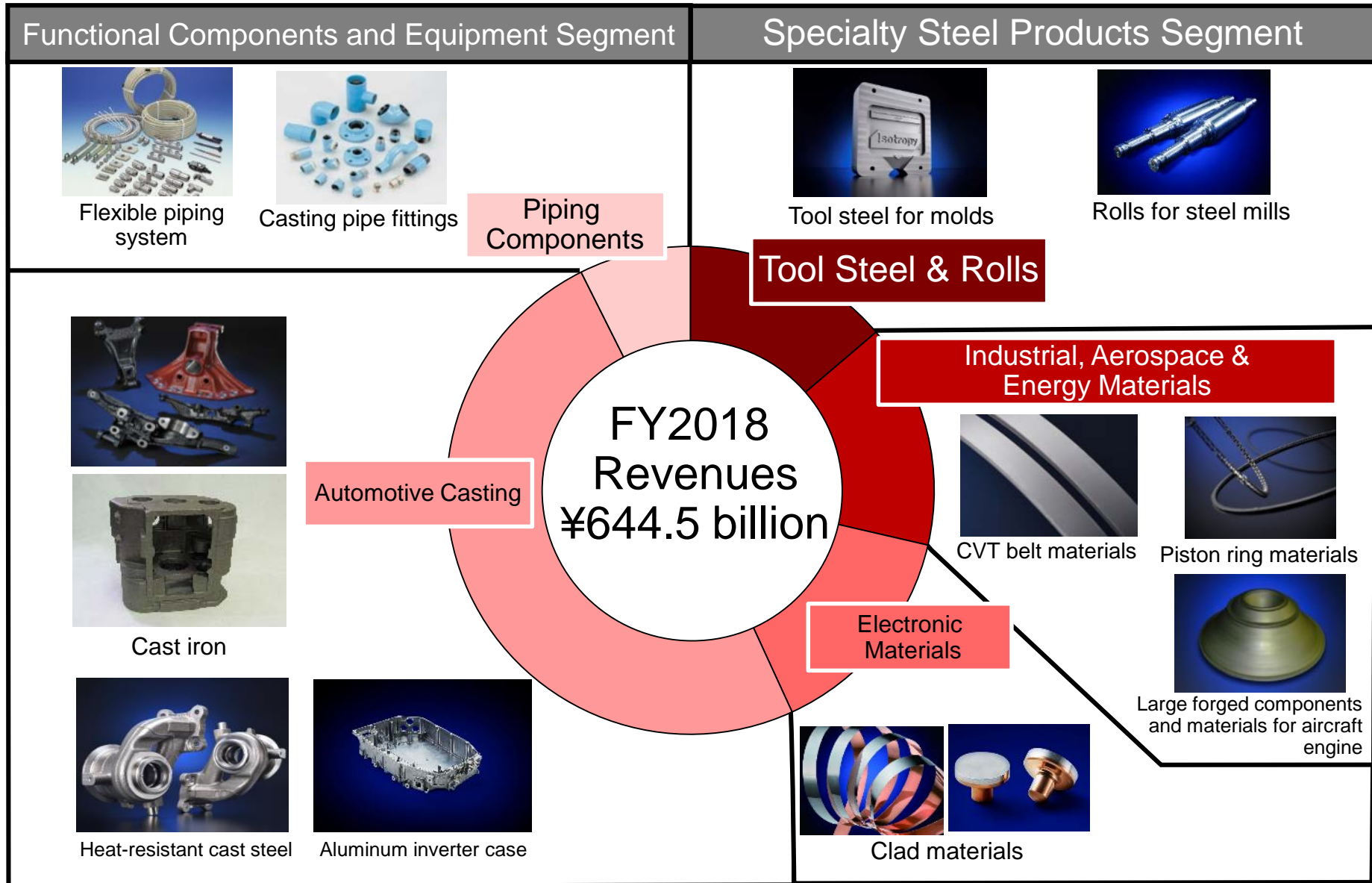


### ■ After organizational restructuring



# 1-2. Advanced Metals Division: Business Overview (2)

## Sales Mix



# 1-3. Advanced Metals Division: Business Overview (3) Market

Offer a lineup of “Only 1, No.1” products in the automotive, industrial infrastructure, and electronics markets

## Industrial infrastructure

### Specialty Steel Products



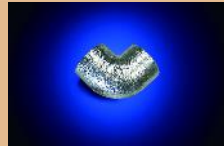
Rolls for steel mills



Turbine case



Turbine blade



Piping components

30%

Sales ratio breakdown

## Automobiles



Tool steel for molds



Piston ring materials



CVT belt materials



Turbine wheels



Suspension parts



Turbo housing



Inverter case

50%

(Passenger vehicles: 35%, other transportation equipment including commercial vehicles: 15%)

## Electronics



Lead frame materials



Clad materials for batteries, heat dissipation materials, and terminals



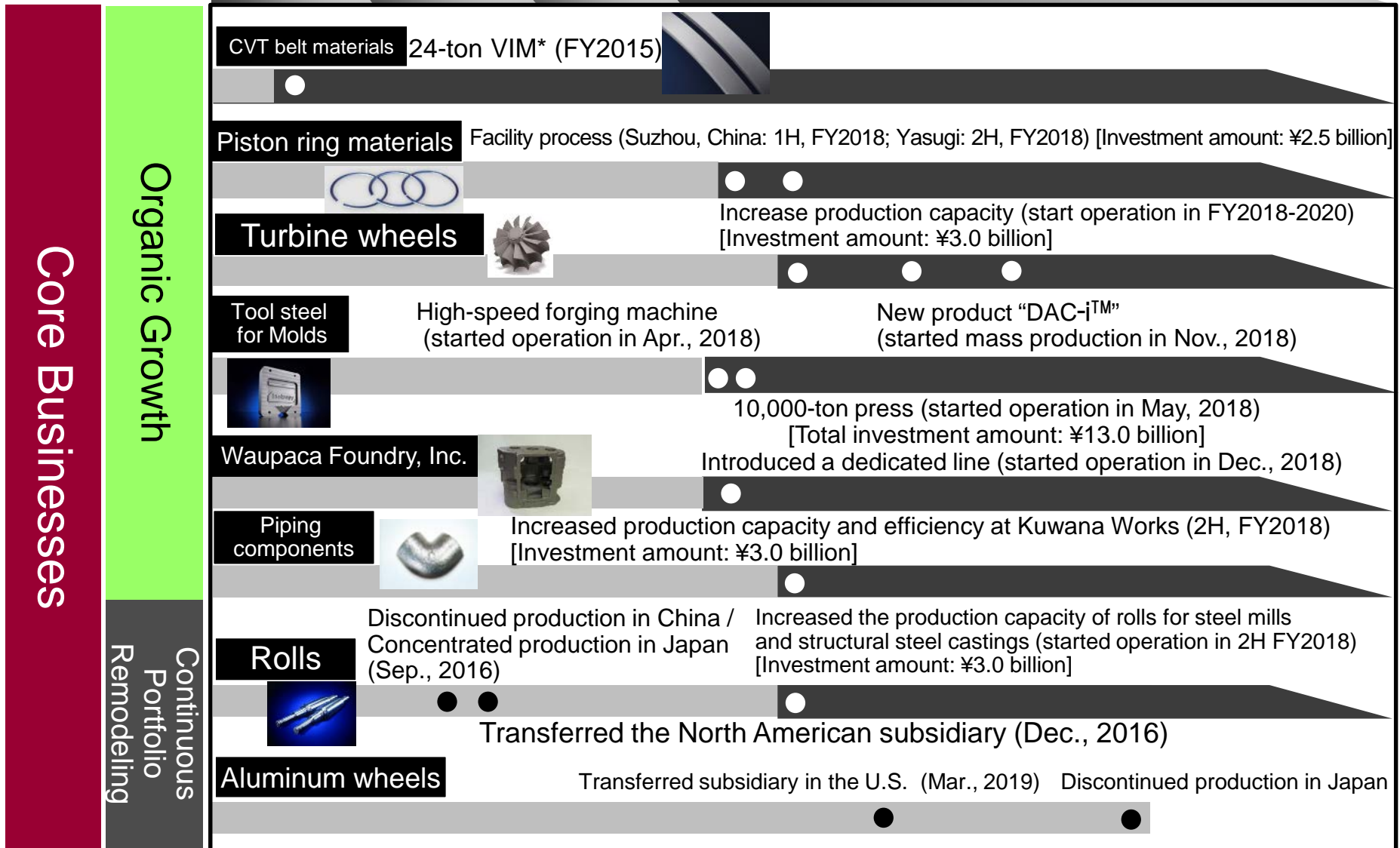
Organic EL materials



Massflow controller

20%

# 1-4. FY2018 Medium-term Management Plan Overview of Efforts (1): Core Businesses







\*VIM: Vacuum Induction Melting & Casting

# 1-5. FY2018 Medium-term Management Plan

## Overview of Efforts (2): Growing Businesses



|  |                    | -FY15   | FY16 | FY17   | FY18-   |  |
|--|--------------------|---|------|--|---|--|
| Growing Businesses   | Organic Growth     | Clad materials  |      |   | Hitachi Metals Neomaterial, Ltd.<br>Increased production capacity at Tsuchiura Works (2H, FY2018) [Investment amount: ¥7.5 billion] |  |
|  |                    | Merged Hitachi Metals Neomaterial, Ltd. and SH Copper Products Co., Ltd. (Apr., 2018) |      |  |   |  |
|  |                    | Organic EL materials  |      |   | Wide line of Yasugi Works (start operation in FY2020) [Investment amount: ¥9.0 billion]   |  |
|  | Growth through M&A | Aircraft and energy materials   |      |   | High-speed forging machine (Apr., 2018)   |  |
|  |                    | 24-ton VIM (FY2015)   |      |  | 10,000-ton forging press (May, 2018)  |  |
|  |                    | Made Hitachi Metals MMC Superalloy, Ltd. a subsidiary (FY2014)                        |      | Established Hitachi Metals Okegawa Works (Apr 2018)                                |   |  |
| 840-ton ring mill in Okegawa (started operation in 2H, FY2016) [Investment amount: ¥5.0 billion] |                    |   |      |  |   |  |

# 1-6. FY2018 Medium-term Management Plan Challenges

Increased inventories

Delay in reaping the benefits of the large-scale investments made at the production sites in Japan



In the light of the challenges, the FY2021 Medium-term Management Plan was developed for the Advanced Metals Division that can create synergies between each business.



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# Basic Policy of the Advanced Metals Division

## Moving Forward Together!

Aim to become the “No.1 high-performance business structure for advanced metals” through collaborative creation with customers

### FY2021 Targets

|                 |                                     | ¥ billions                              | FY2018 Actual<br>US\$1 = ¥111<br>€1 = ¥128<br>1 yuan = ¥16.5 | FY2019 Forecast<br>US\$1 = ¥110 | FY2021 Targets<br>US\$1 = ¥105 | vs. FY2018 |
|-----------------|-------------------------------------|---|--|---------------------------------|--------------------------------|------------|
|                 |                                     | Profit margin in brackets               |  |                                 |                                |            |
| Advanced Metals | Specialty Steel Products            | Revenues                                | 276.9  | 280.0                           | 320.0                          | +16%       |
|                 |                                     | Adjusted operating income <sup>*2</sup> | [8.1%] 22.4  | [7.5%] 21.0                     | [10.3%] 33.0                   | +10.6      |
|                 |                                     | ROIC <sup>*3</sup>                      | 6.3%   | 5.5%                            | 8.6%                           | +2.3%      |
|                 | Functional Components and Equipment | Revenues                                | 367.6  | 350.0                           | 350.0                          | -5%        |
|                 |                                     | Advanced operating income               | [2.9%] 10.5  | [4.3%] 15.0                     | [6.9%] 24.0                    | +13.5      |
|                 |                                     | ROIC                                    | -0.6%  | 3.7%                            | 6.8%                           | +7.4%      |
|                 | Total <sup>*1</sup>                 | Revenues                                | 644.5  | 630.0                           | 670.0                          | +4%        |
|                 |                                     | Advanced operating income               | [5.1%] 32.9  | [5.7%] 36.0                     | [8.5%] 57.0                    | +24.1      |
|                 |                                     | ROIC                                    | 2.7%   | 4.6%                            | 7.8%                           | +5.1%      |

\*1 Simple sum before eliminating intersegment revenues

\*2 Adjusted operating income = Revenues – Sales cost – Selling, general & administrative expenses

\*3 ROIC by segment = IFRS operating income \* (1 – Tax rate of 30%) / (Average of beginning- and end-year working capital + Average of beginning- and end-year fixed assets)

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Resolve the challenges and implement the growth strategy

Reduce inventories

Create synergy between businesses

Materials & Process Innovation

Ongoing restructuring of business portfolio

Take the best advantage of large-scale investments

## Reduce inventories

Steadily implement the action plan, and control the inventories strictly with KPIs (ROIC, etc.)

## Create synergy between businesses

Implement a cross-selling approach

Identify needs in the overlapping markets of specialty steel products and functional components and equipment.  
Implement combined proposals

Improve management efficiency

Strategically allocate management resources to the growth areas

## Materials & Process Innovation

Develop new alloys and process

Merge and advance micro-structural control, alloy building, and production technology

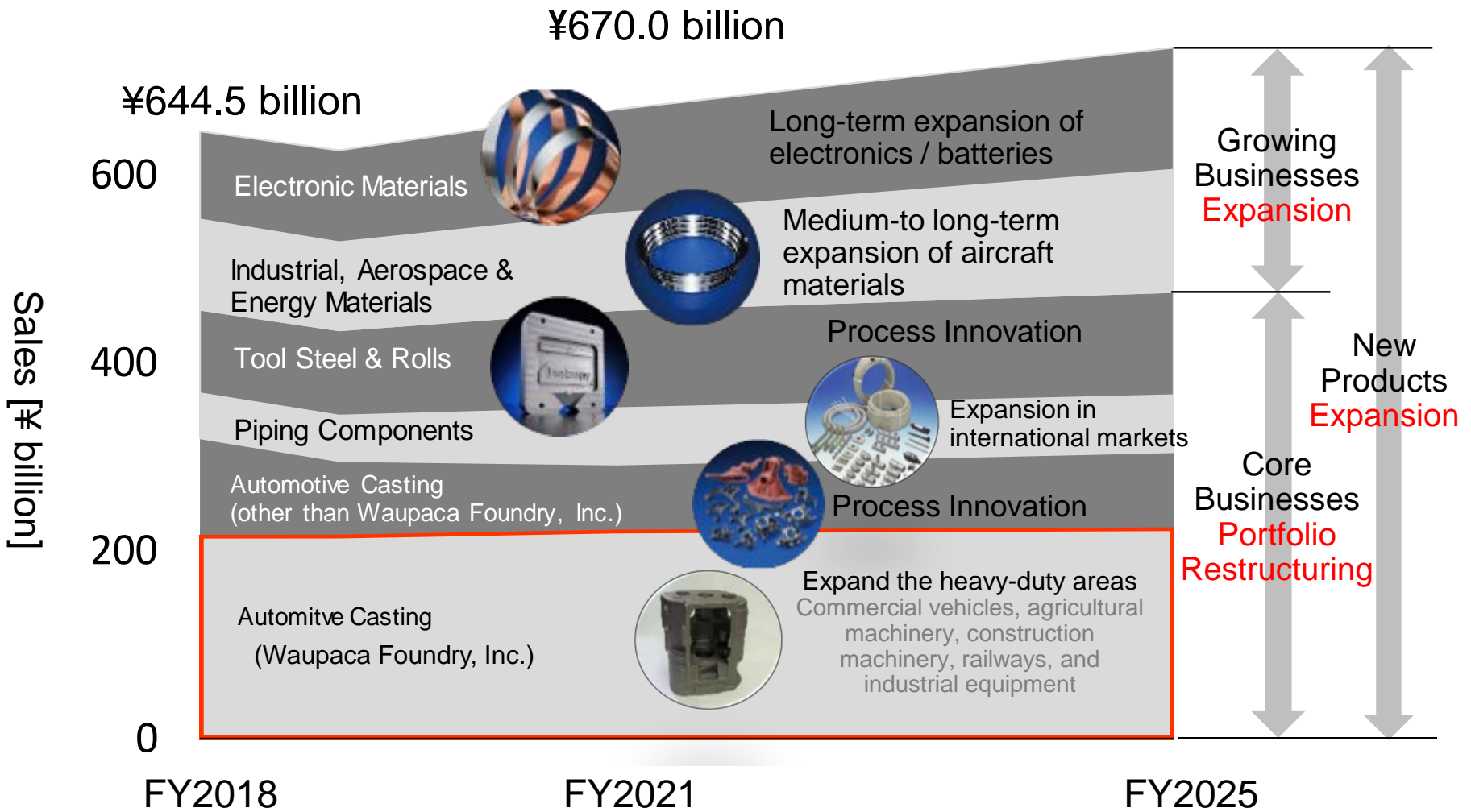
Cooperate and create collaboratively with customers and outside research institutions

**[Case example]** Develop new products that meet the needs of customers



Powder materials for 3D printer and metal injection molding (MIM) products, etc.

## Ongoing Restructuring of Business Portfolio (1)



# 3-3. Action Plan: Details (3)

## Automotive Casting

### Ongoing Restructuring of Business Portfolio (2)

|                                       |   |
|---------------------------------------|---|
| Commercial Vehicles                   | An increase in demand for transportation              |
| Agricultural / Construction Machinery | Population growth → an increase in crop yield         |
| Railways                              | Demand rises around the world                         |
| Industrial Equipment                  | An increase in demand for complicated shaped products |

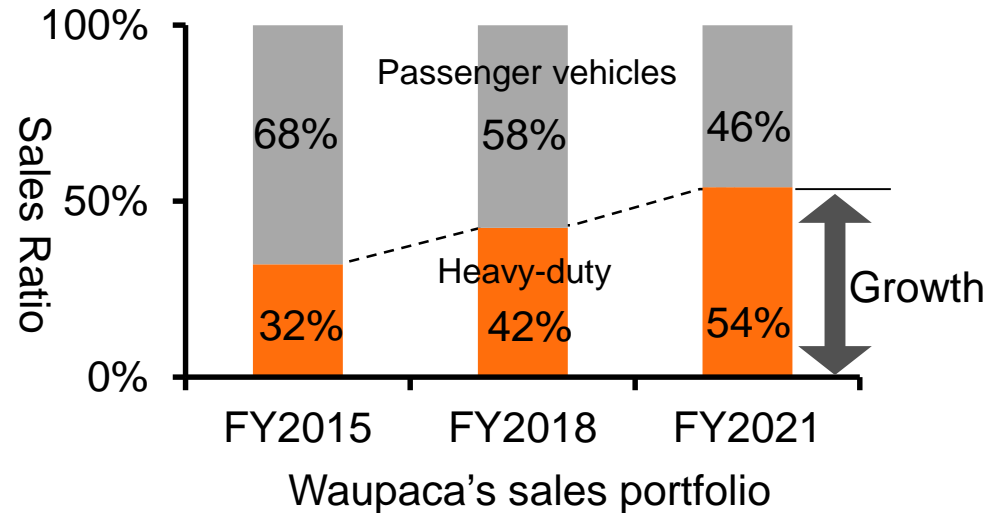


Expand the heavy-duty areas  
 Commercial vehicles, agricultural machinery, construction machinery, railways, and industrial equipment

**Address the need for high added value**

#### Measures

|                            |  |
|----------------------------|--|
| Improve productivity       | <ul style="list-style-type: none"> <li>Introduce a dedicated line</li> <li>Talent development</li> <li>Post-process automation</li> </ul>                                |
| Expand heavy-duty products | <ul style="list-style-type: none"> <li>Form a business alliance with Kohler Industrial Castings and Dotson Iron Castings that own horizontal molding machines</li> </ul> |



**Sales portion of heavy-duty: FY2018 42% → FY2021 54%**

## Take the best advantage of large-scale investments (1)

Core Businesses

|   |   |
|---|---|
| <p><b>Tool Steel for Molds</b></p>        | <p>Yasugi Works 10,000-ton forging press (started operation in May, 2018)<br/>Respond to larger molds and expand the sales of new products such as DAC-i</p>  |
| <p><b>Rolls</b></p>                       | <p>Increase production efficiency and capacity (started operation in 2H FY2018)<br/>Expand sales of rolls for steel mills and structural steel castings</p>   |
| <p><b>Industrial Equipment</b></p>        | <p>Increase the production capacity of turbine wheels (start operation sequentially from FY2018 to 2020)<br/>Expand sales to the growing global turbo market</p>  |
|   | <p>Increase the production capacity of piston ring materials (started operation in 1H FY2018 in China and in 2H FY2018 at Yasugi)<br/>Responded to the needs for better fuel efficiency of internal-combustion engine</p> |
| <p><b>Automotive Casting Products</b></p> | <p>Introduced a dedicated line at Waupaca (started operation in Dec 2018)<br/>Improved productivity and expand the heavy-duty areas</p>   |
| <p><b>Piping Components</b></p>           | <p>Increased the system capacity of flexible piping at Kuwana Works (started operation in 2H FY2018)<br/>Expanded sales in the Chinese and European markets</p>   |



10,000-ton forging press



New building for structural steel castings



Production site of piston ring materials in China

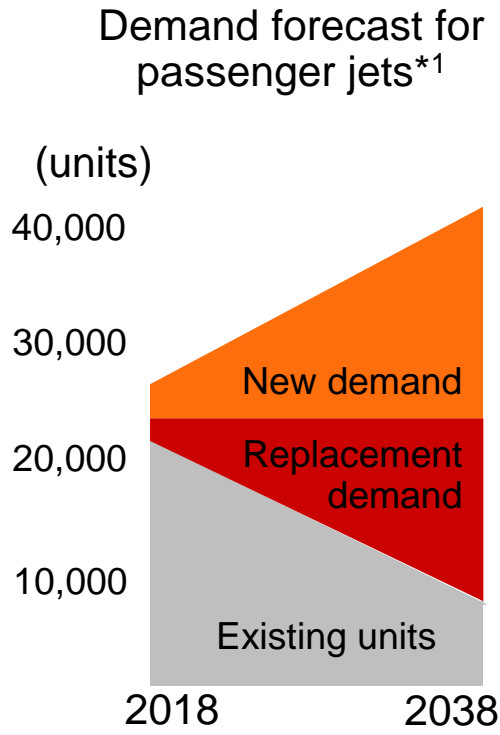


# 3-4. Action Plan: Details (5) Aircraft-related Components and Materials

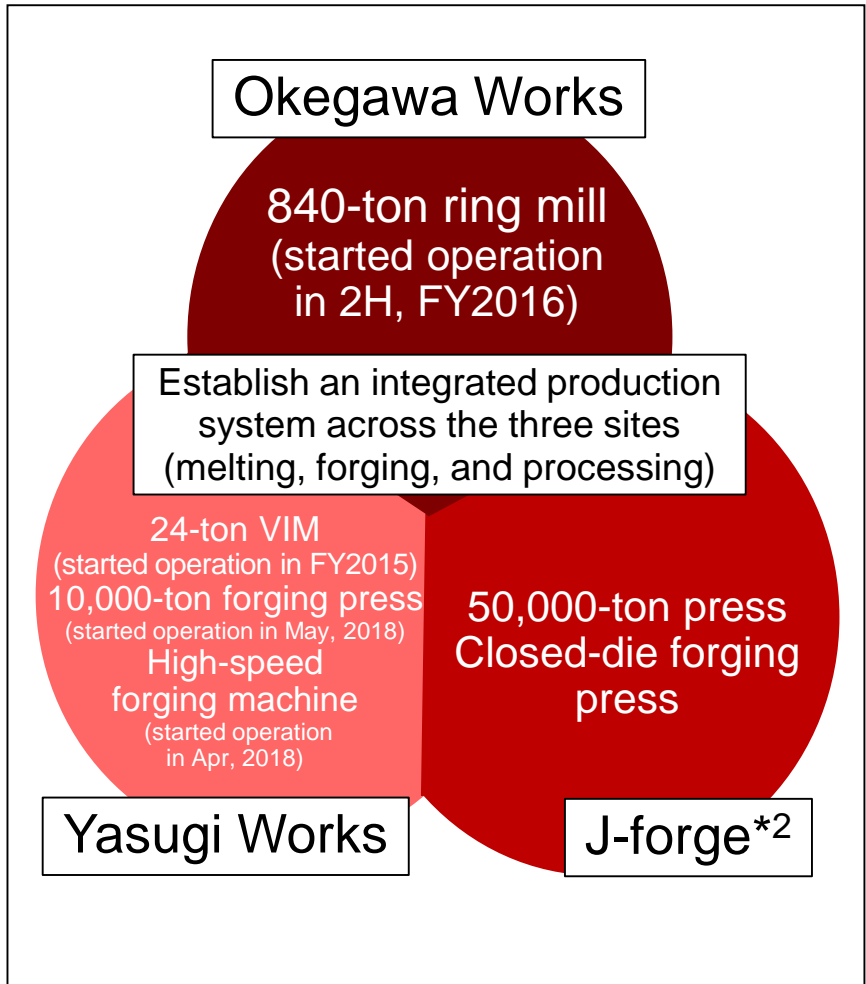
## Take the best advantage of large-scale investments (2)

Growing Businesses

Aircraft / Energy



\*1: Reference: Our estimation by reference to various materials



\*2: Japan Aeroforge, Ltd.

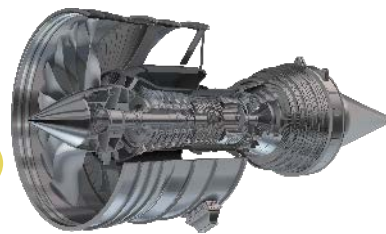
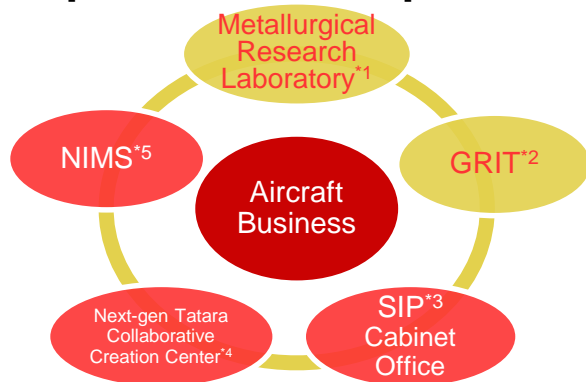
# 3-5. Action Plan: Details (6)

## Aircraft-related Components and Materials

### Take the best advantage of large-scale investments (3)

Establish an integrated production system across the three sites  
(melting, forging, and processing)

- 1) Speed up melting certification
- 2) Increase production efficiency through domestic integrated production system
- 3) Utilize CAE → Reduce design cost and certification period
- 4) Develop new alloys and process technology  
[collaborative creation]



**[Topics]**  
Started mass production of aircraft engine-related components and materials for IHI Corporation (from FY2018)



- \*1: Metallurgical Research Laboratory, Advanced metals Division, Hitachi Metals, Ltd.
- \*2: Global Research & Innovative Technology Center, Hitachi Metals, Ltd.
- \*3: The Cross-ministerial Strategic Innovation Promotion Program, Cabinet Office
- \*4: Next Generation **Tataru** Co-Creation Centre, Shimane University
- \*5: National Institute for Materials Science

### Strengthen business with Engine Prime (the world's top)

- 1) Enter the business of core engine components
- 2) Introduce new next-generation products such as isothermal forging, MIM, and precision (investment) casting to the market

To become the world's top four

FY2025 Sales of Aircraft Components and Materials: ¥60.0 billion

## Take the best advantage of large-scale investments (4)

Growing businesses

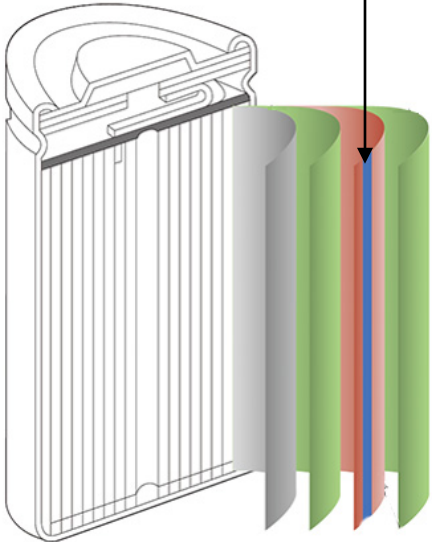
Electronic Materials

| Clad materials  | Organic EL materials   |
|---|--|
|    |  |
|  |  |

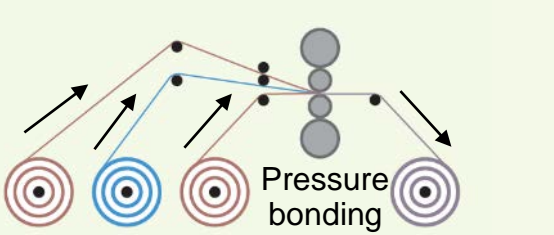
Maintain high growth through electrification of automobiles and higher smartphone performance

**Clad metals**

- Composites of dissimilar metals such as copper and aluminum
- Polish surface of metals and bond them together by applying pressure or heat (pressure bonding)
- Exhibit properties that cannot be achieved by one type of metal, including conductive property, processability, thermal expansivity, and corrosion resistance.



lead material to collect current



Composites                      Clad metals

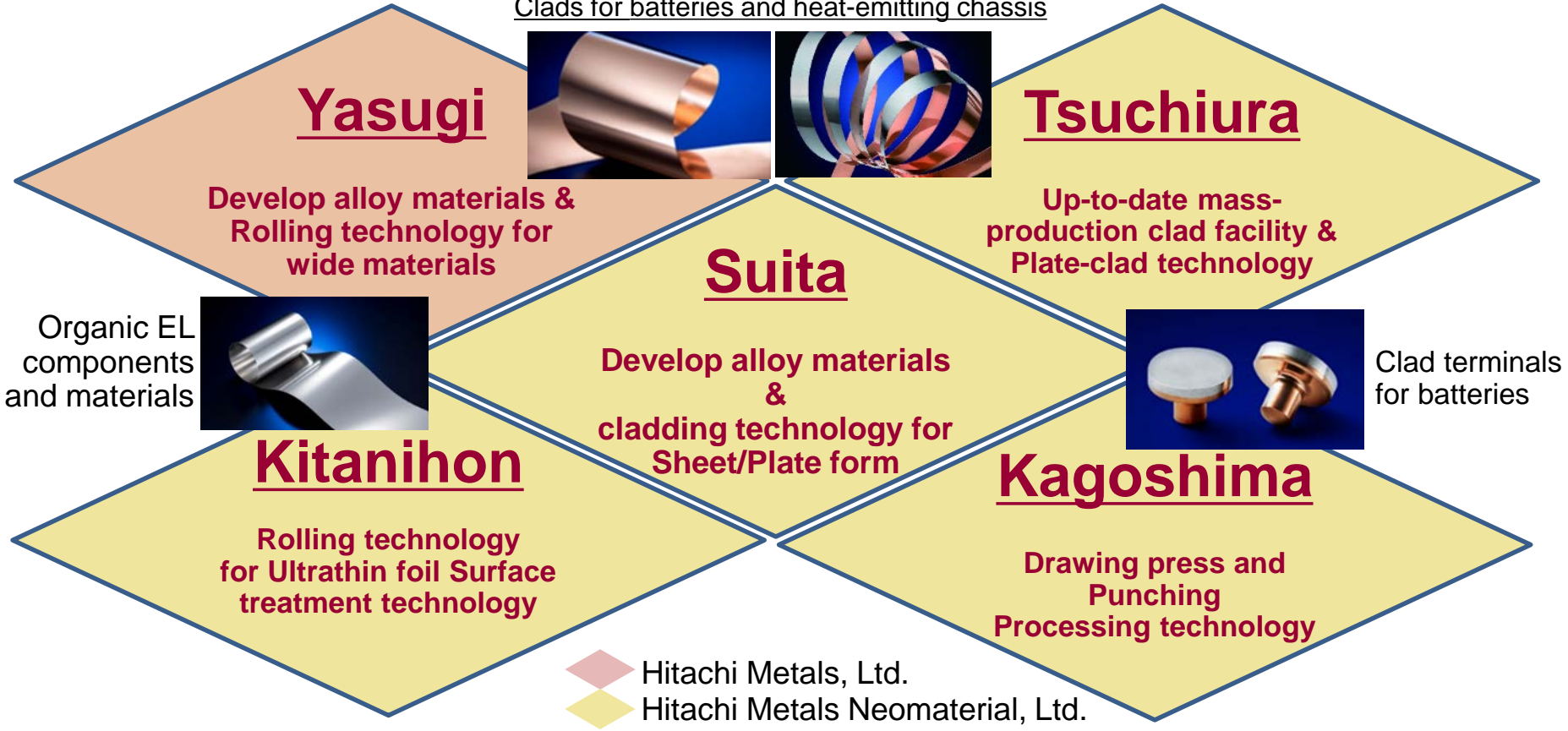
An image of clad metal process

**Application:**  
 External battery terminal  
 Lead material  
 Heat-emitting chassis  
 Heat spreader  
 Coins  
 Bimetal, etc.

## Take the best advantage of large-scale investments (5)

Bring clad metals to a new area by merging the technologies specific to the production sites

Clads for batteries and heat-emitting chassis



FY2021 Sales of Electronic Materials Business: add 14% (vs.FY2018)

### Process Innovation

- Promote automation  
Automate finishing at Waupaca, etc.

### Investments to increase production

- Wide processing line for electronic materials at Yasugi Works
- Facility to increase the production capacity of turbine wheels

**Capital Expenditure from FY2019 to 2021: ¥107.0 billion**  
(vs. previous Medium-term Management Plan: approx. 70%)

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| ¥ billions<br>Profit margin in brackets | FY2018 Actual | FY2021 Targets | vs. FY2018 |
|---|---------------|----------------|------------|
| Revenues                                | 644.5         | 670.0          | +4%        |
| Adjusted operating income               | [5.1%] 32.9   | [8.5%] 57.0    | +24.1      |
| ROIC                                    | 2.7%          | 7.8%           | +5.1%      |

**This document contains forward-looking statements, such as results forecasts, management plans and dividend forecasts, 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:**

- Risks associated with market conditions related to product demand
- Risks associated with changes in raw material prices
- Risks associated with financing activities
- Risks associated with changes in foreign exchange rates
- Risks associated with changes in the value of securities
- Risks associated with the global expansion of businesses
- Risks associated with competitiveness and development and commercialization of new technologies and products
- Risks associated with intellectual property rights
- Risks associated with environmental regulations
- Risks associated with product defects
- Risks associated with laws and regulations, and official regulations
- Risks associated with earthquakes and other natural disasters
- Risks associated with information security
- Risks associated with retirement benefit obligations
- Risks associated with relationship with the parent company
- Risks associated with M&A
- Risks associated with securing talent