Business Strategy of the Functional Components Company

Hitachi Metals IR Day 2017

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Hitachi Metals, Ltd.

Masato Hasegawa
Vice President and Executive Officer
President of the Functional Components Company
Business Strategy of the Functional Components Company

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1. Business Overview
1-1. Business Composition

Addressing Society’s Needs with Functional Components

- Cast Iron Business
- Piping Components Business
- Heat-Resistant Cast Steel Business
- Aluminum Business

FY2016 Revenues ¥333.5 bn

Mobility area
1. Business Overview
1-1. Business Composition

Addressing Society’s Needs with Functional Components

Cast Iron Business
- Passenger cars
- Construction and agricultural machinery
- Industrial machinery and others

Piping Components Business

Heat-Resistant Cast Steel Business

Aluminum Business

FY2016 Revenues ¥333.5 bn

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## 1-2. Market Trends and Strategy (Mobility Area)

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Required needs</th>
<th>Response</th>
<th>Our product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combustion system</td>
<td>High mileage Low cost</td>
<td>Conformity to heat-resistance requirements</td>
<td>Diverse heat-resistant components technology</td>
</tr>
<tr>
<td></td>
<td>Small gasoline turbo</td>
<td>Design, casting, machining Response ability of locations</td>
<td>Strengthen design &amp; evaluation, machining</td>
</tr>
<tr>
<td>EV</td>
<td>Diversified specifications</td>
<td>Form, size, material</td>
<td>Accommodate gravity casting, LPD<em>1, HPD</em>2 methods</td>
</tr>
<tr>
<td></td>
<td>Multi-functional</td>
<td>Combine light-weight and heat dissipation</td>
<td>Develop new materials and methods</td>
</tr>
<tr>
<td>Chassis (Structural components) (Suspension components)</td>
<td>Low cost</td>
<td>Optimization of materials x strength design</td>
<td>Aluminum-based composite material</td>
</tr>
<tr>
<td></td>
<td>Light weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quantitative response ability</td>
<td>Response ability of regional supply</td>
<td>Japan, U.S., S. Korea, India</td>
</tr>
<tr>
<td>Non-passenger cars</td>
<td>Load bearing Low cost</td>
<td>Stable supply</td>
<td>Waupaca</td>
</tr>
<tr>
<td></td>
<td>Accommodate large size</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Large casting</td>
<td>Horizontal casting technology</td>
</tr>
</tbody>
</table>

*1 LPD: Low-pressure die-cast; *2 HPD: High-pressure die-cast; *3 CFRP: Carbon fiber reinforced plastic
1-3. Strengths of the Functional Components Business

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales ability Planning and proposal skills</td>
<td>Selection of quality materials; Lightweight, slim design</td>
</tr>
<tr>
<td>Extensive product line-up</td>
<td>Iron, stainless steel, aluminum, plastic</td>
</tr>
<tr>
<td>Development capabilities</td>
<td>Global Research &amp; Innovative Technology Center (GRIT)</td>
</tr>
<tr>
<td></td>
<td>Casting Technology Research Laboratory</td>
</tr>
<tr>
<td>Technical capabilities</td>
<td>Design, casting, machining, coating, evaluating</td>
</tr>
<tr>
<td>Manufacturing efficiency</td>
<td>World’s largest manufacturing scale, manufacturing efficiency</td>
</tr>
</tbody>
</table>
1-4. Optimization of Business Portfolio

**Cast Iron, Heat-Resistant Cast Steel Business**

- Heat-resistant cast steel (HERCUNITE™)
- High-grade ductile cast iron
- General-purpose ductile cast iron
- Gray iron

→ High-performance
- High added value
- Agricultural, construction, industrial machinery needs

→ Expand business domains
- Maximize added value

**Aluminum Business**

- High performance aluminum components (EV-related products)
- Aluminum wheels with sophisticated design
- General-purpose aluminum wheels

→ New materials
- New methods
- Expand die-cast business

Launch heat-resistant cast steel business in North America (Waupaca)

→ Establish global manufacturing structure

Plant specialized in ductile cast iron & introduce large horizontal casting

→ Expand business domains
- Maximize added value

HIVAC-V®
1-5. FY2018 Medium-term Management Plan: Basic Policy and Goals

Basic Policy of the Functional Components Company

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

FY2018 Medium-term Management Plan: Goals

<table>
<thead>
<tr>
<th>FY2016 Results (¥108 = US$1)</th>
<th>FY2018 Goals (¥110 = US$1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>¥333.5 bn</td>
</tr>
<tr>
<td>Adjusted operating income</td>
<td>¥17.5 bn</td>
</tr>
<tr>
<td>Adjusted operating margin</td>
<td>5.2%</td>
</tr>
<tr>
<td>Overseas sales as a percentage of total sales</td>
<td>79%</td>
</tr>
</tbody>
</table>
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# 2. Heat-Resistant Cast Steel (HERCUNITE™) Business

## 2-1. Market Environment

### Turbo market global growth rate

<table>
<thead>
<tr>
<th>Region</th>
<th>Growing; improved mileage of volume zone</th>
<th>Growing; CAFE*1 regulations + improved mileage for long-distance drive</th>
<th>Mature; diesel → gasoline; high-grade brands</th>
</tr>
</thead>
<tbody>
<tr>
<td>[China]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Americas]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Europe]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Period</th>
<th>2017 → 2021</th>
<th>2021 → 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0%</td>
<td>12.7%</td>
<td>14.4%</td>
</tr>
<tr>
<td>6.2%</td>
<td>7.5%</td>
<td>8.5%</td>
</tr>
<tr>
<td>2.3%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Global market scale: FY2017 5,000 tons/month ⇒ FY2025 10,000 tons/month

*1 CAFE: Corporate Average Fuel Efficiency
## 2-2. Response to Growing Demand

### Responses

- **Enhanced production capacity (+80%) vs. 1H FY2016**
  - New casting line
  - New concept machining line
  - Development of Americas machining line

- **Productivity “+15%” vs. FY2016**
  - Optimization of casting conditions [✓] Completed
  - Quality improvement [✓] Completed
  - Machining efficiency improvement [✓]

- Full utilization of invested equipment [✓]

### Production capacity

- 750 tons/month (1H FY2016)
- ↓
- 1,350 tons/month (FY2017)

### Current state

- Insufficient preparation for production launch against surge in demand
  - Drop in productivity, increase in air transport cost

### New concept machining line

- Development of Americas machining line
  - Under development

- Sales volume (2H FY2016 970 tons/month → FY2017 1,350 tons/month), improved operating margin

Formulate further production capacity enhancement plan
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3. Cast Iron Business
3-1. Business Composition

From heavy-duty vehicles to passenger cars, a product line-up that addresses a broad range of needs

- FY2016 Revenues
  - Passenger cars
  - Pickup trucks
  - Construction & agricultural machinery
  - Industrial machinery and others
  - Commercial vehicles

Revenues: ¥217.3 bn
3-2. Market Environment

**Heavy-duty area**

- Combustion engine is mainstream due to requirement to secure power
  - Agricultural/Construction machinery: Growth in population → Growth in grain production
  - Rolling stock: Global demand increase
  - Industrial equipment: Increase in demand for complex form products

**Business expansion area; needs for high added value**

**Passenger car area**

- Global vehicle production volume steady
- Significant expansion in emerging consumption areas of India and China
- Europe/U.S. are large markets, albeit low-growth

**Business platform area; cash cow**

Vehicle production volume (million vehicles)

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2020</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Korea, Japan</td>
<td>13.2</td>
<td>12.7</td>
<td>12.3</td>
</tr>
<tr>
<td>Europe</td>
<td>17.3</td>
<td>18.3</td>
<td>18.2</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>27.9</td>
<td>30.5</td>
<td>32.3</td>
</tr>
<tr>
<td>China</td>
<td>9.1</td>
<td>11.1</td>
<td>13.1</td>
</tr>
<tr>
<td>India, S.E. Asia</td>
<td>5.4</td>
<td>6.5</td>
<td>7.2</td>
</tr>
<tr>
<td>Latin America, etc.</td>
<td>93.7</td>
<td>101.1</td>
<td>105.9</td>
</tr>
</tbody>
</table>

Hitachi Metals’ estimate based on various research materials
3-3. Product Strengths

<table>
<thead>
<tr>
<th>High-Grade Ductile Cast Iron</th>
<th>General-Purpose Ductile Cast Iron and Gray Iron</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Ability to design high strength and high tensile strength materials (dialog with customers and CAE technology)</td>
<td>- Clearly superior production volume</td>
</tr>
<tr>
<td>- Clearly superior production volume</td>
<td>- Proprietary casting equipment that differentiates Hitachi Metals</td>
</tr>
<tr>
<td>- Addresses requirements for thin and lightweight products</td>
<td>- Addresses low-cost, large-volume needs</td>
</tr>
</tbody>
</table>

### Suspension arm
- 25% lighter weight

### Steering knuckle
- 10% lighter weight
3-4. Action Plan

[Waupaca] Generate Acquisition Synergies

Synergies generated (as of 2018): Estimated upon acquisition: US$40 million → Current: US$50 million

- Expansion of agricultural and construction machinery market business
- Plant specialized in ductile cast iron
- Heat-resistant cast iron machining business
- Plan for full-scale entry into heat-resistant cast steel
- Plan for introduction of horizontal Molding Line for large size cast
- Expansion of agricultural and construction machinery market business
- Plant specialized in ductile cast iron

- Utilize outstanding manufacturing technological skills and abundant resources

- Reduce overall group’s purchase costs using economies of scale
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### Main Products

<table>
<thead>
<tr>
<th>High-performance aluminum components</th>
<th>EV-related components, powertrain components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum wheels</td>
<td>Sophisticated design, large-diameter, general-purpose products</td>
</tr>
</tbody>
</table>

### Market Needs

- Lightweight, thin
- Low-price
- Complex form
- High heat transfer rate

### Strengths

- **✓ Surge in potential of high-performance aluminum components due to spread of EV**
- High-precision CAE
  - Combines high strength/stiffness and lightweight
- Manufacturing locations in Japan and U.S.
  - Structure to expand sales to the Asian region, Americas and Europe
- Diverse casting methods
  - Gravity—low-pressure—high-vacuum die-cast (HIVAC-V®)
4-2. Action Plan

High-Performance Aluminum Components

Increase EV components by utilizing the characteristics of aluminum materials

- Develop designing, material quality, junction, machining technologies
- Improve value of the aluminum die-cast business in cooperation with <GRIT>
  → Roll out to composite materials and connection function components

- Build integrated line, strengthen cost competitiveness

Increase business size by 2.5 times by FY2025 (vs. FY2016)

Aluminum Wheels

Accommodate large diameters and sophisticated design

- Enhance production capacity and improve productivity of sophisticated design and large diameter products

<table>
<thead>
<tr>
<th>Size</th>
<th>16 × 6JJ to 20 × 10JJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum draft</td>
<td>3.5 degrees</td>
</tr>
<tr>
<td>Minimum wall thickness</td>
<td>3 mm</td>
</tr>
<tr>
<td>Max. asperity</td>
<td>30 mm</td>
</tr>
</tbody>
</table>

Focus on high added value products and turn into a cash cow business
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5. Investment Plan

**Cast iron**
- North America (Waupaca)
  - Horizontal Molding line for large size cast iron
  - Dedicate a plant exclusively to ductile and gray iron
- Asia (Japan, South Korea, India)
  - Global roll-out of high efficiency casting line technology

**Heat-resistant cast steel**
- Japan (Kyushu Works)
  - New casting line
  - New concept machining line
- North America (Waupaca)
  - New machining line

**Aluminum**
- Japan, North America
  - Accommodate sophisticated design and large components
  - Improved productivity and efficiency

**Piping**
- Japan, North America
  - Enhance flexible piping system capacity
- Japan
  - High efficiency production line

**Capital expenditures: ¥60.0 billion (cumulative total for FY2016–FY2018)**
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6. Revenues by Region

<table>
<thead>
<tr>
<th>Region</th>
<th>FY2016 (¥billions)</th>
<th>FY2018 (¥billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>69.0</td>
<td>81.4</td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asia (ex. China, Japan)</td>
<td>12.5</td>
<td>13.6</td>
</tr>
<tr>
<td>Europe</td>
<td>10.9</td>
<td>14.4</td>
</tr>
<tr>
<td>Americas</td>
<td>236.2</td>
<td>254.9</td>
</tr>
</tbody>
</table>
7. Conclusion

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

**FY2018 Plan**

- Revenues: ¥370.0 billion
- Adjusted operating income: ¥30.5 billion
- Adjusted operating margin: 8.2%
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• Changes in economic conditions and regulations in the main markets where the Company operates, particularly Japan, the Americas, 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