Business Strategy of the High-Grade Metals Company

Hitachi Metals IR Day 2016

June 3, 2016
Hitachi Metals, Ltd.

Takehisa Seo
Executive Officer
President of the High-Grade Metals Company
Business Strategy of the High-Grade Metals Company

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1. Business Overview
2. Market Environment
4. Conclusion
1-1. High-Grade Metals Company: Business Overview

High-Grade Metals Segment

FY2015
Revenues: ¥256.7 bn

(1) Tool steel
- Cold working tool steel
- Hot working tool steel

(2) Industrial equipment materials
- CVT belt materials
- Piston ring materials

(3) Electronic materials and components
- Lithium-ion battery foil
- Target materials

(4) Aircraft and energy
- Turbine case
- Turbine Blades

(5) Rolls
- High-Speed Steel Roll

(6) Soft magnetic materials
- Amorphous Metals
1-2. Our Position in the Specialty Steel Sector

Top manufacturer in Japan with the No. 1 share in numerous products

• Yasugi Works is a plant dedicated to high-grade specialty steel, with a history of more than 100 years
• It produces numerous high-end products that are No. 1 in the world

A history of leading the business with star products

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</thead>
<tbody>
<tr>
<td>Lead frame materials</td>
<td>Shadow mask materials</td>
<td>CVT belt materials</td>
<td>Piston ring materials</td>
<td>Products for the aircraft and energy businesses</td>
<td></td>
</tr>
</tbody>
</table>

Received a JPO Commissioner’s Award, a national commendation for inventions, in FY2016

High-grade razor and blade materials

Next One
1-3. 2015 Medium-Term Management Plan: Results

**Strengthening the business base**
- 24-ton vacuum induction melting and casting furnace (VIM) installed at the Yasugi Works (began operation in March 2015)
- Increased piston ring production capacity at the China plant (began operation in August 2015)
- Sold part of shares held in Hitachi Tool Engineering, Ltd. (excluded from consolidation in April 2015)

**Establishing a framework for global expansion of tool steel sales**
- Rebuilt the branding for the specialty steel business (October 2015)
- Established Diehl Tool Steel Inc., a tool steel distribution subsidiary in North America (November 2015)
- Launch mass production of SLD-i™, a new type of cold working tool steel (April 2016)

**Expanding the aircraft and energy businesses**
- Launched mass production at Japan Aeroforge, Ltd. (began operation in April 2013)
- Made Hitachi Metals MMC Superalloy, Ltd. a subsidiary (July 2014)
- Installed a large, 840-ton ring mill (began operation in November 2015)

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**FY2015 Results**

Revenues: ¥256.7 bn; Adjusted operating income: ¥27.0 bn (10.5%)

**VIM:** Vacuum Induction Melting & Casting
1-4. Strategic Investment Aimed at Remodeling the Specialty Steel Business Portfolio (1)

Joint Ventures and M&A (Expanding business domains)

Strengthening the Aircraft and Energy Business

- **Japan Aeroforge, Ltd.**
  - Kurashiki, Okayama Prefecture
  - Established in January 2011 (41% equity)
  - World’s largest 50,000-ton die forging press
  - Expanded mass production of long turbine blades

- **Hitachi Metals MMC Superalloy, Ltd.**
  - Okegawa, Saitama Prefecture
  - Consolidated in July 2014 (51% equity)
  - 840-ton ring mill began operation in Nov. 2015
  - Mass production by large ring mill approved (scheduled for the summer of 2016)
1-5. Strategic Investment Aimed at Remodeling the Specialty Steel Business Portfolio (2)

- Reinforcing upstream process at Yasugi Works (Achieving differentiation and “black box” status)

**Increasing production of CVT belt materials**
- 24-ton VIM furnace (began operation in May 2015)
- CVT belt melting furnace approval (expected in summer of 2016)

**Improving competitiveness of tool steel products**
- New melting facility (began operation in April 2016)
- New cold working tool steel
- Construction has begun

World’s largest

- Highly acclaimed SLD-i™ New cold working tool steel

- 10,000-ton free forge press (scheduled to begin operation in FY2017)

- New hot working tool steel under development

• Also possible to use for aircraft materials ⇒ pursue melting approval
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2. Market Environment

**Demand for environmentally-friendly products is expanding as environmental regulations are tightened and the need for energy-efficiency increases**

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<thead>
<tr>
<th></th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Automotive</strong></td>
<td></td>
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</tr>
<tr>
<td>CO₂ emissions regulations</td>
<td>130g/km</td>
<td>95g/km</td>
<td>70g/km</td>
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<tr>
<td>Percentage of EV and HEV</td>
<td>2%</td>
<td>9%</td>
<td>15%</td>
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<tr>
<td><strong>Aircraft and Energy</strong></td>
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<tr>
<td>No. of jet aircraft in operation</td>
<td>19,200</td>
<td>26,000</td>
<td>30,000</td>
<td></td>
</tr>
<tr>
<td>Steam turbine power generation efficiency</td>
<td>42% USC: 600°C</td>
<td>46% A-USC: 760°C</td>
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<tr>
<td><strong>Need for Products and Technology</strong></td>
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<tr>
<td>Tool steel</td>
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<tr>
<td>Mold materials for ultra-high tensile strength steel processing + surface treatment</td>
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<tr>
<td>Industrial equipment materials</td>
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<tr>
<td>Belt material for continuously variable transmissions (CVT)</td>
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<tr>
<td>Aircraft and energy</td>
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<tr>
<td>New disk alloy with ultra-high heat resistance</td>
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<tr>
<td>Electronic materials and components</td>
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<tr>
<td>Cladding material for EV batteries</td>
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<tr>
<td>Rolls</td>
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<tr>
<td>Rolls for ultra-high tensile strength steel mills</td>
<td></td>
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<tr>
<td>Soft magnetic materials</td>
<td></td>
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<tr>
<td>Components and materials for EV chargers</td>
<td></td>
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</tbody>
</table>

Source: Hitachi Metals forecasts based on various surveys/data
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### 2018 Medium-Term Management Plan: Goals

<table>
<thead>
<tr>
<th></th>
<th>FY2015 Results (¥120 = US$1)</th>
<th>FY2018 Goals (¥115 = US$1)</th>
<th>Change vs. FY2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>¥256.7 bn</td>
<td>¥310.0 bn</td>
<td>121%</td>
</tr>
<tr>
<td>Adjusted operating income</td>
<td>¥27.0 bn</td>
<td>¥41.0 bn</td>
<td>+ ¥14.0 bn</td>
</tr>
<tr>
<td>Adjusted operating margin</td>
<td>10.5%</td>
<td>13.2%</td>
<td>+2.7%</td>
</tr>
<tr>
<td>Overseas revenues as a % of total revenues</td>
<td>44%</td>
<td>47%</td>
<td>+3%</td>
</tr>
</tbody>
</table>
## Key initiatives by business unit

<table>
<thead>
<tr>
<th>Specialty Steel</th>
<th>Tool steel</th>
<th>Work to expand global sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial equipment materials</td>
<td>Accelerate expansion of environmentally-friendly product sales</td>
<td></td>
</tr>
<tr>
<td>Aircraft and energy</td>
<td>Manifest synergies among the three companies and accelerate certification by customers</td>
<td></td>
</tr>
<tr>
<td>Electronic components and materials</td>
<td>Concentrate on new areas: From electronic components to batteries</td>
<td></td>
</tr>
<tr>
<td>Rolls</td>
<td>Work to expand overseas sales through new material properties</td>
<td></td>
</tr>
<tr>
<td>Soft Magnetic Components and Materials</td>
<td>Accelerate development of applications by consolidating the components business</td>
<td></td>
</tr>
</tbody>
</table>

**Key Word for FY2016: Speed up**
3-3. Tool Steel: Work to Expand Global Sales (1)

- Working to ensure brand penetration and pursue solution sales

Expand sales of the new product, SLD-i
Reinforce local human resources
Pursue solution sales
Establish new locations and fortify processing
Achieve brand penetration

Accelerate expansion of overseas sales

Europe
- Strengthen distribution through M&A

China
- Strengthen the sales structure

Americas
- Concentrate on Diehl Tool Steel to expand sales in the Americas market

Asia
- Increase and strengthen processing locations

Japan
- Establish SEC*

YASUGI SPECIALTY STEEL
OUR HERITAGE, YOUR ADVANTAGE

Cases of results achieved from solutions-oriented activities

- Surface modification technology
  - Adopted in mass production for surface treatment of ultra-high tensile strength die molds
  - Introduced in the product catalogs of mold and component manufacturers

- CAE analysis technology
  - Secured initial orders from European auto manufacturers by offering CAE services

FY2018 Tool Steel Revenues: 30% growth vs. FY2015

*SEC: Solution & Engineering Center
3-4. Tool Steel: Work to Expand Global Sales (2)

Expand global sales of the new cold working mold steel, SLD-i™

- Achieves improvement in 1) controlling size changes from heat treatment, 2) controlling size changes from aging, and 3) resistance to wear, while maintaining the same composition as the global standard.

**SLD-i™ properties**

- **Structural property:** Even distribution of carbides
  - **SLD-i™**
    - Carbides (hard)
    - Base material only (soft)
  - **Existing material**

- **Results of customer evaluations**
  - **Improve Mold Life**
    - **Target Products**
      - Evaluation Results (compared to existing materials)
        - Burring punch: Mold life: 5x or more
        - Mold for cutting high-tensile strength steel sheet: Mold life: 7x or longer
        - Mold for cutting glass film: Consistent size change from heat treatment
        - Shearing molding machine blades: Reshaping: 20% reduction
        - Fine blanking die: Die life: 1.4x

Customer sample evaluation: Good
Mass production of SLD-i begun in April 2016
## 3-5. Aircraft and Energy: Manifest Synergies Among the Three Companies and Accelerate Certification

**Take on the challenge of becoming one of the top four aircraft materials manufacturers in the world**

### Manifest synergies among the three companies

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hitachi Metals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yasugi Works</td>
<td>• 24-ton VIM</td>
<td>• 10,000-ton free forge press</td>
<td>• High-speed radial forging machine</td>
</tr>
<tr>
<td></td>
<td>• Large VAR</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Japan Aeroforge</strong></td>
<td></td>
<td>• 50,000-ton die forging press</td>
<td></td>
</tr>
<tr>
<td><strong>Hitachi Metals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMC Superalloy</td>
<td>• Made a consolidated subsidiary</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• 840-ton ring mill</td>
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</tbody>
</table>

- **Aircraft & Energy Business Acceleration of new development underway**
  - 24-ton VIM
  - Large ESR
  - Long VAR
  - 840-ton ring mill
  - 10,000-ton large press
  - High-speed radial forging machine
  - 50,000-ton die forging press
  - Promotion of human resources
  - CAE
  - Processing Technology Center

- **Engine shaft supplied to Company A**
  - Mass production and supply from January 2016

- **Large disks supplied to Company B**
  - Mass production from summer 2016

- **Large ring mill development products supplied to Company C**
  - Mass production from summer 2016

### FY2025 Sales Goal: Over ¥60 billion
(FY2015 Results: ¥33.5 billion ⇒ FY2018 Plan: ¥37 billion)
3-6. Investment Plans

Key investments in the hot-rolling process, the source of competitiveness

- New casting equipment
- 24-ton VIM
- Underway 10,000-ton forge press
- Underway High-speed radial forging machine
- Processing Technology Center
  - Large ring mill (HMSA)
  - 50,000-ton press (J Forge)

- New cold working tool steel (SLD-i)
- Industrial equipment materials (CVT belt material)
- Hot working tool steel (new product)
- Aircraft & Energy (Large forged components)

Strengthening the network for expanding overseas sales

- Establish new distribution location in Europe
- Expand and strengthen processing locations in the U.S. and Asia

Capital Investment:
¥68 billion (cumulative total for FY2016-FY2018)
3-7. Investment Plans: Yasugi Works

<table>
<thead>
<tr>
<th>Raw materials</th>
<th>Complete</th>
<th>Underway</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIM furnace</td>
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<tr>
<td>Vacuum arc remelting (VAR)</td>
<td></td>
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<tr>
<td>Electric furnace</td>
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<tr>
<td>Smelting process outside of various furnaces</td>
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<tr>
<td>Gas atomization</td>
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<tr>
<td>Hot-rolling hydrostatic pressure press</td>
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<tr>
<td>Steel ingots</td>
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<tr>
<td>Steel ingots</td>
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<tr>
<td>Press</td>
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<tr>
<td>Bloom</td>
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<tr>
<td>Processing Technology Center</td>
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<tr>
<td>Press</td>
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<tr>
<td>Forging mill</td>
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<td>Bloom</td>
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<tr>
<td>High-speed forging</td>
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<tr>
<td>Billet</td>
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<tr>
<td>Forging mill</td>
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<tr>
<td>Cable &amp; wire mill</td>
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<tr>
<td>Slab</td>
<td></td>
<td></td>
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<tr>
<td>Planetary mill</td>
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<tr>
<td>Hot working steel strip</td>
<td></td>
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<tr>
<td>HC mill</td>
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<tr>
<td>Distribution center</td>
<td></td>
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</tr>
<tr>
<td>(Sales locations) Strengthen processing, and surface treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(China location) Expand piston ring capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(China location) Hardened steel strip slit center</td>
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</tbody>
</table>

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3-8. Global Growth

**Overseas revenues as a % of total revenues: 44% (FY2015) ⇒ 47% (FY2018)**

<table>
<thead>
<tr>
<th>Region</th>
<th>Tool Steel</th>
<th>Aircraft &amp; Energy</th>
<th>Industrial Equipment Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>Build distribution services (currently considering M&amp;A)</td>
<td>Mine target customers</td>
<td>Mine the automotive-related market</td>
</tr>
<tr>
<td>Americas</td>
<td>Concentrate on Diehl Tool Steel to expand sales</td>
<td>Put direct business into place</td>
<td>Concentrate resources in technology sales</td>
</tr>
<tr>
<td></td>
<td>Tool Steel</td>
<td>Aircraft &amp; Energy</td>
<td>Roll</td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>

**Tool Steel: Strengthen the local sales structure**

**Tool Steel: Establish a plate and surface treatment location**

**Soft Magnetic Materials:**
- **Asia:** Step up lobbying activities
- **Japan:**
  - 15% (FY2015)
  - 20% (FY2018)

**China:**
- 59% (FY2015)
- 4% (FY2018)

**Tool Steel:**
- **Asia:**
  - 37% (FY2015)
  - 4% (FY2018)

The graphs compare FY2018 sales to FY2015 sales, with FY2015 sales indexed to 1.
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Achieve growth globally by focusing on high-grade products

High-Grade Metals Company
FY2018 Plan

Revenues: ¥310 billion
Adjusted operating income: ¥41 billion (13.2%)
Information on Risks Inherent in Future Projections

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