Automotive Systems
Business Strategy
Hitachi IR Day 2014
June 12, 2014
Kunihiko Ohnuma
Chairman & CEO
Hitachi Automotive Systems, Ltd.
Automotive Systems Business Strategy

Contents

1. Business Overview
2. Market Trends
3. Growth Strategy
4. Business Targets
Evolve into a highly reliable global supplier in the environment and safety fields by making automobiles smarter through advanced electronics and electronic drive and control technologies.
1-2. Business Structure

**Drive control systems**
- Electrically-driven intelligent brake
- Semi-active suspension
- Electric power steering
- Stereo camera

**Car information systems** (Clarion)
- Google voice search navigation device (NX714)
- Cloud information network service

**Powertrain & electronic control systems**
- Hybrid systems
  - Motors
  - Inverters
  - Lithium-ion batteries
- Engine components systems
  - Engine management systems
  - Variable valve systems
  - Direct Injection systems

**Industrial use • aftermarket business**
- Rolling stock dampers (Seven Stars, JR Kyushu)
- Hydrogen dispenser (TOKICO TECHNOLOGY)
- Suspension
- Brake pad

**FY2013 Consolidated revenues** ¥892.1 billion

<table>
<thead>
<tr>
<th>Field</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>20%</td>
</tr>
<tr>
<td>Information</td>
<td>20%</td>
</tr>
<tr>
<td>Environment</td>
<td>30%</td>
</tr>
<tr>
<td>Other</td>
<td>20%</td>
</tr>
</tbody>
</table>

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1-3. The Automotive Systems Group’s Five Core Strengths

**The Automotive Systems Group’s Core Strengths**

- **Product Diversity**
  - Expansion in product orders through cross selling

- **Sales**
  - Engineering capabilities anchored by Hitachi’s strengths as an electronics manufacturer

- **R&D**
  - A global network of Hitachi research laboratories

- **Quality**
  - Globally consistent quality and brand reliability through vertical integration

- **Global Footprint**
  - Utilize a global network of bases

**Hitachi Group**
Automotive Systems Business Strategy

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2-1. Global Auto Market Trends

Global Automobile Production Volumes by Region

(Million unit)

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2009</th>
<th>2013</th>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emerging nations' markets</td>
<td>71.3</td>
<td>65.7</td>
<td>85.8</td>
<td>91.4</td>
<td>104.3</td>
</tr>
<tr>
<td>Industrialized nations' markets</td>
<td>59%</td>
<td>41%</td>
<td>39%</td>
<td>61%</td>
<td>35%</td>
</tr>
</tbody>
</table>

Markets of emerging nations will expand to more than 60% of global automobile production by FY2020

Ratio by vehicle segments

- Small cars: 72%
- Mid-sized, large cars: 28%

Source: Data compiled in-house from data provided by IHS Automotive

Trends in environmental field
- Stricter fuel efficiency (CO₂, NOx, etc.) and emissions regulations worldwide
- Progressive development of ultra fuel-efficient engine technology and electric drive vehicles

Trends in safety field
- Automatic braking systems to be added to safety evaluation standards (EU: from 2014)
- Rear monitoring camera to be installed in all vehicles (U.S.: from 2018)
- Automakers to accelerate development and take concrete steps to commercialize automatic driving in 2020 and beyond

The small car segment will grow to account for 70% of all vehicles by FY2020
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3-1. Global Position Analysis

Electronics products* share of top 10 global parts suppliers by revenue in FY2012

- Breakdown of electronics products
  - Information field: 48%
  - Environment field: 42%
  - Safety field: 10%

- Global expansion of electronics products
  - Secured a high degree of reliability in the environment and safety fields based on our extensive expertise in quality and technology developed over many years
  - Developed the world’s first engine controller in 1979
  - Started full-scale mass production
  - Built production systems in the world’s five key regions
  - Strengthened development in Japan, the U.S. and China

- Enhance growth potential by increasing electronics products* share to world-leading level

*Electronics products: Electronic control and electric drive products such as electronic control units, hybrid systems, etc.

Source: Arthur D. Little
3-2. Three Strategies for Driving Global Growth

Execute three strategies with an eye on 2020

1 Customer Strategy
2 Regional Strategy
3 Product Strategy

Create new products and technologies and become No.1 in MONOZUKURI (manufacturing) capabilities in the world
3-3. Customer Strategy (1)

Expand Business Faster Than the Market Growth Rate

Market growth rate < Sales growth rate

Global auto production forecast

<table>
<thead>
<tr>
<th>Year</th>
<th>FY2012 (Result)</th>
<th>FY2015 (Forecast)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales units</td>
<td>81.47 million</td>
<td>91.44 million</td>
<td>112%</td>
</tr>
</tbody>
</table>

Revenue target

<table>
<thead>
<tr>
<th>Year</th>
<th>FY2012 (Result)</th>
<th>FY2013 (Result)</th>
<th>FY2014 (Forecast)</th>
<th>FY2015 (Forecast)</th>
<th>Revenues (Billion yen)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2012</td>
<td>806.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>892.1</td>
<td></td>
<td>940.0</td>
<td>1 trillion</td>
<td></td>
<td>124%</td>
</tr>
</tbody>
</table>

Customer composition (FY2013/Result)

- RENAULT / NISSAN: 34%
- Global automakers: 41%
- Others: 25%

Domestic revenue ratio for customer bases:
- FY2012: 50%
- FY2013: 47%
- FY2014: 43%
- FY2015: 40%

Overseas revenue ratio for global customer bases:
- FY2012: 50%
- FY2013: 53%
- FY2014: 57%
- FY2015: 60%

Strengthen account strategy through GAM/GAT

- Expand product orders by strengthening cross selling
- Strengthen sales structure in 4 key overseas regions

Strengthen systems proposal capabilities

- Strengthen response to customers’ module strategy
- Propose new technology using demo cars
- Ensure consistent global quality assurance

* Customer bases that install automotive components in finished vehicles. This is different from overseas revenues in the consolidated accounts. Excluding exchange rate differences

GAM: Global Account Manager
GAT: Global Account Team

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Double revenues from Ford (FY2008 - FY2012)

Commodities and current products
- Air-flow sensor
- Valve timing control
- Water pump
- Balancer
- Shock absorber
- Brake master cylinder

Advanced technologies and newly adopted products
- Hybrid systems
- Stereo camera
- Telematics control unit (Clarion)
- Electric power steering (belt type)
- Semi-active suspension
- Lincoln Navigator
- Explorer
- Taurus

...Currently proposing
Regional Strategy (1)
A Global Footprint Aimed at Local Production for Local Consumption

Japan
- 25 bases
  - Global corporate
  - Product business units and domestic Group companies

Europe
- 5 bases
  - Czech Republic Plant started mass production (December 2013)

Asia
- 8 bases
  - India Plant under construction (Production scheduled to begin in 2015)

China
- 15 bases
  - New Guangzhou site started mass production (May 2013)

Americas
- 9 bases
  - Opening Ceremony for new Mexico site (March 2014)

Number of manufacturing bases: as of March 2014
*Revenue index (FY2010: 100) The indexes inside the graphs are FY base

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### Americas

**Priority initiatives**

- **Full-scale expansion of business in Mexico**
  - Expand production in Mexico and strengthen synergies across the Americas

- **Expand internal production in the Americas**
  - Customers commend vertical integration (product orders triple from FY2011 → FY2013)

- **Joint development together with Hitachi America, Ltd.**
  - Strengthen experimental development in North America

- **New business investment**
  - FY2013 - FY2015 total: 45.0 billion yen

### China

**Priority initiatives**

- **Enhance sales system**
  - Present → FY2015
  - Sales personnel 50 → 75 people (mainly local staff)
  - Sales bases 4 → 6 locations

- **Bolster procurement functions**
  - Pure local procurement ratio 35 → 50%

- **Strengthen local development capabilities**
  - Design personnel 90 → 210
  - Launch the new Guangzhou site (Zengcheng)

- **New business investment**
  - FY2013 - FY2015 total: 30.0 billion yen
Propose next-generation systems by enhancing core products

Contribution to make automobiles smarter
[Expand electronic control and electric drive products]

<table>
<thead>
<tr>
<th>Environment</th>
<th>Drive stabilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultra fuel efficient system</td>
<td>Safety support systems</td>
</tr>
<tr>
<td>Direct injection engine</td>
<td>Cameras, sensors</td>
</tr>
<tr>
<td>Electric drive system</td>
<td>Drive stabilization systems</td>
</tr>
<tr>
<td>HEV/EV</td>
<td>Electrically-driven intelligent brake</td>
</tr>
</tbody>
</table>

Enhancement of core products
- Electronic control and electric drive products
- High-performance mechatronics

Global design and development capabilities

MONOZUKURI capabilities

Propose next-generation systems

Contribute to Build Attractive Automobiles

- Revenues
  - FY2012: 370.0 billion yen
  - FY2015: 500.0 billion yen

3-7. Product Strategy(1)

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3-8. Product Strategy(2)
Expand Business Through Innovative, High Value-Added Products

**Engine Innovation**
- World’s top share
- World’s leading

**Innovation in electronic control and electric drive products**
- World’s leading
- World’s first

**Innovation in safety control**
- World’s leading
- World’s first
- World’s first

- **Air-flow sensor**
  World’s top share, track record of 200 million units supplied

- **Variable valve systems**
  VEL: Achieves both fuel efficiency and clean exhaust performance through best-in-class high power output and quick response (Reduces startup exhaust by 50%)
  Revenues 1.6 times*

- **Inverters**
  World’s leading high power output density (35kW/L) using double-sided cooling modules

- **Electrically-driven intelligent brake**
  World’s first product to achieve highly energy efficient regenerative braking through an electric brake booster

- **Semi-active suspension**
  Achieves even greater ride comfort with world-class 10-fold variability

- **Stereo camera**
  Commercialized the world’s first driving support system using a stereo camera
  Revenues 2.3 times*

- **SurroundEye system**
  Commercialized a camera system designed to assist with parking based on the world’s first top-down view of vehicles; expand use to automatic driving

VEL: Variable Valve Event and Lift Control System

* Revenue growth from FY2012 to FY2015

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 Achieve automatic driving through the smart ADAS* and Hitachi’s IT synergy

**Evolution of automobiles: Smart ADAS**
- Outside recognition sensors
- Advanced HMI
- Communication module
- ADAS controller
- Communication
- On-board network
- Drive actuator
- Electric powertrain
- Engine and transmission control

**Fuse Hitachi’s IT and infrastructure**
- Data center
- Road-to-car
- Car-to-car
- Pedestrian
  - Map and traffic information, big data, etc.
  - Assist with recognition of car, road and pedestrian information

**Automatic driving (2020 and beyond)**

**Benefits**
- Eliminate and alleviate traffic congestion
- Reduce environmental impact
- Improve driving comfort
- Reduce traffic accidents
- Assist transportation of seniors, etc.
- Increase international competitiveness

ADAS: Advanced Driver Assistance System
HMI: Human Machine Interface
3-10. Enhance Global R&D Capabilities

Collaborate with overseas R&D bases and utilize open innovation

Europe (Germany, France)
- RWTH Aachen University (map data collaboration, chassis control)
- Technische Universität München (TUM) (engine combustion analysis and simulation)
- European Consortium (connected services, car-to-car communication)

China
- Joint laboratory with Shanghai Jiao Tong University (evaluation of quality and properties of local materials, manufacturing process technologies)

US
- University of Wisconsin (high-efficiency engine technology)
- R&D institutions (Texas) (model base control development)

Hitachi R&D bases (automotive systems-related)
- Hitachi Automotive Systems Technical Center
- Collaboration among industry, academia and government

Enhance global R&D capabilities
Vigorously drive global R&D activities focusing on the core Engineering Development Division

Vertical integration
Execute activities ranging from materials, processing and assembly to combustion analysis and vehicle driving performance evaluation technologies

R&D expenditure

<table>
<thead>
<tr>
<th>Year</th>
<th>Expenditure (billion yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2013</td>
<td>59.7</td>
</tr>
<tr>
<td>FY2015 (Forecast)</td>
<td>80.0</td>
</tr>
</tbody>
</table>

35% UP

Accelerate regional development
Enhance technical centers in the three key regions of the U.S., Europe and China and conduct applied development

Bolster training of manufacturing personnel
Opened the Global Manufacturing Training Center (October 2012)
**3-11. Progress of Hitachi Smart Transformation Project**

**Execute the growth strategy with continuous innovation**

### Cost structure reforms

1. **Global quality reforms**
   - Full-scale roll out of the global quality integrated management system
   - Foster the culture needed for highly reliable manufacturing (learning from mistakes)

2. **Global production reforms**
   - Production and indirect material cost reforms (global production reform project, logistics reforms)
   - Develop concurrent engineering (improve development efficiency and reduce overall workload)

3. **Global procurement reforms**
   - Strengthen procurement engineering (overseas VEC)
   - Use more pure local materials (step up efforts to find vendors in emerging countries)

### Business structure reforms

1. **Realign the battery business** FY2015 target: double revenues (Vs. FY2012)
   - Integrate development division of Hitachi Vehicle Energy
   - Improve development efficiency for electric powertrains

2. **Bolster the aftersales business** FY2015 target: increase revenues by 50% (Vs. FY2012)
   - Drive global business through the Aftermarket Division
     - Dedicated production line
     - Extensive product lineup
     - Global sales channels

3. **Expand the industrial business** FY2015 target: increase revenues by 15% (Vs. FY2012)
   - Established the new Industrial Product Design Division
     - Instrumentation products
     - Rolling stock dampers
     - Seismic isolation dampers for buildings

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VEC: Value Engineering for Customers
## 3-12. Strengthening Cash Flow Management

### Initiatives for improving free cash flows

<table>
<thead>
<tr>
<th>Issues and Areas to Strengthen</th>
<th>Earnings Improvement Initiatives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Improve operating cash flows</strong></td>
<td>Bolster global TSCM and overseas business expansion (Raise inventory turnover)</td>
</tr>
<tr>
<td></td>
<td>Enhance services and solutions businesses (aftersales and industrial)</td>
</tr>
<tr>
<td></td>
<td>Reduce development man-hours through advances in simulation technology (Reduce by 50% from FY2012 → FY2015)</td>
</tr>
<tr>
<td><strong>Improve investment efficiency</strong></td>
<td>Shorten lead times for product launches by expanding global standard automated production lines (currently applied to suspension lines)</td>
</tr>
<tr>
<td></td>
<td>(Japan, U.S., China) Internalize production facilities through the use of global industrial equipment team (Internal production value increased 2.4 times from FY2012 → FY2015)</td>
</tr>
</tbody>
</table>

- **Raise fund efficiency**
- **Expand business in China and Southeast Asia**
- **Global production line reforms**
- **Create the world’s No.1 manufacturing technologies**

TSCM: Total Supply Chain Management
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4-1. Business Targets

FY2015 targets Revenues: 1 trillion yen, Operating income (EBIT) ratio: 7.0%

<table>
<thead>
<tr>
<th>Revenues (Billion yen)</th>
<th>Operating income (Billion yen)</th>
<th>Overseas revenue ratio for global customer bases</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2011 (Result)</td>
<td>811.5</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>(Result)</td>
<td></td>
</tr>
<tr>
<td>FY2012 (Result)</td>
<td>806.8</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>(Result)</td>
<td></td>
</tr>
<tr>
<td>FY2013 (Result)</td>
<td>892.1</td>
<td>53%</td>
</tr>
<tr>
<td></td>
<td>(Result)</td>
<td></td>
</tr>
<tr>
<td>FY2014 (Forecast)</td>
<td>940.0</td>
<td>57%</td>
</tr>
<tr>
<td></td>
<td>(Forecast)</td>
<td></td>
</tr>
<tr>
<td>FY2015 (Forecast)</td>
<td>1 trillion yen</td>
<td>60%</td>
</tr>
</tbody>
</table>

- Powertrain & electronic control systems
- Engine components systems
- Drive control systems
- Car information systems
- Others
- Operating income
- Operating income ratio *below(): EBIT* ratio

* EBIT: Earnings before interest and taxes

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4-2. FY2015 Targets

**FY2015 Targets**

- Revenues: 1 trillion yen  
  (Overseas revenue ratio for global customer bases 60%)
- Operating income (EBIT) ratio 7.0%
- Gross margin (1.0 point improvement) (Vs. FY2012)  
  FY2013 result: 0.3 point improvement
- SG&A expense ratio (1.0 point improvement) (Vs. FY2012)  
  FY2013 result: 0.6 point improvement

Evolve into a highly reliable global supplier in electronics and electronic drive and control technologies
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- The possibility of cost fluctuations during the lifetime of, or cancellation of, long-term contracts for which Hitachi uses the percentage-of-completion method to recognize revenue from sales;
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- The potential for significant losses on Hitachi’s investments in equity method affiliates;
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- Uncertainty as to the accuracy of key assumptions Hitachi uses to evaluate its significant employee benefit-related costs; and
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