Automotive Systems
Business Strategy
Hitachi IR Day 2011

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President & CEO
Hitachi Automotive Systems, Ltd.
Automotive Systems Business Strategy

Contents

1. Business Overview
2. Global Growth Strategy
3. Conclusion
Harness cutting-edge technologies in the auto-related environment, safety and information fields. Accelerate the global business development.
1-2 Main Products

Environment field

Powertrain & electronic control systems

• Engine management systems
  <Electromechanical>
• Lithium ion batteries (Hitachi Vehicle Energy, Ltd.)
• Engine management systems
  <Fuel economy improvement>
• Variable valve systems
• Engine equipment

Drive control systems

• Stereo camera
  <Driving support>
• Power steering systems
• Suspension systems
• Electrically-driven intelligent brake

Car information systems (CIS)

• ICT* solution services for electric vehicles (EV) Solution services
• Car Navigation Systems (Clarion)
• In-vehicle terminals for commercial vehicles

Safety field

Information field

Other

*ICT: Information and Communication Technology

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1-3 Recovery after the Great East Japan Earthquake

Entire Hitachi Group worked as one to restore production facilities rapidly, through cooperation among Hitachi bases and support from business partners. Production restarted on March 25.

Overview for FY2011

Revenues

<table>
<thead>
<tr>
<th></th>
<th>Before*</th>
<th>After*</th>
</tr>
</thead>
<tbody>
<tr>
<td>First half</td>
<td>87%</td>
<td>107%</td>
</tr>
<tr>
<td>Second Half</td>
<td></td>
<td>107%</td>
</tr>
<tr>
<td>Full-Year</td>
<td></td>
<td>98%</td>
</tr>
</tbody>
</table>

*Forecast before the earthquake
*Forecast after the earthquake

- Results for the first half of FY2011 are expected to fall below initial targets due to cuts in production by domestic customers in the wake of the earthquake
- Aim to make up for this shortfall in the second half as demand recovers and post on-target results for the year as a whole

3 Key pillars for recovery in FY2011

1. Reorganize production system (Countermeasures for restrictions in power supply over the summer months)
2. Expedite and secure procurement of materials
3. Bring forward operation start at new facilities
   Bring forward facility maintenance schedules
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Performance steady in industrialized nations while growth continues apace in emerging nations

(Source: Data compiled in-house from data provided by IHS Automotive and Nomura Research Institute, Ltd.)
2-1 Market Environment (2)

Regulatory trends in environment field

- Strengthening fuel efficiency (CO₂ emissions) and emissions regulations
- Even in emerging markets, regulations are expected to be tightened to the same level as industrialized nations going forward

(Source: Nikkei BP materials)

Roadmap for environmental technologies

- Increase efficiency of internal combustion engines and develop electric drive technology for HEV and EV

(Source: Nikkei BP materials)
Strengthen technologies in all areas relating to battery products from materials to control technology particularly for automotives, and aim for greater growth and development through integrated management of the business as a whole.

**FY2009**

- Automotive Systems Business Management Division
  - Hitachi Automotive Systems, Ltd.
  - Clarion Co., Ltd.

**FY2010**

- Automotive Systems Business Management Division
  - Hitachi Automotive Systems, Ltd.
  - Clarion Co., Ltd.
  - Hitachi Vehicle Energy, Ltd.

**FY2011**

- Automotive Systems Business Management Division
  - Hitachi Automotive Systems, Ltd.
  - Clarion Co., Ltd.
  - Hitachi Vehicle Energy, Ltd.

**New segment created in FY2011 to include Battery Systems Company**

- Battery Systems Company
  - Hitachi Maxell Energy, Ltd.*
  - Hitachi Vehicle Energy, Ltd.

*Established through a corporate spin-off from Hitachi Maxell, Ltd. Takes over manufacturing and sales activities for battery operations (Apr., 2011)
2-3 Business Targets up to FY2015

FY2015 targets: revenues: over ¥1 trillion, operating income ratio: over 5.0%

Automotive Systems segment
Battery Systems Company
(Figure of 2009 and 2010 are restated based on new organization in 2011)

Over ¥1 trillion
Over 5.0%

Promote growth and development through integrated management
Target expansion in scope of battery applications from consumer and automotive to industrial

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenues (Billion yen)</th>
<th>Operating income ratio (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2009 (Actual)</td>
<td>671.0</td>
<td>(2.2%)</td>
</tr>
<tr>
<td>FY2010 (Actual)</td>
<td>773.5</td>
<td>2.4%</td>
</tr>
<tr>
<td>FY2011 (Forecast)</td>
<td>800.0</td>
<td>2.5%</td>
</tr>
<tr>
<td>FY2012 (Target)</td>
<td>830.0</td>
<td>3.5%</td>
</tr>
<tr>
<td>FY2015 (Target)</td>
<td></td>
<td>Over 5.0%</td>
</tr>
</tbody>
</table>

Automotive Systems segment
Battery Systems Company
(Figure of 2009 and 2010 are restated based on new organization in 2011)
Become a global supplier driving the automotive systems related market

Reinforcing with the three “G”s

(1) Global sales strategy
(2) Global distinctive technologies
(3) Global management foundations

1. Double revenues of “Global customers” and “Emerging nations”

2. Increase share of e-product market (electronics and electromechanical products)

   E-product composition ratio (compared with FY2010)
   Revenues 45% → more than 65%, operating income 50% → more than 80%

3. Accelerate local production for local consumption, and speed up management decision-making

   (From April 2011 onwards)
**2-5 Global Sales Strategy (1)**

**Example of global customer strategy targets (FY2015 revenues)**

**Customer Base Composition by Revenue (FY2009)**

- 8 companies/groups*
- Total revenues for FY2009: ¥230.0 billion
- *Customers comprising 10% or less

**FY2015 (Target)**

- ¥230 billion (36%)
- ¥460 billion (46%)

Double revenues
Increase revenue share to 10%

**Introduce, reorganize and entrench GAM / GAT system**

- GAM: Global Account Manager
- GAT: Global Account Team

Reconfigure global customer strategy and reinforce global customer support

**Propose new products and technologies (core technologies)**

- HEV and EV system products
- High-efficiency engine systems, etc.
2-5 Global Sales Strategy (2)

- Double the revenues in emerging nations by FY2015 (compared to FY2010)
- Increase Overseas Revenue Ratio for Global Customer Bases* from 49% (FY2010) to over 60% (FY2015)

### Overseas Revenue Ratio for Global Customer Bases* (Billion yen/year)

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2010</td>
<td>376.9 (49%)</td>
<td></td>
</tr>
<tr>
<td>FY2011</td>
<td>420 (53%)</td>
<td>420 (51%)</td>
</tr>
<tr>
<td>FY2012</td>
<td>600 (60%)</td>
<td></td>
</tr>
</tbody>
</table>

*These are combined ratio with figures of automotive systems that are equipped with vehicles at customer’s base and figures of mobile batteries’ overseas revenues.

Excluding exchange rate differences
Implement measures to expand business in emerging nations

**China**

1. Develop compliance initiatives for Chinese environmental regulations (EURO5/CAFE*) and expedite development of locally-based operations
   - Direct injection systems, VTC*, injectors, pistons, etc.
2. Expand business targeting independent Chinese automobile manufacturers
   - Expand sales through a locally-accelerated management covering R&D, production and sales

**Asia except China**

1. Reinforce business foundation in Thailand and expand business into ASEAN markets
   - Promote locally-led operations in Thailand (ECU* production), develop Indonesia and Malaysia markets
2. Build business foundation to cultivate the market in India
   - Reinforce R&D for small- and medium-sized car products (e.g.: ECU*, etc.)

*CAFE: Corporate Average Fuel Economy  VTC: Valve Timing Control  ECU: Engine Control Unit
2-5 Global Sales Strategy (4)

Example of measures to expand business in emerging nations – New business scheme in Mexico

Central And South America

1. Start optimizing production across global facilities, including product supply to the Americas
2. Increase collaboration with Clarion Co., Ltd.

UNISIA MEXICANA

1. Supplies materials to the North and Central American markets
2. Manufactures mechanical products for the North and Central American markets
3. Supply base to reinforce the business in the South American market - Cooperation with the newly established office in Brazil

Electronica Clarion

1. Manufactures navigation and audio integrated systems
2. Manufactures electronic products for the North and Central American markets
Under the development of leading systems for both efficiency and energy-saving technology

[Example] System leveraging the information from stereo camera and car navigation, and cooperating with the electric drive brake system and battery to maximize regenerative energy

⇒FY2015 Targets: Increase maximum mileage by more than 30% compared to current EVs (Based on identical battery capacity)
2-6 Global Distinctive Technologies (2)

Example [Environment field]: HEV systems (motors, inverters, lithium-ion batteries)

Drive adoption of electronic control and electromechanical systems with industry-leading distinctive Hitachi technologies, and systems development capabilities

Strengths

(1) Inverters:
   Made smaller with high-efficiency cooling system
   (by 1/3 compared with our current model)

(2) Motors:
   Small, high-efficiency, high output, optimum design of magnetic circuits with analysis technology

(3) Lithium-ion batteries:
   cumulative shipments in excess of 1.2 million cells, high quality and high reliability in all aspects from materials to control technology

Inverters
Motors
Battery packs

Powertrain & electronic control systems business: target revenues for FY2015: ¥300 billion
2-6 Global Distinctive Technologies (3)

Example [Environment field]: High-efficiency engine system (DI* system, VTC*)

Increase fuel efficiency for gasoline engines, by far the leading engine type, and develop global operations based on the principle of local production for local consumption.

Strengths

(1) Improved fuel efficiency, higher compression for injectors and high-pressure fuel pump
(2) Reduced pump loss: VTC etc.
(3) Reduced friction in pistons, valve lifters, etc.

Promote local production
- High pressure fuel pumps: production in North America to start in FY2011
- VTC: production in China to start in FY2011

*DI: Direct Injection
*VTC: Valve Timing Control

Engine management systems business: target revenues for FY2015: ¥200 billion

*DI: Direct Injection  *VTC: Valve Timing Control
2-6 Global Distinctive Technologies (4)

Example [Safety field]: Electrically-driven intelligent brake

- Develop and mass produce new electric drive braking system
  - Accelerate the development as a series (compact version, low-cost version, version w/ brake booster, etc.) and increase sales globally

Strengths

1. Develop regenerative braking system that maximizes energy regeneration for EVs and HEVs without negative pressure
2. Improve vehicle fuel efficiency based on coordinated control of regenerative brakes

Mass production began in August 2010, installed on Nissan Fuga Hybrid and Nissan LEAF

- Awarded “Technical R&D Award” by Society of Automotive Engineers of Japan, Inc.

Drive control systems business: target revenues for FY2015: ¥200 billion
Example [Information field]: ICT* solution for EVs

Support EVs via global telematics centers
~ Strengthen collaboration with Clarion navigation system and DCM* ~

**Strengths**

(1) **EV drive support function**
Notify driver when recharging becomes necessary and give directions to the nearest recharging stand

(2) **Remote operation function**
(via data center)
Air conditioning can be controlled using a mobile phone when vehicle power has been turned off

(3) **Vehicle status manager function**
(via data center)
Transmits vehicle location, equipment status etc., to the data center, and generates probe traffic information

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**Car information systems (CIS) business:**
target revenues for FY2015: ¥250 billion

*ICT: Information and Communication Technology
*DCM: Data Communication Module

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2-6  Global Distinctive Technologies (6)

Developing methods to increase differentiation and efficiency in production

Develop production capabilities that surpass all others through improvements in differentiation methods and technologies

- **Friction Stir Welding technology**
  - Calipers
  - HEV inverters

- **Rectangular wire technology**
  - HEV motors

- **High precision assembly/heat suppression**
  - Brake booster
  - e-ACT* + ESC*, etc.

- **New center for Forging and Molding Prototypes established**
  - Lead time reduction by 1/3 for Die casting prototype

- **Global introduction of remote maintenance facilities in FY2011**

* e-ACT: electric drive braking system
* ESC: Electronic Stability Control
2-7 Global Business Foundation (1)

Start full operation of regional HQ systems based around 4 key overseas regions

Previous framework
Management structure centered on business divisions in Japan

New framework

Objectives
(1) Achieve speedy management by expediting decision-making
(2) Start operation of locally-led management, and local production for local consumption (conformed to the characteristics and needs of the home market)

[Optimization of group operations]

Corporate

Product Business Divisions (Japan)

Americas  Europe  China  Asia

Global Corporate

Product Business Division / Domestic group companies

Europe RHQ*
Hitachi Automotive Systems Europe
Group companies and bases

Asia RHQ*
Hitachi Automotive Systems Asia
Group companies and bases

China RHQ*
Hitachi Automotive Systems China
Group companies and bases

Americas RHQ*
Hitachi Automotive Systems Americas
Group companies and bases

*RHQ: Regional HQ

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Increase investment in electronic control and electric drive products and overseas bases to execute global strategy

1. **Global investment**
   70% increase in cumulative investment for the period FY2011 to 2013 (compared to FY2008 to FY2010)

2. **Triple investment in electronic control and electric drive initiatives**
   (compared to cumulative total for the period FY2008 to FY2010)

3. **Increase the number of engineering personnel from 3,500 (FY2010) to 4,000 (FY2015)**

4. **Increase personnel at 4 key technical centers overseas from 200 (FY2010) to 400 (FY2015)**
**Strengthen global procurement capabilities**

Promote measures to maintain procurement networks to ensure stable supply lines

1. Expand local and international procurement by accelerating “local production for local consumption”
   Increase local procurement rate from 65% (FY2010) to 80% (FY2015)

2. Reinforce VEC* and sourcing of development functions

3. Establish global demand/supply system
   Share information globally in real time to expedite responses

*VEC: Value Engineering for Customers, creating greater value for a lower cost
Strengthen global quality assurance initiatives

Achieve the standard of craftsmanship, high reliability and high quality that expected of Japanese products at all bases worldwide

1 Reinforce global quality assurance framework
   • Reconfigure global quality assurance policies and related responsibilities (organization)

2 Assure the quality of newly introduced and locally sourced materials
   • Bolster quality assurance evaluation framework, etc.

3 Introduce integrated management system for global quality assurance
   • Improve the speed of response through real-time information sharing with suppliers and others (From July 2011 onwards)
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Achieving the goals set out in this global growth strategy will increase our competitiveness on the world stage.

*These are combined ratio with figures of automotive systems that are equipped with vehicles at customer's base and figures of mobile batteries's overseas revenues.
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- Uncertainty as to general market price levels for equity securities in Japan, declines in which may require Hitachi to write down equity securities that it holds;
- The potential for significant losses on Hitachi’s investments in equity method affiliates;
- Increased commoditization of information technology products and digital media-related products and intensifying price competition for such products, particularly in the Components & Devices and the Digital Media & Consumer Products segments;
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