Sony IR Day 2014
Devices Segment

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Sony Corporation

Agenda

- Devices Segment
  1. Business Overview
  2. Mid-term Business Direction
     1. Business policy
     2. Image Sensor
     3. Energy
  3. Summary
**FY2013 Business Overview**

**Devices Segment**

### FY2013 Sales by Key Products

<table>
<thead>
<tr>
<th>Category</th>
<th>Sales (bln yen)</th>
<th>Product/Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image Sensor</td>
<td>320.0</td>
<td>Mobile, Security cameras, DSLR/DSC</td>
</tr>
<tr>
<td>Camera Module</td>
<td>50.0</td>
<td>Mobile</td>
</tr>
<tr>
<td>LSI</td>
<td>120.0</td>
<td>LSI for Game, Laser, RF SW</td>
</tr>
<tr>
<td>Energy</td>
<td>140.0</td>
<td>Polymer, Cylindrical, ESS (Energy Storage)</td>
</tr>
<tr>
<td>Storage Media</td>
<td>90.0</td>
<td>Tape, Memory, Disk</td>
</tr>
</tbody>
</table>

*The figures for sales and operating income are based on the organizational structure as of October 2014, which excludes a transferred business.*

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**FY2014 Business Overview**

**Devices Segment**

### Sales & Operating income (bln yen)

<table>
<thead>
<tr>
<th>Category</th>
<th>Sales</th>
<th>Operating income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image Sensor</td>
<td>860.0</td>
<td>36.0</td>
</tr>
<tr>
<td>Camera Module</td>
<td>63.0</td>
<td>+36.0</td>
</tr>
<tr>
<td>Energy</td>
<td>27.0</td>
<td>+40.0</td>
</tr>
<tr>
<td>Others</td>
<td>-16.9</td>
<td>+17.7</td>
</tr>
</tbody>
</table>

**Changes from previous year**

- Sales increased by 16%, OP increased by 79.9 bln yen
  - Robust smartphone market conditions (Image Sensor/Energy)
  - Strong demand for power tools (Energy)
  - Profit improvement in image sensors
  - Sales decrease in System LSIs due to the shift from PS3 to PS4
  - Recording impairment loss for Energy’s long-lived assets in FY13

**Changes from May forecast**

- Sales increase by 5%, OP increase by 36.0 bln yen
  - Favorable exchange rates
  - Robust smartphone market conditions (Image Sensor/Energy)
  - Strong demand for power tools (Energy)
  - Profit improvement in image sensors

*The figures for sales and operating income are based on the organizational structure as of October 2014, which excludes a transferred business.*
**Mid-term Business Direction**

**Direction**

- Strengthen profitability
  - “Selection and concentration” of business
  - Concentrate resources to main business areas
  - Strengthen profitability in mature business areas
  - Healthy asset management/Advance investment for future business

- Always be the first in the market
  - “Technological differentiation” and advantage
  - Exceed competitors by strengthening our device competitiveness
  - Always be the first to introduce products by advancing technologies and developing cutting-edge technologies

- Be the source of Sony’s end products’ competitiveness
  - “Device innovation”
  - Increase customer value with system solutions
  - Strengthen ties with customers and strategic partnership

**Product Lifecycle**

**DSBG Strategy**
- **Development**
  - Advanced Investment

**Business Area**
- **Life Space UX**
- **Wearable**
- **Automotive System**
- **Medical**
- **ARAM system**

**Development**
- Image Sensor
  - Camera Module
  - Energy

**Strengthen**
- Tuner
  - MMIC
  - SXRD/HTPS
  - Storage Media

**Reconstruct**
- Profitability

**Terminate**
- Game/TV LSI
  - Conventional-Laser
  - Optical Pickup
FY2017 Business Portfolio

Expand sales by differentiating technologies in Image Sensors (incl. Camera Module) and Energy

- **FY2013 Sales by Key Products**
  - **Image Sensor** Sales: 742.3 bln yen (47% of sales)
  - **Energy** Sales: 1300~1500 bln yen (15% of sales)
  - **Storage Media** Sales: 18% of sales
  - **LSI** Sales: New Biz

- **FY2017 Sales by Key Products**
  - **Image Sensor** Sales: 1300~1500 bln yen (63% of sales)
  - **Energy** Sales: 15% of sales
  - **Storage Media** Sales: 47% of sales
  - **LSI** Sales: 15% of sales

*The figures for sales and operating income are based on the organizational structure as of October 2014, which excludes a transferred business.*

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Image Sensor Market Overview

Concentrate on expanding market for mobile, IP Security cameras and automotive

- **Compact DSC**
  - FY13: 51mil pcs
  - FY17: 13mil pcs

- **Smartphone** (Main)
  - FY13: 1061mil pcs
  - FY17: 1607mil pcs

- **Tablet**
  - FY13: 409mil pcs
  - FY17: 567mil pcs

- **CCTV Security**
  - FY13: 97mil pcs
  - FY17: 79mil pcs

- **IP Security**
  - FY13: 13mil pcs
  - FY17: 97mil pcs

CAGR (Units: FY13→FY17)

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*Compact DSC: Compact Digital Still Camera, ILC: Interchangeable Lens Camera, CAGR: Compound Average Growth Rate*
<<Winning strategy>>

- Strengthen Imaging
- Evolve to Sensing
Strengthen Imaging: “New imaging world” realized by Sony’s cameras

8.9MP Super 35mm CMOS Image Sensor
Installation of a global shutter allowing clear images without motion skew and other rolling shutter distortions

12.2MP 35mm Full Size CMOS Image Sensor
Wide pixel pitch delivers about 3 times sensitivity, about 2.3 times signal saturation and phenomenal sensitivity up to ISO 409600

α6000
Apply phase- and contrast-detection autofocus
179 phase detection points phase-detection AF sensor can shoot in 0.06 seconds: the world’s fastest autofocus

In spite of Compact DSC size
20.2MP
1” CMOS Image Sensor

Strengthen Imaging: Exceed the limits of the human eye

Limits of speed
Limits of sensitivity
Limits of dynamic range
Limits of viewing field
Limits of distance
Strengthen Imaging: “1msec world”

Able to switch to 1000fps whenever recording moving images

<<Winning strategy>>
- Strengthen Imaging
- Evolve to Sensing
Evolve to Sensing: Entry into automotive & wearable world based on strengthening imaging technologies

- No.1 share in smartphone market
- Image Sensor technologies

Evolve to Sensing: Meet customer needs by Module & System Solution

- System Solution
- Camera Module
- Image Sensor

Target

- High speed (Low power consumption)
- High sensitivity
- High resolution

Technologies

- Column-parallel ADC
- Back-illuminated structure
- Stacked structure

Assembly technologies

- Information system technologies
- Camera signal processor technologies
**Evolve to Sensing: Meet customer needs by Module & System Solution**

- **Image Sensor**
  - High speed
  - High sensitivity
  - High resolution

- **Camera Module**
  - Embedded: Compact/Thinness
  - Dual cameras

- **System Solution**
  - Recognition: Smile Shutter, PS4 Face log-in
  - Extraction
  - Depth Sensing

- **Target**
  - High speed (Low power consumption)
  - High sensitivity
  - High resolution

- **Technologies**
  - Column-Parallel ADC
  - Back-illuminated structure
  - Stacked structure

- **Assembly technologies**

- **Information system technologies**

- **Camera signal-processing technologies**

**Devices Segment**

- **Evolve to Sensing: New functions delivered by system solutions**

  **Recognition/Distance**
  - Able to accurately calculate distances quickly
  - Recognition/Distance realized by the combination of dual cameras and signal processors
  - Under study for LIDAR using SWIR

  **Extraction**
  - Able to capture fast-moving subjects
  - Defog
  - Backlight correction

  **High-speed processing**
  - Able to capture clear images even in bad weather
  - Images that surpass the limits of the human eye are delivered by system LSIs cultivated in TV image processing
  - High-speed readout and processing realized by high-performance image sensors and back-illuminated structure

*Source: Ishikawa Watanabe Laboratory, The University of Tokyo*
### Business Scenario by Category

#### Devices Segment

**Mobile**

- **Main business for further added value**
  - Application: Smartphone, Tablet
  - Scenario: Entry into Chinese smartphone makers

**Non-Mobile**

- **Base business for utilizing technological advantage**
  - Application: DSC/CAM/DSLR, Professional Camera, Security Camera

**New Business**

- **Business for meeting customer needs by System Solution**
  - Application: Medical, Automotive

### Image Sensor Wafer Production Capacity

**Proactively execute domestic investment**

(300mm wafer basis; unit: 1,000 wafers/month)

<table>
<thead>
<tr>
<th>Year</th>
<th>Production Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>25</td>
</tr>
<tr>
<td>2012</td>
<td>50</td>
</tr>
<tr>
<td>2014</td>
<td>60</td>
</tr>
<tr>
<td>2015~2016</td>
<td>75</td>
</tr>
</tbody>
</table>

**Recent investment**

- Press Release in Sep 2010, Kumamoto TEC approx. 40
- Press Release in Dec 2010, Nagasaki TEC approx. 100
- Press Release in Jun 2012, Nagasaki TEC approx. 80
- Press Release in Jan 2014, Yamagata TEC approx. 35
- Press Release in July 2014, Nagasaki/Kumamoto TEC approx. 35

*Studying further capacity increase*
For AV/IT

- Linked with Sony’s core business by utilizing gel polymer batteries
  - Application: Smartphone, Wearable
  - Scenario: Entry into major smartphone makers, Entry into Chinese smartphone makers

For Non-AV/IT

- New market creation by Olivine-type batteries
  - Application: Power tool, ESS (Energy Storage system), Automotive
  - Scenario: Entry into Megawatt level large-sized ESS, Establishment of JV with Hydro-Québec

Branded batteries

- Stable business with Sony brand & battery technology
  - No.1 in quality in the industry

Sales target by category

<table>
<thead>
<tr>
<th>Year</th>
<th>Branded business</th>
<th>Non-AV/IT</th>
<th>AV/IT</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY13</td>
<td>+10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY14</td>
<td>+60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY17</td>
<td>+25%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For AV/IT Winning Strategy by Sony Gel Polymer Batteries

- Higher energy density
  - Realize higher energy density by Sony’s unique gel polymer (gel electrolyte) structure

- Long life
  - More stable structure of gel polymer compared with competitors’ electrolyte
  - Gel electrolyte keep steam pressure low even if the temperature rise
  - Low swelling ratio

- High safety
  - Gel electrolyte is flame-retardant

Energy Density Improvement

- Atsugi TEC, Koriyama plant
  - Material development, Product design, Basic research

Comparison of energy density:

- Company 1
- Company 2
- Sony
For Non-AV/IT Winning Strategy by Olivine-type batteries

- **Stable structure**
  - Safety + Long life
  - Very safe due to no oxygen dissociative adsorption
  - Long life due to stable structure
  - Highly bound Non-oxide type electrode materials (lithium iron phosphate)

- **Stable discharge characteristics**
  - Large-scale system
  - Capture stable electricity even when charging

- **Quick charge**
  - Realize high speed charging by high-power charging
  - High affinity to wind power and solar power

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**Summary**

**FY2017 Financial Targets**
- Sales: 1,300～1,500 billion yen
- Operating Income Margin: 10%～12%

- Image Sensors: Focus on wearables and automotive in addition to smartphones
- Energy: Focus on smartphones/wearables, power tools and ESS

**Trend from FY2012**

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales (billion yen)</th>
<th>Operating Income margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY12</td>
<td>752.7</td>
<td>5%</td>
</tr>
<tr>
<td>FY13*</td>
<td>742.3</td>
<td>-2%</td>
</tr>
<tr>
<td>FY14</td>
<td>860.0</td>
<td>7%</td>
</tr>
<tr>
<td>FY17 (Target)</td>
<td>1,300～1,500</td>
<td>10%～12%</td>
</tr>
</tbody>
</table>

*Operating loss in FY13 includes a 32.1 billion yen impairment charge related to long-lived assets in the energy business.
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