FY2014 1st Half Results
(from April 1, 2014 to September 30, 2014)

October 31, 2014

This is a translation of materials used for the analyst meeting held in Tokyo, Japan on October 31, 2014

This document contains forward-looking statements that are based on management’s expectations, estimates, projection and assumptions that were available and reasonable at the time of release. Actual future results and trends may differ materially from those in the forecasts due to a variety of factors.
Summary of financial results for FY2014 1st Half
( Ended September 30, 2014)

Forecast for FY2014
( End in March 31, 2015)

Segment Information

Target ratio of new products to total sales

R&D / Capital Expenditure

Financial Condition
## FY2014 1st Half Consolidated Financial Results

### Growth ratio

<table>
<thead>
<tr>
<th>Category</th>
<th>1st half FY2013 (¥Bil.)</th>
<th>1st half FY2014 (¥Bil.)</th>
<th>Growth ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Sales</td>
<td>141.8</td>
<td>168.0</td>
<td>+ 19%</td>
</tr>
<tr>
<td>Operating Income</td>
<td>19.7</td>
<td>28.8</td>
<td>+ 46%</td>
</tr>
<tr>
<td>Ordinary Income</td>
<td>19.6</td>
<td>26.9</td>
<td>+ 37%</td>
</tr>
<tr>
<td>Net Income</td>
<td>12.6</td>
<td>20.1</td>
<td>+ 59%</td>
</tr>
</tbody>
</table>

Higher sales and income compared with the same period last year

- **Ceramics**
  - Demand for automotive-related products increased due to strong sales of trucks in the US and Japan, and diesel cars in the Europe.

- **Electronics**
  - Demand increased atop brisk capital investment by semiconductor manufacturers.

- **Power**
  - The first domestic order after the NAS batteries fire incident was shipped.
Forecasts for FY 2015

<table>
<thead>
<tr>
<th></th>
<th>FY 2013 (¥Bil.)</th>
<th>FY 2014 (¥Bil.)</th>
<th>Growth ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Sales</td>
<td>308.7</td>
<td>350.0</td>
<td>+13%</td>
</tr>
<tr>
<td>Operating Income</td>
<td>44.3</td>
<td>56.0</td>
<td>+27%</td>
</tr>
<tr>
<td>Ordinary Income</td>
<td>45.8</td>
<td>58.0</td>
<td>+27%</td>
</tr>
<tr>
<td>Net Income</td>
<td>27.0</td>
<td>39.0</td>
<td>+44%</td>
</tr>
</tbody>
</table>

Higher sales and income forecast compared with the previous year

- **Ceramics**  
  Demand for Automotive related products remains strong.  
  Tighter emission regulations in China make some contribution to demand.

- **Power**  
  NAS batteries to be shipped for major customers abroad in 2nd half of the fiscal year. (Some shipments to be deferred to next fiscal year.)

- **FX rate** for the 2nd half is assumed to be ¥100/US$1 and ¥135/€1.
Change Analysis: Sales

FY2014 1st half Presentation

3/14
308.7

+12.7

NAS batteries

+12.9

+12.9

Automotive related

+3.1

Insulators related

+1.7

SPE related

+0.9

Others

+8.8

FX Rate

¥100 /US$

¥134 /ER €

May (3/15 Est.)

¥135 /ER €

New (3/15 Est.)

¥102 /US$

¥137 /ER €

3/14
3/15 Est.
Change Analysis: Operating Income

### FX Rate

- **3/14**: ¥100 /US$  
- **3/15 Est.**: ¥102 /US$  
- **New (3/15 Est.)**: ¥102 /US$

### NAS Batteries

- **3/14**: +0.6
- **3/15 Est.**: +0.2
- **New (3/15 Est.)**: +1.3

### Insulators

- **3/14**: +1.2
- **3/15 Est.**: -0.5
- **New (3/15 Est.)**: 0.0

### Depreciation

- **3/14**: +0.5
- **3/15 Est.**: +1.2
- **New (3/15 Est.)**: +3.5

### Automotive Related

- **3/14**: +3.5
- **3/15 Est.**: +7.0
- **New (3/15 Est.)**: 56.0

### SPE Related

- **3/14**: +0.6
- **3/15 Est.**: -3.1
- **New (3/15 Est.)**: -3.1

### Others

- **3/14**: 44.3
- **3/15 Est.**: 48.0
- **New (3/15 Est.)**: 48.0

*(¥ Bil.)*
<Insulators> • Domestic power companies continue to control capital expenditure.
  • Improve earnings by capturing replacement demand and making further cost reduction.
  • Business in Southeast Asia and Middle East continues steadily.

<NAS> • Some overseas shipments will be deferred to next fiscal year.

<After consolidation elimination>

【Sales】

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Insulators</td>
<td>57.7</td>
<td>59.0</td>
<td>75.0</td>
<td>71.0</td>
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<tr>
<td>NAS batteries</td>
<td>0.1</td>
<td>5.1</td>
<td>18.0</td>
<td>15.0</td>
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</tbody>
</table>

【Operating Income】

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Operating Income</td>
<td>-5.7</td>
<td>-3.9</td>
<td>-2.0</td>
<td>-2.5</td>
</tr>
</tbody>
</table>

Compared to May, deficits have expanded due to deferred shipments of NAS batteries.
Forecast for the NAS Batteries Business

**Estimation of global market of large-scale power storage** (NGK’s Est.)

|----------------|------|------|------|------|------|-------|

- **Short time use: Less than 3 hours**
  - Power grid countermeasure (Frequency regulation)

- **Long time use: More than 3 hours**
  (Target market for NAS® batteries)
  - Power grid countermeasure (Save surplus power)
  - Deal with additional electricity demand (Alternative to capital investment)
  - For commercial-scale utility customers

**Challenges**

1. Acquire continuous orders
   - Enhance sales proposal capabilities, increase the number of sales engineer

2. Establish competitive advantage by radical cost reduction
   - Labor saving by rationalized production (automation, process improvement)
   - Standardize design and construction by launching container model package

**Achieve business structure with stable profit**

- **100** kW
- **250** kW

→ Long time use: More than 3 hours

- **2014**
- **2015**
- **2016**
- **2017**
- **2018**
- **2020~**
Ceramics Business

<Automotive-related> • Demand for diesel-related products and NOx sensors has increased due to strong sales of trucks in the US and Japan, and diesel cars in Europe.

<Industrial process> • Although domestic capital investment shows sign of recovery, it remains low.
  • Streamline operation and reduce costs through business restructuring.

<After consolidation elimination>
Demand Trends for Automotive-Related Products

Sales of passenger cars (mil. cars)

Trucks requiring aftertreatment (mil. trucks)

Developing countries: Sales of passenger cars and trucks requiring aftertreatment are increasing
Developed countries: Tighter emission standards for non-road vehicles

Total demand forecast for products

- Demand for diesel-related products (Cd-DPF, LSH, SiC-DPF), and NOx sensors to increase in the medium-to-long term
- GPFs for passenger cars with gasoline direct injection in Europe (full scale from 2017 onward)
**Electronics Business**

*Semiconductor Production Equipment-Related Ceramic (SPE-related products)*
- Semiconductor companies are continuing capital expenditure due to expanding market for mobile products.
- Focus on cost reduction and technical advancement of products.

*Beryllium Copper (Metal related products)*
Demand for use in home appliances and industrial equipment is increasing steadily in China.

*Electronics Components*
Achieve business growth by expanding wafer business, and by adding ceramic package products.

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**Operating Income**
- **Operating Income Margin**
- **Operating Income**

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**Sales**
- **Soshin Electric Co.**
  - Electric related
  - Metal related
- **SPE related**
- **Metal related**

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**Operating Income**
- **3/13**
  - 0.4
- **3/14**
  - 3.1
- **May New (July announcement)**
  - 4.0
- **3/15 Est.**
  - 4.5

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**Operating Income Margin**
- **3/13**
  - 0.9%
- **3/14**
  - 5.3%
- **May New (July announcement)**
  - 6.6%
- **3/15 Est.**
  - 7.0%
Growth Strategies for the Electronics Business

Expand wafer business

**Bonded wafers for SAW filters**
Remarkably improve the thermal characteristics of SAW filters by bonding low-thermal expansion silicon to high-thermal expansion piezoelectric layer.

Order & production increasing steadily

**Translucent alumina wafer (HICERAM™ wafer)**
**Gallium Nitride (GaN) Wafer**

[Advantage vs. existing product]
- Compatible with larger scale
- Higher workability
- Targeting use as an alternative for sapphire and alumina substrates

[Example of final products]
- High-frequency device

**Upcoming commercialized products**

**Commercialize**

**M&A**

Acquire “NIPPON STEEL & SUMIKIN Electronics Devices Inc.”

Capital: ¥3.45 bil.
Manufacturing base: Head office (Yamaguchi, Japan), Malaysia, China
Earnings: Consolidated net sales ¥24.5 bil. (FY2013)
Date of share transfer: Jan. 5, 2015 (scheduled)

Main Products

**Package for quartz crystal device**
Ceramic Package (Protects quartz crystal devise)

**RF package**
High-frequency power amplifier package for mobile communication base station

**Ultra micro quartz crystal package**

**NIPPON STEEL & SUMIKIN Technologies in high-mix production & mass-production**

**NGK Technologies in materials & high-precision production**

“Synergy”

Aim to expand profitability in growth areas

**Example of final products**
- Ultra bright LED
- Power device

**Upcoming commercialized products**

**Order & production increasing steadily**
Priority Tasks

Further promote strong business from a medium- to long-term perspective

- Construct global production system to respond to demand expansion
- Accelerate company-wide “New Structural Innovation of Manufacturing”

Establish the future “ideal self” for each business
Study manufacturing approaches for achieving the “ideal self”
Work on the ideas that break conventional molds

Aim to build the “New Structural Innovation of Manufacturing” to achieve high competitiveness

Creation of new products and businesses - 2017 Challenge 30

- Launch full-fledged expansion of wafer business
- Quickly commercialize prospective products
- Focus on priority research fields and expand development themes
Target ratio of new products to total sales

Forecast of current fiscal year

Raise the ratio of new products to total sales to 30% by FY2017

Total sales of new products

<table>
<thead>
<tr>
<th>Date</th>
<th>Electronics</th>
<th>Ceramics</th>
<th>Power</th>
<th>Total Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/14 FY2013</td>
<td>58.9</td>
<td>190.8</td>
<td>59.0</td>
<td>308.7</td>
</tr>
<tr>
<td>3/15 Est. FY2014</td>
<td>64.0</td>
<td>215.0</td>
<td>71.0</td>
<td>350.0</td>
</tr>
<tr>
<td>3/16 Est. FY2015</td>
<td></td>
<td></td>
<td></td>
<td>19%</td>
</tr>
<tr>
<td>3/17 Est. FY2016</td>
<td></td>
<td></td>
<td></td>
<td>30%</td>
</tr>
<tr>
<td>3/18 Est. FY2017</td>
<td></td>
<td></td>
<td></td>
<td>30%</td>
</tr>
</tbody>
</table>
## Quick commercialization of new products

### Ceramic fuel cell module
**SOFC (Solid-Oxide Fuel Cell)**

- **Proprietary configuration**
- **Split electrode, flat-tubular SOFC**
- **Highly efficient and durable power generation component made of ceramic**

This component creates a chemical reaction using gas to generate electricity and heat, which is then used to heat water and contribute to energy conservation. Expect to be used in condominiums, residences, and commercial buildings.

### Ceramic membrane filter
**(DDR membrane)**

- **Proprietary large sized ceramic membrane that has molecule-size pores**

This filter enables removal and recovery of specific constituents by separating mixed gases and liquids.

### All-solid-state battery

- **All-solid-state battery which are ultra-slim, high energy dense and operable under high temperatures**

The battery enables adjacent mounting with semiconductor components on the circuit board and contributes to reducing the size of electronic devices.

### Applications

<table>
<thead>
<tr>
<th>Ceramic fuel cell module</th>
<th>Ceramic membrane filter</th>
<th>All-solid-state battery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Smart houses (fuel cell for residential use)</strong></td>
<td><strong>Chemical plants (dehydration)</strong></td>
<td><strong>Wearable devices</strong></td>
</tr>
<tr>
<td>Under evaluation at large fuel cell system companies for commercialization</td>
<td>Started several field tests</td>
<td>Start providing a sample in this fiscal year</td>
</tr>
</tbody>
</table>

**Graphical Representation**

- **Fuel cell system**
  - Fuel (Gas)
  - Water
  - Exhaust (Low temperatures)
  - Heat exchanger
  - Air
  - Electricity
  - Inverter
  - Hydrogen

- **SOFC module (Under development)**

- **Ceramic membrane filter**

- **All-solid-state battery**

**Image Descriptions**

- **Filtration area**: 174cm²; equivalent to 600 tubular membrane cells of ø 1022, 100G

**Additional Notes**

- **Chemical plants (dehydration)**

  • Started several field tests

- **Wearable devices**

  • Smart cards

  - Batteries for memory backup

- **Smart cards**

  - Credit card

  - Memory cards

- **Under evaluation at large fuel cell system companies for commercialization**
R&D Input

(¥ Bil.)

R&D

R&D /Sales Ratio

4.8% 4.6% 4.5% 3.9% 3.9%

11.4 11.4 11.3 12.1 13.5


Corporate

Electronics

Power

Ceramics

3.0

3.0

2.5

5.0
Construct a global production system

Europe
Consider additional investment

Poland
Assembly facilities for NOx sensors (2015)
Production Capacity: 7 mil.⇒10 mil. sensors (Total for Japan and Poland)
Increase capacity of LSH, Cd-DPF, GPF (2016)
Production Capacity: 8 mil.⇒15 mil. (In HONEYCERAM equivalent)

United States
Increase capacity of HONEYCERAM (2014)

Mexico
Increase capacity of LSH and Cd-DPF (2013)

China
Increase capacity of HONEYCERAM, LSH, Cd-DPF (2012)

Southeast Asia
Look at establishing new plant

Indonesia
Increase capacity of HONEYCERAM and LSH (2013)

Japan
“Cutting-edge” production system for HONEYCERAM (2015)
Production Capacity: 8 mil.⇒13 mil.
HONEYCERAM
Increase capacity of NOx sensors (2015)
Production capacity: 7 mil.⇒10 mil. sensors
(Total for Japan and Poland)

Red: PROJECTED

FY2014 1st half Presentation

Enhance the global production system, mainly for automotive-related products
Develop cutting-edge production lines in Japan & expand them abroad
Estimated impact on change of depreciation method: -¥3.4 bil.

Capital expenditure is expected to continue over ¥30 Billion in the following years.
## Summary of Cash Flow

### (¥ Bil.)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Activities</strong></td>
<td>3.7</td>
<td>32.7</td>
<td>62.0</td>
</tr>
<tr>
<td><strong>Investing Activities</strong></td>
<td>-0.6</td>
<td>-21.2</td>
<td>-40.0</td>
</tr>
<tr>
<td><strong>Financing Activities</strong></td>
<td>12.4</td>
<td>2.0</td>
<td>-25.0</td>
</tr>
<tr>
<td><strong>Effect of exchange rate change</strong></td>
<td>2.9</td>
<td>3.4</td>
<td>-</td>
</tr>
<tr>
<td><strong>Net Change in Cash &amp;Eq-</strong></td>
<td>18.4</td>
<td>16.9</td>
<td>-3.0</td>
</tr>
<tr>
<td><strong>Effect of changing the FY period (1~3/’12)</strong></td>
<td>-0.7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Cash &amp; Eq- at the End of Year</strong></td>
<td>102.8</td>
<td>119.8</td>
<td>116.8</td>
</tr>
</tbody>
</table>
Total Assets & ROE / EPS & Dividends

FY2014 1st half
Presentation

<table>
<thead>
<tr>
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<th></th>
<th></th>
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<tbody>
<tr>
<td>ROE</td>
<td>8.0%</td>
<td>-12.6%</td>
<td>4.2%</td>
<td>8.6%</td>
<td>11.1%</td>
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<tr>
<td>Other liabilities</td>
<td>323.9</td>
<td>264.4</td>
<td>303.1</td>
<td>344.5</td>
<td>880.0</td>
</tr>
<tr>
<td>Interest-bearing liabilities</td>
<td>69.2</td>
<td>131.4</td>
<td>155.8</td>
<td>167.3</td>
<td>150.0</td>
</tr>
<tr>
<td>Net assets</td>
<td>479.8</td>
<td>523.3</td>
<td>563.0</td>
<td>614.2</td>
<td>650.0</td>
</tr>
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</table>

EPS

<table>
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<tbody>
<tr>
<td>Dividends</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>22</td>
<td>26</td>
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Est.

<table>
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</tr>
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</table>

Payout Ratio

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>26.7%</td>
<td>-</td>
<td>57.2%</td>
<td>26.6%</td>
<td>21.8%</td>
<td></td>
</tr>
</tbody>
</table>

*NAS batteries fire incident

-108.27
<table>
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<tr>
<th></th>
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<th></th>
</tr>
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<tbody>
<tr>
<td>Insulators</td>
<td>54.9</td>
<td>57.6</td>
<td>53.9</td>
<td>56.0</td>
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<td>NAS</td>
<td>0.9</td>
<td>0.1</td>
<td>5.1</td>
<td>15.0</td>
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<td>Power Business</td>
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<td>57.7</td>
<td>59.0</td>
<td>71.0</td>
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<td>SiC-DPF</td>
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<td>26.5</td>
<td>37.6</td>
<td>39.0</td>
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<td>Cd-DPF / LSH</td>
<td>24.8</td>
<td>33.0</td>
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<td>Sensors</td>
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<tr>
<td>Total</td>
<td>247.8</td>
<td>252.8</td>
<td>308.7</td>
<td>350.0</td>
</tr>
<tr>
<td>----------------------------</td>
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<td>--------------</td>
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<td>26.7</td>
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<td>5.1</td>
<td>1.5</td>
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<td>42.8</td>
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<td>33.6</td>
<td>35.1</td>
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<td>9.2</td>
<td>11.4</td>
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<td>Industrial Process</td>
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<td>11.9</td>
<td>7.7</td>
<td>12.3</td>
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<td>Metal related</td>
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<td>9.5</td>
<td>10.7</td>
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<tr>
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<td>13.9</td>
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<td>13.1</td>
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<tr>
<td>Electric Related</td>
<td>2.8</td>
<td>2.0</td>
<td>2.4</td>
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<td>Soshin Electric CO.</td>
<td>5.5</td>
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<td>27.7</td>
<td>31.2</td>
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<td>Total</td>
<td>141.8</td>
<td>166.9</td>
<td>168.0</td>
<td>182.0</td>
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The purpose of this brief is information disclosure for better understanding of NGK Group’s policies, projections and financial condition. This brief does not solicit buying and selling of NGK’s shares.

The figures included in this brief, including the business performance targets and figures, are all projected data based on the information currently available to the NGK Group, and are subject to variable factors such as economic conditions, competitive environments and future demands.

Accordingly, please be advised that the actual results of business performance may differ substantially from the projections described here.