MID-TERM MANAGEMENT PLAN for "REAL VALUE"

April 12, 2016

Shinichi Odo
Representative Director and Chairman of the board
Chief Executive Officer
NGK SPARK PLUG CO., LTD.
The outline image of the 7th Mid-Term Management Plan

Real Value
Sales: 520 billion yen
OP: 100 billion yen

Create of New Business Pillars

Strengthen of Current Business Pillars

Reinforcement of Business Infrastructure

FY2016 - FY2020
The outline of the 7th Mid-Term Management Plan
Evolving phase is the final term of our long-term management plan. The 5 years mid-term plan is made to deliver “Real Value” in FY2020.

>> Delivering “Real Value” to all stakeholders in FY2020.

The 7th mid-term Plan
FY2016 to FY2020
Redefined to adjust environmental changes to offer “Real Value”

### Our Ideal Image in the Year 2020

#### Monozukuri Company
- “Unique core technology”
- “Optimum quality created by all employee participation and manufacturing / technological innovation”
- “The No.1 leading company delivering ‘Real Value’”

#### Highly Profitable Company
- “Global manufacturing and sales networks”
- “Speedy, flexible business development capable of adapting to change”
- “Sustained growth through strategic investment”

#### Progressive Company
- “Corporate Governance System for elevating corporate value”
- “Assertive dialogue with stakeholders and contribution to people around the world”
- “Operations that will support the development of society”

#### Human “Asset” Company
- “Fair corporate culture in which diverse personnel can further excel”
- “Framework that allows people to be autonomous, challenging and active”
- “High professional pride and company loyalty”

### Sales: 500 billion yen
### OP: over 20%
### ROIC Oriented
### CSR Oriented
### IR・SR Oriented
### Speed
### Diversity
### Challenge
### Global
### Fair
Review of the Evolution of NGK SPARK PLUG
Review of the Evolution of NGK SPARK PLUG
–Sales Results–

Unit: million yen

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual Sales Results</th>
<th>Sales Forecasts</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2010</td>
<td>255,500</td>
<td>269,232</td>
</tr>
<tr>
<td>FY2011</td>
<td>277,500</td>
<td>284,746</td>
</tr>
<tr>
<td>FY2012</td>
<td>295,000</td>
<td>302,798</td>
</tr>
<tr>
<td>FY2013</td>
<td>305,000</td>
<td>329,758</td>
</tr>
<tr>
<td>FY2014</td>
<td>331,000</td>
<td>347,636</td>
</tr>
<tr>
<td>FY2015E</td>
<td>363,000</td>
<td>391,500</td>
</tr>
</tbody>
</table>

Delving (3 years)

Renovating (3 years)

$1 | 86 yen | 79 yen | 83 yen | 100 yen | 110 yen | 118 yen
€1 | 113 yen | 109 yen | 107 yen | 135 yen | 139 yen | 132 yen
Review of the Evolution of NGK SPARK PLUG
–Operating Profits–

Unit: million yen

Delving (3 years)

Renovating (3 years)

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>21,500</td>
<td>33,300</td>
<td>41,000</td>
<td>38,000</td>
<td>48,000</td>
<td>60,000</td>
</tr>
</tbody>
</table>

$1  86 yen  79 yen  83 yen  100 yen  110 yen  118 yen
€1  113 yen 109 yen  107 yen  135 yen  139 yen  132 yen

10.7%  12.0%  13.9%  15.7%  17.9%  17.4%
8.4%  8.6%  7.8%  12.5%  14.5%  16.5%
Review of the 6th Mid-Term Management Plan
–Actions and Management Issues–

Actions of the Renovating Phase
- Selection and Concentration
  - Acquisition of Wells
  - Joined NIHON CERATEC as a group subsidiary
  - End of Organic Package production
  - Transferred Dielectric business to MARUWA
  - Transferred assets of the ceramic tube business for the vacuum circuit breakers to CUMI, India

- Creating New Business Pillars
  - Signed Basic Agreement on Business Tie-up in Cylindrical Cell Stacks Used in SOFCs with MHPS
  - Business capital tie-up contract of the asthma monitoring system with Spirometrix
  - Released Oxygen Concentration Instruments “KM5 5touch” in Japan
  - Released Hydrogen Leak Detection sensor
  - Business tie-up with FOMM, Electric Cars

Our Issues to be solved
- Changing our products portfolio, decreasing our reliance on internal combustion engines parts.
- Establishing New Business Pillars
- Strengthening our business infrastructures
Outline of the 7th Mid-Term Management Plan

Delivering “Real Value” to all stakeholders in FY2020

Strengthening Current Businesses
- Increasing shares in China & India, Developing countries
- Strengthening Products for Environmental Regulations
- Promoting Automotive parts utilizing Wells
- Regeneration of Ceramic Package Business
- Promoting Parts for Ceramic Production Machines with NTK Ceratec

Establishing New Business Pillars
- Launching Next Generation Vehicles and the other automotive products
- Realization of Environment / Energy / Medical business pillars

Establishing Strong Business Infrastructures
- Implementing Management Decision with speed in a global perspective
- Fair treatment of human resources in globally
- Organizational reform to visualize responsibilities and authority, and to manage all divisions

Slogan for the 7th Mid-Term Plan  Accelerating Current & New Businesses
Business Strategies

1. Strengthening Current Businesses
1-1. Strengthening Current Businesses - Plugs

Exploiting Developing Countries

<table>
<thead>
<tr>
<th>Price of Cars</th>
<th>Segment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 150,000 yuan</td>
<td>luxury car</td>
</tr>
<tr>
<td>80,000-150,000 yuan</td>
<td>Middle class car</td>
</tr>
<tr>
<td>60,000-80,000 yuan</td>
<td>Lower-Middle class car</td>
</tr>
<tr>
<td>Under 60,000 yuan</td>
<td>Lower class car</td>
</tr>
<tr>
<td>Under 50,000 yuan</td>
<td>Low priced car</td>
</tr>
</tbody>
</table>

e.g. China

High-end (obtained)

Volume Zone

Low-end
1-1. Strengthening Current Businesses -Plugs

Offering competitive products required in developing countries such as features, qualities and prices

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Action plans</th>
</tr>
</thead>
</table>
| Gaining market shares in developing countries | <China>
|                                            | • Promoting CX precious plugs and CX Ni plugs                              |
|                                            | • Leveraging brand image of CX Ni plugs in the market                       |
|                                            | <India>
|                                            | • Promoting sales supports                                                  |
|                                            | **Gaining shares**                                                          |
| Gaining OEM applications for AM           | • Gaining OEM applications for future AM sales                             |
1-2. Strengthening Current Businesses - Sensors

Establish Competitive advantages in Technology and collaborate with system manufacturers to regulations

- Promoting OZ Sensors
- Promoting Temperature Sensors
- Promoting New UEGO Sensors
- Promoting NOx Sensors
- Developing PM Sensors

Current Sensors / secure profits

High-value added / improve profitability

Strict Regulations

Europe

EURO7

EURO5

Brazil

EURO6

Europe

EURO7

*for automobiles

FY2016

FY2018

FY2020
1-2. Strengthening Current Businesses -Sensors

Establish Competitive advantages in Technology and collaborate with system manufacturers to regulations

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Action plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Sensors: secure profits</td>
<td>• Promoting OZ Sensors for developing countries</td>
</tr>
<tr>
<td></td>
<td>• Promoting Temperature Sensors further</td>
</tr>
<tr>
<td>High-value added Sensors: Improve profitability</td>
<td>• Promoting NOx Sensors</td>
</tr>
<tr>
<td></td>
<td>• Promoting New UEGO Sensors</td>
</tr>
<tr>
<td></td>
<td>• Promoting OZ Sensors (Motorcycles)</td>
</tr>
<tr>
<td>Finding seeds in next products</td>
<td>• Developing PM Sensors</td>
</tr>
<tr>
<td></td>
<td>• Finding seeds in next products</td>
</tr>
</tbody>
</table>
1-3. Strengthening Current Businesses - Wells

Launching new AM business utilizing our AM channels and Wells’ products

**Global Strategy**
1. Promoting Ignition Coils
2. Technology and Production optimization

**North America**
Establish a competitive advantage in DIFM (Do it for me) market

**Developing Countries**
Delivering a new service with a price competitive product
## 1-3. Strengthening Current Businesses - Wells

### Launching new AM business utilizing our AM channels and Wells’ products

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Action plans</th>
</tr>
</thead>
</table>
| **Global** | • Promoting Ignition Coils utilizing our channels  
             • Strengthening Technology with collaboration with partners to correspond customers’ requirements |
| **Regions** | <North America>  
                • Establishing a competitive advantage in DIFM (Do it for me)* market besides retails  
                  *DIFM(Do it for me): entrust repairs to dealers or garage companies  
                  <Developing Countries>  
                • Delivering a new service with a price competitive product |
Reforming organization by utilizing outer resources for the growth and regeneration

1. To be an independent subsidiary
2. “Selection and Concentration” of products
3. Reconsideration of facilities
4. Inviting Management Talent

Make a Profit in the end of FY2018
1-4. Strengthening Current Businesses – Ceramic Packages

New Organization

To be an independent subsidiary

NTK Ceramic to be an independent subsidiary
“Selection and Concentration” of products
Reconsideration of facilities
Inviting Management Talent
1-5. Strengthening Current Businesses – Semiconductors

Preparations

1. Electro-static chucks
2. Pins chucks
3. Spraying

Patterns

CVD / PVD

Ion applying

Etching

Resistors

CMP

Source: Data book for Semiconductor Manufacturing Equipment, 2013, Yano Research
### 1-5. Strengthening Current Businesses – Semiconductors

**Make a synergy with NTK CERATEC (ex NIHON CERATEC)**

**To be a top player in the Semiconductor Manufacturing Equipment**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Action plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapting lamination technology to other products</td>
<td>• Adapting sheet lamination technology to other products combined core technology of NTK CERATEC</td>
</tr>
</tbody>
</table>

**To launch a product in the end of 2017**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Action plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promoting Electro-Static Chuck</td>
<td>• Developing new channels</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Action plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing at NTK CERATEC</td>
<td>• Establishing a post process production system of electro-static chuck</td>
</tr>
</tbody>
</table>

**Shortening LT and realizing cost down**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Action plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promoting spraying business</td>
<td>• Developing next spraying membranes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Action plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promoting Refurbish business</td>
<td>• Promoting refurbish business combined with our sheet lamination technology and NTK CERATEC’s refurbish technology</td>
</tr>
</tbody>
</table>
## 1-6. Strengthening Current Businesses –Cutting Tools

Improve productivity of the plant and promote each targets

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Action plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolute No.1 of Ceramic Tools</td>
<td>• Promote high-valued tools for the US aircraft industry and European automobile industry</td>
</tr>
<tr>
<td>Niche and Top of SS Tools(*1)</td>
<td>• Unique and original tools for contributing cost reduction of customers</td>
</tr>
</tbody>
</table>
| Promoting business fields       | • Developing a new pillar besides ceramic tools and SS tools  
                                   1. Diamond tools for Aluminum  
                                   2. CBN(*2) Tools for super hard materials  
                                   3. Drills                                                                              |

(*1)SS Tools: small tools to be used for manufacturing automobile, watch, camera, OA instruments  
(*2)CBN Tools: tools for super hard materials used sintered ceramics
Business Strategies
2. Creating New Businesses
Estimation of Fuel Cell Energy Penetration in Japan

- **Stationary Fuel Cell Market**
  - 500 billion yen (2030)
  - $\Rightarrow$ 1,000 billion yen (2050)

**Source:** Resources and Energy Agency
2-1. Creating New Businesses – Fuel Cell

- Cylinder Type
- Plate Type

**Power Plant**
- 1000kW~
- Dispersed power 250kW~

**Industrial use**
- 3~250kW

**Domestic stationary use**
- (overseas) 0.3~3kW
- (Japan) 0.4~1kW

**Collaboration with MHPS**

- Power
- Dispersed Power
- Bio Gas
- Wood, Garbage
- Industrial Use, City Gas
- Natural Gas for Overseas domestic use
- Japanese Domestic use LPG
- Japanese Domestic use City Gas

- Large thermal power

**Timeline**
- 2015
- 2018
- 2020
- 2025
- 2030
## 2-1. Creating New Businesses – Fuel Cell

Establish a solid status as a fuel cell stack manufacturer

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Action plans</th>
</tr>
</thead>
</table>
| Entering into Domestic use SOFC and launch small industrial SOFC business | • Develop small and high power plate stack SOFC and entering into domestic stationary use and small industrial SOFC system  
Launch by 2020  
Gain 30% shares in the field of domestic use SOFC by 2025 |
| Promoting dispersed power SOFC and entering into Power Plant SOFC | • Entering into power plant market collaborating with MHPS by cylinder stack SOFC  
Entering into industrial SOFC market by 2017, and make profits in several years  
Entering into power plant market in the near future |
2-2. Creating New Businesses – Medical field

Entering into new markets with current products and launching new products

- Artificial Bones
- Oxygen Concentrator

Current Products

- Sensing Technologies

New Products

- Orthopedic Implantation
- Asthma Management
- Overseas Distribution

Markets
## 2-2. Creating New Businesses – Medical field

### Developing its business field

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Action plans</th>
</tr>
</thead>
</table>
| Developing implant business     | • Entering into orthopedic implant business  
                                 | • Entering into overseas business                                                                                                           |
| Adding values and promoting oxygen concentrator | • Leveraging added values by offering working data of oxygen concentrator to doctors  
                                 | • Considering overseas productions and entering into the US markets                                                                      |
| Developing sensing unit for asthma | • Developing NO detection sensing unit for asthma diagnosing instrument of Spirometrix, the US venture company |

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2-3. Creating New Businesses – Others

Finding seeds and raising businesses

- New Products Utilizing Sensing Technologies
- New Products Utilizing Waste heat
- New Products Utilizing Ceramics Features
Business Strategies

3. Establishing Strong Business Infrastructures
3. Establishing Strong Business Infrastructures

**Strengthening business infrastructures for organization and human resources**

**Infrastructure**
- Management of Portfolio, Suggesting Strategies
- Global SCM

**Human Resources**
- Global Management Talents for next generation
- Training programs
- Evaluation systems
- Appropriate positioning

**Organization**
- Promoting Regional Headquarters
- 9 business units for speed decision making
- Establishing Corporate Strategy Group
- Reform our works for enhancing work productivity
### 3. Establishing Strong Business Infrastructures

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Finance</td>
<td>• Introducing ROIC and utilizing as a management indicator</td>
</tr>
<tr>
<td></td>
<td>• Establishing managerial accounting system for decision making</td>
</tr>
<tr>
<td>• Purchasing, SCM</td>
<td>• Establishing appropriate SCM scheme from purchasing, production and sales</td>
</tr>
<tr>
<td>• IT</td>
<td>• Appropriate IT scheme to promote business enlargement and work reform</td>
</tr>
<tr>
<td>• Technology Development</td>
<td>• Accelerating business launch by strengthening marketing</td>
</tr>
<tr>
<td></td>
<td>• Broadening research themes by open innovation</td>
</tr>
<tr>
<td>• Corporate Planning</td>
<td>• Visualization of responsibilities and authorities and management basis</td>
</tr>
<tr>
<td></td>
<td>• Risk Management</td>
</tr>
<tr>
<td>• Human resources</td>
<td>• Developing next global top management talent</td>
</tr>
<tr>
<td></td>
<td>• Appropriate evaluation system and positioning system</td>
</tr>
<tr>
<td></td>
<td>• Developing professionals for each function</td>
</tr>
<tr>
<td>• Work reform</td>
<td>• Shifting to high-valued works to eliminate 20% indirect cost</td>
</tr>
</tbody>
</table>
### 3. Establishing Strong Business Infrastructures
- Introducing ROIC

#### Target: ROIC over 13% in FY2020

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</thead>
<tbody>
<tr>
<td>ROIC</td>
<td>10.3%</td>
<td>10.7%</td>
<td>6.1%</td>
<td>10.7%</td>
<td>11.3%</td>
<td>10.5%</td>
<td>Over 13%</td>
</tr>
<tr>
<td>ROE</td>
<td>11.2%</td>
<td>11.3%</td>
<td>8.4%</td>
<td>11.5%</td>
<td>11.4%</td>
<td>10.1%</td>
<td>Over 12%</td>
</tr>
<tr>
<td>OP rate</td>
<td>10.7%</td>
<td>8.6%</td>
<td>7.8%</td>
<td>15.7%</td>
<td>17.9%</td>
<td>17.4%</td>
<td>Over 20%</td>
</tr>
</tbody>
</table>

**Industries Average *3 years**
(Source SPEEDA)
- 21 Japanese Ceramics: 3.0%
- 99 automotive related: 5.2%
Revenues
-Securing stable revenues-
To realize our sales and OP target in FY2020

<table>
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<tr>
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<tbody>
<tr>
<td>Sales</td>
<td>269,232</td>
<td>284,746</td>
<td>302,798</td>
<td>329,758</td>
<td>347,636</td>
<td>391,500</td>
<td>520,000</td>
</tr>
<tr>
<td>OP</td>
<td>28,770</td>
<td>24,478</td>
<td>23,754</td>
<td>51,661</td>
<td>62,196</td>
<td>68,000</td>
<td>100,000</td>
</tr>
<tr>
<td>OP rate</td>
<td>10.7%</td>
<td>8.6%</td>
<td>7.8%</td>
<td>15.7%</td>
<td>17.9%</td>
<td>17.4%</td>
<td>Over 20%</td>
</tr>
</tbody>
</table>

Unit: million yen

FX rate
$1=115 yen
€1=120 yen

Over 20%
Variance Analysis on Operating Income

Unit: million yen

Negative factor
Positive factor

Sales changes
Product Mix
Rationalization
Others

Impact of foreign exchanges
Depreciation

68,000
13,000
22,700
67,700
100,000

FY2015E
FY2020E

32,000

Unit: million yen
Future business portfolio
Business Portfolio

Sales and growth rate
Average of FY2015 to FY2020

vertical: sales and growth rate
(Average of FY2015 to FY2020)

horizontal: OP rate

Bubble size: sales amounts

Developing business (except plugs and sensors)

Core business (plugs and sensors)

- Rate of developing business to be 32% from 24% of FY2015
- Expect to have 30 billion yen sales in the field of new businesses in FY2020
Financing Strategy
Financing Strategy
-Estimated Cash Flows

Earning cash to be used for investment to grow from FY2016 to FY2020

**CASH IN**
- Net Profit: 280 billion yen
- Depreciation: 170 billion yen

**450 billion yen**

**PAY OUT**
- Working Capital: ▲100 billion yen
- Investment: ▲250 billion yen
- Dividend: ▲100 billion yen

**450 billion yen**
Financing Strategy
-Strengthening shareholders return

Current dividend policy
Stable return + over 20% dividend ratio

New dividend policy
Stable return + over 30% dividend ratio + buyback
Estimated Indicators at a glance

### Management Indicators

<table>
<thead>
<tr>
<th></th>
<th>FY2015E</th>
<th>FY2020E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>391,500 million yen</td>
<td>520,000 million yen</td>
</tr>
<tr>
<td>OP</td>
<td>68,000 million yen</td>
<td>100,000 million yen</td>
</tr>
<tr>
<td>OP ratio</td>
<td>17.4%</td>
<td>Over 20%</td>
</tr>
<tr>
<td>ROIC</td>
<td>10.5%</td>
<td>Over 13%</td>
</tr>
<tr>
<td>Dividend</td>
<td>25.4%</td>
<td>30.0%</td>
</tr>
</tbody>
</table>

### cf.

<table>
<thead>
<tr>
<th></th>
<th>FY2015E</th>
<th>FY2020E</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE</td>
<td>10.1%</td>
<td>Over 12%</td>
</tr>
<tr>
<td>net earnings per share</td>
<td>165.42 yen</td>
<td>300 yen</td>
</tr>
<tr>
<td>FX rate</td>
<td>$1 118 yen</td>
<td>€1 132 yen</td>
</tr>
<tr>
<td></td>
<td>€1 115 yen</td>
<td>€1 120 yen</td>
</tr>
</tbody>
</table>
For the 100th anniversary

Overview of Long-term Management Plan

- Delving
- Renovating
- Evolving

NGK SPARK PLUG in 10 years
- Monozukuri Company
- Highly Profitable Company
- Progressive Company
- Human 'Asset' Company

Real Value

FY2010 to 2012
Delve into existing business and seek new business

FY2013 to 2015
Launch new products or new business

FY2016 to 2018
Develop existing and new business at an accelerated rate

IGNITE YOUR SPIRIT
FORWARD-LOOKING STATEMENTS This presentation contains forward-looking statements concerning the future plans, strategies, beliefs and performance of NGK Spark Plug Co., Ltd. and its subsidiaries. These forward-looking statements are not historical facts. They are expectations, estimates, forecasts and projections based on information currently available to the Company and are subject to a number of risks, uncertainties and assumptions. As such, actual results may differ materially from those projected.