Medium-term Management Plan Progress and TEL Initiatives
July 7, 2016

Toshiki Kawai
Representative Director, President & CEO
FY2016 Highlights

- Increased sales and profit YoY. Achieved sales of ¥663.9B and highest-ever gross profit margin of 40.2%

- Since the 2008 global financial crisis, improved operating income to over ¥100.0B. Substantially improved operating margin to 17.6%, up 3.2 pts YoY
FY2016 Highlights

- Since the 2008 global financial crisis, improved operating income to over ¥100B
- Achieved +8.3% sales increase YoY, GPM of 40.2%, OPM of 17.6% and ROE of 13.0%. Strong progress towards Medium-term Plan targets
- Made steady progress in certification of equipment applications within Medium-term Plan’s SPE focus areas (etching, cleaning and ALD systems)
- Implemented reorganization to strengthen product development ability and responsiveness to customers
- Announced new shareholder return policy, cancelled 15.4 million shares of treasury stock, paid highest-ever annual DPS of ¥237
- Announced that we are building a proactive governance structure with emphasis on linkage to Medium-term Plan
# FY2017 Consolidated Financial Estimates

(Billion Yen)

<table>
<thead>
<tr>
<th></th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Half</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Half</th>
<th>Full year</th>
<th>YoY changes</th>
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</thead>
<tbody>
<tr>
<td><strong>Net Sales</strong></td>
<td>330.0</td>
<td>384.0</td>
<td>714.0</td>
<td>+7.5%</td>
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<tr>
<td><strong>Sales by division</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>SPE</strong></td>
<td>304.0</td>
<td>361.0</td>
<td>665.0</td>
<td>+8.5%</td>
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<tr>
<td><strong>FPD</strong></td>
<td>26.0</td>
<td>23.0</td>
<td>49.0</td>
<td>+9.7%</td>
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<tr>
<td><strong>Operating Income</strong></td>
<td>49.0</td>
<td>75.0</td>
<td>124.0</td>
<td>+6.2%</td>
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<tr>
<td></td>
<td>14.8%</td>
<td>19.5%</td>
<td>17.4%</td>
<td>-0.2pts</td>
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<tr>
<td><strong>Ordinary Income</strong></td>
<td>49.0</td>
<td>75.0</td>
<td>124.0</td>
<td>+3.9%</td>
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<tr>
<td><strong>Income before income</strong></td>
<td>39.0</td>
<td>75.0</td>
<td>114.0</td>
<td>+7.1%</td>
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<tr>
<td><strong>Net income attributable to owners of parent</strong></td>
<td>29.0</td>
<td>56.0</td>
<td>85.0</td>
<td>+9.1%</td>
</tr>
</tbody>
</table>

SPE: Semiconductor Production Equipment  
FPD: Flat Panel Display Production Equipment

Forecasting further YoY increases in sales and profits
Dividend Forecast

- FY2017 DPS(E): ¥260
- DPS expected to set new record high for the third consecutive year
## Current Progress with Medium-term Financial Target

<table>
<thead>
<tr>
<th>WFE market size</th>
<th>FY2015</th>
<th>FY2016</th>
<th>Medium-term financial target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>¥613.1B</td>
<td>¥663.9B</td>
<td>¥720B</td>
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<tr>
<td>Operating margin</td>
<td>14.4%</td>
<td>17.6%</td>
<td>20%</td>
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<tr>
<td>ROE</td>
<td>11.8%</td>
<td>13.0%</td>
<td>15%</td>
</tr>
</tbody>
</table>

FY2015: $31.9B  FY2016: $31.5B

$30B  $37B

FY2015: ¥720B  FY2016: ¥900B

20%  25%

FY2015: ¥613.1B  FY2016: ¥663.9B

15%  20%
Three Focus Areas for New Growth Opportunities

- **Product competitiveness**: Create strong next-generation products
- **Responsiveness to customers**: Become the best and sole strategic partner
- **Increased profitability**: Pursue operational efficiency

Responsiveness to customers leads to increased profitability, which leads to product competitiveness.
# Organizational Reforms to Strengthen TEL

1. **Unification of development divisions**  
   - Implemented (Jan. 2016)

2. **Establishment of new account structure**  
   - Implemented (Jan. 2016)

3. **Reorganization of business units**  
   - Started in Jul. 2016

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Optimized organization for further growth
Unification of Development Divisions – Create Strong Next-generation Products

- Reinforce proposal ability with an eye to markets
- Integrate our diverse technologies
  - Improve performance of individual products
  - Create solutions for patterning, integration, etc.
- Optimize the use of resources
Establishment of New Account Structure

- **Background**
  - Overseas sales ratio of 80%, consolidation among semiconductor manufacturers
  - Technology diversification
    Optimization of device manufacturing processes, as well as improving performance of individual products

- **Actions**
  - Assign regional GM, account GM and account technology GM for each customer
  - Pursue technology marketing that creates customer needs
  - Rapidly identify latent customer needs and provide solutions that exceed customer expectations

- **Purposes**
  - Become the best and sole strategic partner by further enhancing the great trust customers place in us
Reorganization of Business Units

- Reorganized business units in accordance with 4 strategic markets (deposition, coat & clean, etch, test)
  - Structure to maximize technological synergies realized with an eye to strategic markets
  - Make effective use of resources
  - Further speed up decision-making
SPE Product Line-up

Wide range of products that solve customers’ tough technological issues
Capture opportunities in the rapidly growing OLED market with new products

Source: IHS Technology

**FPD Production Equipment Market**

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<td>($)</td>
<td>4</td>
<td>12</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>4</td>
<td>10</td>
<td>12</td>
<td>14</td>
</tr>
</tbody>
</table>

**Forecast**
Summary

- **Unified development divisions**
  - Create strong next-generation products
  - Respond to diverse requirements by taking advantage of an extensive product line-up

- **Established new account structure**
  - Become the best and sole strategic partner by further enhancing the great trust customers place in us

- **Reorganized business units**
  - Focusing on 4 strategic markets, established a structure that will maximize technological synergies

- **Expand revenues in field solutions business**

- **FPD business: Aim for further growth through providing solutions in high value-added areas**
  - Ultra-high resolution, low power consumption, large size
SPE R&D Strategy

Sadao Sasaki
Representative Director, Executive Vice President & General Manager, Development & Production Division
Contents

- Leading-edge Technology Requirements and Business Opportunities for TEL
  - Technological Requirements for Next-generation Leading-edge Devices from the Perspective of Trends in Final Products
  - SPE Business Focus Areas

- SPE R&D Strategy
  - Strategy for Strengthening R&D Ability
  - Growth Strategy for Business Focus Areas (Deposition, Cleaning Systems)
  - IoT Technology R&D
Requirements for Next-generation Devices for Final Products

Pursuit of convenience and user experience

Expansion of use in IoT era

Overall society converting to digital data
Network sophistication

High performance, low power requirement, functional diversification

Accelerating 3D integration
Introduction of next-generation memory technology

Low power consumption, high reliability devices

Requirements for continuous miniaturization and devices with high quality and reliability
Manufacturing Technology Requirements for Semiconductor Devices

**Built-in memory capacity driving demand**
- High aspect, thin film controllability, new materials
- Achievement of ultimate miniaturization

**Acceleration of introduction of SSD at data centers**
- Both precision in fine processing and high productivity
- Innovative cost reductions

**Further miniaturization and changes in structure**
- Taking on challenges in patterning technology, new structures
- Pursuing defect control technology

Grasp of customer needs and rapid provision of equipment, process solutions

CORP IR / July 7, 2016
### SPE Business Focus Areas

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</thead>
<tbody>
<tr>
<td>Logic/Foundry</td>
<td>16/14nm</td>
<td>10nm</td>
<td>7nm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRAM</td>
<td>20nm</td>
<td>1Xnm</td>
<td>1Ynm</td>
<td>1Znm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3D NAND</td>
<td>48 Layer</td>
<td>64 Layer</td>
<td>96 Layer</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Logic/Foundry**
- Maintain 85%+ market share. Further expand technological differentiation with leading-edge immersion and EUV
- Expand applications in 3D NAND processes, expand PORs in patterning processes with new technologies
- Improve position in ALD products and expand market share in new products, establish volume production process for STT-MRAM*

**DRAM**
- Expand sales of batch system for 3D NAND, increase share in single wafer clean through pattern collapse prevention technology

**3D NAND**
- Defect control and removal technology, make systems intelligent

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*STT-MRAM (Spin Transfer Torque-Magnetoresistive Random Access Memory): Magnetic memory that shows promise for low power consumption*
Unification of R&D Resources

- Selection and concentration of company-wide R&D resources in SPE R&D

**FY2016**

BU R&D

64% of total

**FY2017**

BU R&D and corporate R&D

92% of total

*Allocation ratio of R&D engineering staff*
3D NAND Key Process Technologies and TEL’s Solutions

**Plasma dry etch**
- Word line isolation
- Channel hole
- Multi-level contact

**Chemical dry etch**
- Source line pre-clean

**Wet etch**
- Replacement word line

**Wet clean**
- Bevel clean

**Single wafer deposition**
- Word line barrier
- Multi-level contact barrier
- Source line barrier

**Lithography**
- Word line isolation
- Channel hole
- Multiple contact
- Staircase

**Thermal process (batch deposition)**
- Block oxide (high-k)
- Charge trap (ALD SiN)
- Channel Si
- Cap Si

**Atomic layer deposition**
- Core oxide

**3D NAND Key Process Technologies**
- Tactras™
- Certas™
- EXPEDIUS™-i
- CELLESTA™-i
- Trias™
- LITHIUS Pro™ Z
- TELINDY PLUS™
- NT333™
SPE Business Strategy: Strategic Collaboration in Patterning

Collaboration with customers

Capture next-generation POR through joint evaluation and by providing integrated solutions that draw on our broad product range.

Consortia

New technologies
New materials
Leading-edge lithography

TEL’s R&D locations

Patterning Solution Project
TEL Technology Center America

Coater/Developer
Chemical etching system
Etching system
Deposition system
Cleaning system
SPE R&D Strategy (Deposition, Cleaning)
Product line-up responds to high coverage and productivity required in miniaturization and 3D structure.
SPE Business Strategy: Cleaning Systems

- Single wafer wet cleaning system will contribute to improved yield for customers through TEL’s strengths in areas
  - Pattern collapse prevention technology
  - BEOL polymer removal/metal loss reduction
  - High precision back-side bevel cleaning

- Fulfill high technological needs with dry cleaning

- Realize higher share by accelerating introduction of new technologies for further miniaturization
  - Strengthen back-side bevel cleaning technology
  - Microscopic particle control/removal

<table>
<thead>
<tr>
<th>Market share</th>
<th>CY2014</th>
<th>CY2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning system</td>
<td>25%</td>
<td>24%</td>
</tr>
</tbody>
</table>

CY2019 Target
>35%
IoT R&D Strategy (Making Equipment Intelligent)
Providing New Added-value

Application of big data and AI through IoT

Use IoT to analyze diverse data

Combine with expert knowledge

Learns on its own while controlling optimally and safely

Develop intelligent equipment
R&D Initiatives

High growth
High efficiency
High profit

Optimal, safe equipment control

Self-diagnosis ability
Learning ability
Autonomous control ability

Business value

- Higher reliability, lower support requirements with self-diagnosis
- Streamlined spare parts stocks through parts lifespan prediction
- Improved response speed and avoidance of damage through pre-fault detection
- Higher yield through optimal stability control for wafer production
- Less downtime, higher utilization rate through PM optimization

Continuously build high profit structure by achieving high efficiency through incorporation of the newest technology
Making SPE Intelligent

Self-diagnosis ability
Optimal equipment management

Learning ability
Absolutely stable operation

Autonomous control ability
Expansion of functions

R&D of autonomous production systems
Summary

- TEL will grow substantially in consideration of the ever-increasing technological demand for SPEs

- Strategically strengthen collaboration with customers and consortia to create innovative technology. Aim for growth with existing product enhancement and cross-BU synergies
  - Promote technological development of patterning solutions
  - Make SPE intelligent

- Aim to grow our share in etching, deposition, and cleaning through the unification of R&D resources
Environment Around the Leading-edge Semiconductor Industry: TEL’s Patterning Strategies

Akihisa Sekiguchi, PhD
Vice President & General Manager
Advanced Semiconductor Technology Division
Contents

- Technical Challenges in Patterning
  - Sustainability of Device Scaling and Migration to 3D structure
  - Extendibility of Immersion 193 nm (ArF) Exposure Technology and EPE (edge placement error)

- Technical Approaches
  - Unit Process Solution
  - Integrated Patterning Solution (co-optimization of multiple unit processes)

- Next Generation Process
  - Control Techniques in Atomic Scale: ALD (atomic layer deposition) and ALE (atomic layer etch)
Environment of the Leading-edge Semiconductor Industry: Sustainability of Device Scaling and Migration to 3D Structure

Planar

Source: Intel (65 nm node)

Source: Intel (22 nm node)

2005
65 nm node
193 nm litho – Single mask

2012
22 nm node
193i litho – Multiple masks

Future
≤ 7 nm node
193i litho – Multiple masks
EUV litho
Memory-like gridded DR

Migrating to 3D structure with CD scaling makes process more difficult, but sustains Moore’s law
Lithography has already migrated from single exposure of immersion 193 nm to integrated patterning.
Technical Challenges: Resolution and EPE

3. Resolution isn’t the only challenge

- Total Edge Placement Error is the biggest technical challenge to scaling (limiting before device physics)
  - Must reduce EPE contributions from all process steps (not just Litho) in order to take full advantage of resolution benefits of EUVL

Precision of edge placement needs to be at the nm scale, which is more critical than resolution
Progress in Conventional Process: Precision in Cutting and Shrinking

Continuous improvement of etching and thin film formation is key in patterning.
Evolution of Self-aligned Technology: Necessity of New Integration and Module Development

Innovative solutions can be found by combining a variety of our equipment and processes.
Evolution of Unit Process Technology: Atomic Level Controllability

**Performance of Atomic Layer Deposition (ALD)**

The contour map shows the application of ALD on PR surface.

- **Initial**:
  - 44.0 nm
  - 3 sigma: 0.70 nm

- **ALD 10 cycles**:
  - 45.1 nm
  - 3 sigma: 0.64 nm

- **ALD 20 cycles**:
  - 46.5 nm
  - 3 sigma: 0.89 nm

It is possible to control the CD to 1 nm levels while keeping CDU.

**Application of Quasi-ALE to SAC Etch**

- Etch Stop
- SIN Loss
  - SI: 30.0/20.0 mm
  - Selectivity: approx. 12:1 (flat)
- Conventional RIE
- Quasi-ALE

- Etch through
- SIN loss
  - 3.0/5.0 mm
  - Selectivity: approx. 80:1 (flat)

Quasi-ALE increases SiO2 etch selectivity to SIN without etch stop

ALD and ALE require both deposition and etch process/equipment technologies.
Summary of Patterning Technology

- Scaling will still be important in logic devices
- Process will become more complex
- Integrated solutions have become indispensable in addition to continuous improvement in unit process
- Our key strength is the variety in our product lineup – deposition, etch, clean, coat
Etching System: Business Strategies

Yoshinobu Mitano
Vice President & General Manager, ES BU
Current Situation of Etching Market and TEL

- Expansion in etching market continues due to growth in 3D NAND and patterning processes

- Sales in 3D NAND expected to be double those of previous year

- Leveraging our technological advantage, we have seen good progress in the first year of the Medium-term Plan
### Technologies Sought for Leading-edge Logic Devices

<table>
<thead>
<tr>
<th>Demand for Advanced Device</th>
<th>Key Technology/Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIN FET (FEOL)</strong></td>
<td>- Low damage/CD uniformity</td>
</tr>
<tr>
<td><strong>SAC etch (MEOL)</strong></td>
<td>- High selectivity</td>
</tr>
<tr>
<td></td>
<td>- Vertical form</td>
</tr>
<tr>
<td></td>
<td>- Low electron temperatures</td>
</tr>
<tr>
<td></td>
<td>- Radical control</td>
</tr>
<tr>
<td></td>
<td>- ALE technology</td>
</tr>
</tbody>
</table>

- **ALE concept**
- **RLSA plasma**

Source: Intel
Etching Technologies Demanded for Cutting-edge Memory

Demand for Advanced Device

- High selectivity to mask
- Vertical etching
- Productivity

Key Technology/Solution

- TEL’s unique DC superposition technology
- Dynamic processing
- Process control at the wafer edge
Etching Equipment Market and Business Opportunities

Main applications and target devices

- <200mm
- Others
- Gate process
- HARC process*
- Interconnect/contact process
- Patterning process
- Logic
- 3D NAND
- DRAM


*By application ratios are based on TEL estimates

*HARC (High Aspect Ratio Contact) process: A process for forming holes that requires advanced processing technology

Graph made by TEL based on Gartner's research

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### HARC Processing for DRAM/3D NAND

**Market needs**
- Further HARC vertical processing through miniaturization (DRAM) and stacking (3D NAND) needed

**TEL actions and results**
- In DRAM processing, achieved vertical processing of 18nm and beyond
- In 3D NAND, made progress with slit processing, in addition to multi-layer contact processing
- Improved productivity through improved processing performance at wafer edge (increased number of chips in yield)

<table>
<thead>
<tr>
<th>DRAM</th>
<th>3D NAND</th>
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<tr>
<td>CY2016</td>
<td>CY2017</td>
</tr>
<tr>
<td>DRAM</td>
<td>20~25nm</td>
</tr>
<tr>
<td>3D NAND</td>
<td>~48Layers</td>
</tr>
</tbody>
</table>

![Diagram showing HARC Processing for DRAM/3D NAND](image_url)
BEOL/Contact Processing

- Market needs
  - Higher selectivity
  - Contact formation of narrow dimensions

- TEL actions and results
  - Realized high-selectivity ALE through optimization of electricity supply system
  - Higher productivity through improvements to gas supply system

![Diagram of ALE Concept]

- Initial state
- Gas absorption
- Repeated necessary number of times
- Desorption
- Activation
Patterning for Logic/DRAM

- **Market needs**

- **TEL’s initiatives and results**
  - Logic: Utilize the strengths in our oxide etching to handle expanding patterning processes
  - DRAM: Realize productivity merits through process simplification and leveraging equipment adoption in logic customers

![Diagram of patterning technologies](image)

Evolution of multi patterning technology

Simplify process and raise productivity by combining multiple etching steps
Summary

- Achieve Medium-term Plan target (raise profitability on 10 pt increase in share) through stable position in logic interconnect/contact process, our initiative to realize HARC/patterning market needs

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<tr>
<th>Market Share</th>
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</thead>
<tbody>
<tr>
<td>Etching system</td>
<td>26%</td>
<td>19%</td>
</tr>
</tbody>
</table>

CY2019 Target: >36%
Field Solution Business Strategies

Kiyoshi Sunohara
Senior Vice President & General Manager, FS BU
FY2016 Highlights and Revenue Plan

FY2016 Highlights

- Grew sales ¥15.0B YoY
- Began supplying remanufactured equipment
- Introduced new TELeMetrics™ service
  - 50 fabs remotely connected
- Installed base of 59,000 units

Increased earnings in both the used equipment/modification and parts/service segments
IoT Expanding Business Opportunities

Chips for iPhone 6S

Leading-edge equipment
- Processor/DRAM
- NAND Flash
- LTE Modem
- Others

Upgraded previous generation equipment
- Power amplifier
- MEMS
- Display controller
- Sensor
- Others

Customer needs driven by IoT
- Used equipment/modification
  - Fast delivery/low price
  - Compatibility with new applications
  - Upgrades based on changes in (technological) needs
- Parts/services
  - Stable operation of equipment
  - Reduced running costs
  - Long life support for equipment

Upgrades to leading-edge technology being sought for all generations of equipment

Source: iFixit website
A Business Model Utilizing Makers’ Strengths

1. Reliable equipment supply structure
   ■ Remanufactured equipment model
   In addition to our existing used equipment supply, upgrade and resale business, supply remanufactured equipment made with new and used parts

2. Upgrades that meet customers’ needs
   ■ Increased capabilities and life-span extension of equipment already in place
   With the rise of diverse device needs due to IoT, there is demand for reuse of equipment already in place through life-span extension. We provide upgrades that address these needs
A Business Model Utilizing Makers’ Strengths

1. TELeMetrics™ Service
Supply high value-added services through real time monitoring of operational status of customer equipment

2. Growing share through annual parts contracts
In addition to increasing the number of installed units, supply contracts that meet customer needs by combining parts-based service, consumables and repairs

- Predictive maintenance
- Improved throughput
- Chamber-to-chamber matching
- Fewer defects

High value-added services + Parts supply → Comprehensive service contracts

Largest installed base in the industry

- >59,000 units in CY2013
- >63,000 units in CY2020(E)
- >1,000 units/year increase in CY2016
Summary

- We are driving our business through a business model that utilizes makers’ strengths in response to diverse technological needs being expanded by IoT.

- We will achieve sales growth and increased profitability by expanding a broad range of businesses, including services, parts, used equipment and upgrades.
FPD Business Strategy

Tsuguhiko Matsuura
Vice President & General Manager, FPD BU
# Display Trend

## Business opportunities in technological inflection around OLED

<table>
<thead>
<tr>
<th>Major end products</th>
<th>Conventional</th>
<th>Advanced display</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notebook Monitor TV</td>
<td>Notebook Monitor TV</td>
<td>Smartphone, tablet OLED TV* 4K, 8K TV Flexible*</td>
</tr>
<tr>
<td>Display technology</td>
<td>a- Si LCD</td>
<td>LTPS, metal oxide, OLED</td>
</tr>
<tr>
<td>Required features</td>
<td>Large screen, low cost</td>
<td>High resolution, flexible large screen TVs (&gt;65”, 8K)</td>
</tr>
</tbody>
</table>

*Source: LG Display website*
FPD Production Equipment Market and Medium-term Plan

- Increase share and profitability in market that has begun to grow again
- FY2020 target: sales ¥60.0B, operating margin over 20%
  (FY2016 sales ¥44.6B, segment profit margin* 10%)

- **Others**
  Cell, module processes, etc.

- **OLED**
  OLED-specific manufacturing. Emitting layer deposition, encapsulation, etc.

- **TFT Array**
  Substrate fabrication process. Essential manufacturing process common to both LCD and OLED

Grow sales in leading-edge sectors where we can differentiate

- Inkjet OLED printing system
- G10.5 compatible etching system and coater/developers
- High performance PICP™*** etching system

* Segment profit margin is based on profit margin before income tax
** TFT Array: Substrate that realizes display images
*** PICP: Plasma source for producing extremely uniform high density plasma on substrate

Source: IHS Technology, Display Supply Demand Equipment Tracker Data Tables Q1 2016
**Opportunity - Metal Oxide/LTPS**

**Sophistication of LCD/OLED etching technology, increased number of processes**

<table>
<thead>
<tr>
<th></th>
<th>TFT</th>
<th>a-Si</th>
<th>Metal oxide</th>
<th>LTPS</th>
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<tbody>
<tr>
<td><strong>Representation of structure</strong></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
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</tr>
<tr>
<td><strong>Application</strong></td>
<td>LCD TV Monitor</td>
<td>Tablet OLED TV</td>
<td>Smartphone (LCD, OLED)</td>
<td></td>
</tr>
<tr>
<td><strong>Number of masks</strong></td>
<td>5</td>
<td>6 ~ 8</td>
<td>9 ~ 13</td>
<td></td>
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<tr>
<td><strong>Dry etch processes</strong></td>
<td>a-Si, SiNx</td>
<td>SiO, SiNx</td>
<td>SiO, Metal</td>
<td></td>
</tr>
</tbody>
</table>
PICP™ Etching System
Our proprietary high precision plasma technology. Currently growing share in LTPS LCD/OLED

Miniaturization of TFT
Reduced diameter of contact holes
Thick film/miniaturation of interconnect
Increased size of substrate

Merits of PICP™ etching system
Increased precision in etching process
Suppression of process changes during continuous processing
Underlayer loss suppression (uniformity, selectivity)
Opportunity – Growth of Large Panel TV Market/G10.5
Substrate Size
Expect to capture high share in rapidly growing G10.5 market on G10 results and differentiated technology (large area plasma suppression, air floating coater)

TFT Array equipment market (by generation)

Source: IHS Technology, Display Supply Demand Equipment Tracker Data Tables Q1 2016

Possible to make 65 inch TV with eight panels

3,370 mm

2,940 mm

≥G10
G8
G6
< G6

Expect to capture high share in rapidly growing G10.5 market on G10 results and differentiated technology (large area plasma suppression, air floating coater)
Opportunity – Growth of OLED TV Market
Market launch of inkjet printing system for start after 2018

Forecast for OLED area demand

Inkjet printing system for manufacturing OLED panels *Elius™2500*

Material utilization efficiency far higher than evaporation method

Source: IHS Technology, Display Long Term Demand Forecast Tracker 1Q16
Summary

- Increase share and profitability in market that has begun to grow again. FY2020 target: sales ¥60.0B, operating margin over 20%

- For leading-edge production processes, focus on areas where we have technological superiority
  - High performance PICP™ etching system
  - G10.5 compatible etching system and coater/developer
  - Inkjet printing system for OLED TV
Medium-term Management Plan: Financial Progress

Tetsuro Hori
Representative Director, Executive Vice President & General Manager
Corporate Administration Division
## Financial Model

<table>
<thead>
<tr>
<th></th>
<th>FY2016 (Actual)</th>
<th>FY2017 (Estimate)</th>
<th>FY2020 (Medium-term plan)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WFE $31B</td>
<td>WFE $31B</td>
<td>WFE $30B</td>
</tr>
<tr>
<td>Net Sales</td>
<td>663.9</td>
<td>714.0</td>
<td>720.0</td>
</tr>
<tr>
<td>SPE</td>
<td>613.0</td>
<td>665.0</td>
<td>660.0</td>
</tr>
<tr>
<td>FPD</td>
<td>44.6</td>
<td>49.0</td>
<td>60.0</td>
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<tr>
<td>Gross profit</td>
<td>267.2</td>
<td>280.0</td>
<td>305.0</td>
</tr>
<tr>
<td>Gross profit margin</td>
<td>40.2%</td>
<td>39.2%</td>
<td>42%</td>
</tr>
<tr>
<td>SG&amp;A expenses</td>
<td>150.4</td>
<td>156.0</td>
<td>160.0</td>
</tr>
<tr>
<td>SG&amp;A expense ratio</td>
<td>22.6%</td>
<td>21.8%</td>
<td>22%</td>
</tr>
<tr>
<td>Operating income</td>
<td>116.7</td>
<td>124.0</td>
<td>145.0</td>
</tr>
<tr>
<td>Operating margin</td>
<td>17.6%</td>
<td>17.4%</td>
<td>20%</td>
</tr>
<tr>
<td>Net income attributable to owners parent</td>
<td>77.8</td>
<td>85.0</td>
<td>100.0</td>
</tr>
<tr>
<td>ROE</td>
<td>13%</td>
<td>-</td>
<td>15%</td>
</tr>
</tbody>
</table>
Our Initiatives as Seen From Our Financial Model

Comparison of FY2017 (estimate) and ¥720B sales Model

- **Challenge:** Net sales are around target level, but gross margin is still 3 pts short of FY2020 target
- **Response:**
  1. Supply markets with equipment and services that are even more differentiated. Plan to increase profitability by providing high added-value
  2. Aim to reduce cost of sales ratio by more quickly achieving the equipment performance demanded by customers and further raising quality
  3. Lower outsourcing costs by reducing delivery time

![Net Sales and Gross Profit Margin Chart](chart.png)
Control of SG&A Expenses

- Progress: Level of SG&A expenses is as planned

- Going forward:
  1. Pursue greater efficiency through unification of R&D divisions
  2. Rebalance SG&A expenses, reallocate to R&D expenses
     - Increase productivity by strengthening IT systems
     - Balance sales growth and inventory control for space saving
     - Aim to expand sales in excess of staff increases

![Net Sales per Employee](image)
Increasing Efficiency of R&D

- Strengthen R&D across the business units that integrate leading-edge technologies in each product

- Focus resources on strategic products
  - R&D expenses for focus areas ￥54.0B  
    (Increase by +￥11.0B, 26% vs. FY2015)

![R&D Expense Chart]

Focus areas (etching, deposition, cleaning)

￥11.0B, +26%  
(vs. FY2015)
Assets and Capital Efficiency (Sales ¥900B Model)

- **Accounts Receivable Turnover**
  - Current approx. 60 days: Appropriate

- **Inventory Turnover**
  - Current 107 days → Target 85 days

- **ROE**
  - Current 13% → Target 20%

**EPS and ROE**

![Graph showing EPS and ROE](image)

- **ROE** = Net income attributable to owners of parent / Average total number of shares outstanding in each fiscal year (excluding the treasury stock)
Summary

- Making progress towards achieving our FY2020 financial model

- Key to achieving profit margin target is further improving competitive strength of products and raising gross profit margin through higher quality

- Progress in raising R&D and operational efficiency

Pursue global standard profitability
Aim to further enhance our corporate value
Disclaimer regarding forward-looking statement
Forecast of TEL’s performance and future prospects and other sort of information published are made based on information available at the time of publication. Actual performance and results may differ significantly from the forecast described here due to changes in various external and internal factors, including the economic situation, semiconductor/FPD market conditions, intensification of sales competition, safety and product quality management, and intellectual property-related risks.

Processing of numbers
For the amount listed, because fractions are rounded down, there may be the cases where the total for certain account titles does not correspond to the sum of the respective figures for account titles. Percentages are calculated using full amounts, before rounding.

Exchange Risk
In principle, export sales of Tokyo Electron’s mainstay semiconductor and FPD panel production equipment are denominated in yen. While some settlements are denominated in dollars, exchange risk is hedged as forward exchange contracts are made individually at the time of booking. Accordingly, the effect of exchange rates on profits is negligible.

FPD: Flat Panel Display