Review of Operations and Business Outlook

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**Semiconductor Production Equipment (SPE)**

2017 Business Environment

Investments in data center services were brisk, backed by growing streaming video consumption, electronic payment services, and the spread of streaming video and other services. Supply of DRAM was especially tight, and in 3D NAND, the use of SSD in servers also grew. These factors led to major increases in capital investment aimed at expanding production. As a result, 2017 global capital expenditure for wafer fab equipment (WFE) grew 37% year on year to surpass US$50 billion for the first time.

- **Segment net sales grew 40.7% year on year to ¥1,055.2 billion.**
  - By application, sales of equipment for DRAM and non-volatile memory more than doubled year on year.
  - By product, investment in 3D NAND and multiple patterning, reflecting ongoing miniaturization, increased. Tokyo Electron's market share rose, leading to sales growth in the key fields of etching, deposition and cleaning. Sales of etch systems rose to 40% of the segment's total new equipment sales.
  - Sales in the field solutions business (uncompensated sales of parts and used equipment, modifications and maintenance services) rose 20.5% year on year to ¥20.1 billion due to significant growth in parts sales, mainly in South Korea, reflecting higher equipment utilization rates at customer facilities.
  - The segment profit margin improved significantly, from 24.4% in the previous fiscal year to 29.8%, due in part to the increase in sales as well as a rise in the competitiveness of products in key fields.

**Business Outlook**

With the full-scale arrival of 10T, the use of data centers with high-speed processing and services that leverage big data is rapidly expanding. This expansion relies on semiconductor nodes and is driving a boom in semiconductor demand. Reflecting this, the WFE market is expected to grow to over US$50 billion in the near future. Tokyo Electron has positioned etch, deposition and cleaning systems as key medium-term growth fields, which are expected to see especially strong market expansion. By achieving technological differentiation in these fields, the Company aims to improve profitability and market share by leveraging its technological superiority.

As the number of layers in 3D NAND increases and the miniaturization of DRAM and logic chips continues, device structure is growing more complex and a wider range of materials is being used. To fabricate such devices, deposition technologies that form uniform films from a broad range of materials and etch and cleaning technologies that selectively and precisely remove such films are becoming more important than ever. Tokyo Electron is working to expand its market share in these three key fields by leveraging such strengths as its deep hole etch technologies for high aspect ratio features, excellent processing uniformity, Tokyo Electron is working toward business growth by introducing Betaplex™, a new platform with higher productivity, and equipment for new processes. Looking at large-sized panels for TVs, in generation 10.5 panels for 65-inch TVs has begun. Building on its track record of providing equipment for the mass production of generation 10 panels, Tokyo Electron is already securing business in this area and aims to flex its competitive strengths to win other customers’ planned investment going forward. As a result, Tokyo Electron is focusing on continuous improvement of its products to meet the needs of customers, and is expanding its market share in its three key areas.

**FPD Production Equipment**

2017 Business Environment

- **Investment in small- and medium-sized OLED panels for smartphones was brisk.** At the same time, investment in generation 10.5 large panels for TVs began. As a result, the equipment market for thin-film transistor (TFT) array processes, in which Tokyo Electron operates, grew about 30% from the previous year, reaching approximately US$50 billion.

Fiscal 2018 Business Overview

- The segment profit margin rose significantly, from 9.4% in the previous fiscal year to 17.7%.
- Tokyo Electron continues to improve profitability and market share by leveraging its technological superiority.
- Tokyo Electron is working toward business growth by introducing Betaplex™, a new platform with higher productivity, and equipment for new processes. Tokyo Electron is positioning etch, deposition and cleaning systems in their respective key fields. Tokyo Electron is positioning etch, deposition and cleaning systems in their respective key fields.

**Business Outlook**

In the display market, technological innovation is expected in both products for mobile devices and for TVs. Accordingly, the market for TFT array process equipment, in which Tokyo Electron operates, is expected to remain firm through 2020. Within this overall market, Tokyo Electron aims to further improve profitability and market share by leveraging its technological superiority.

In small- and medium-size panels for mobile devices, increases in display size are expected to drive continued expansion in panel area basis demand. Despite ongoing market adjustments, demand for OLED is forecast to grow over the medium term, as it offers excellent performance (e.g. high resolution and low power consumption) and enables flexible displays. OLED production, however, requires more difficult etching and longer processes. In addition, new etch processes are emerging for flexible display production. In addition to PICP™ etch systems, which offer excellent processing uniformity, Tokyo Electron is working toward business growth by introducing Betaplex™, a new platform with higher productivity, and equipment for new processes. Looking at large-sized panels for TVs, in generation 10.5 panels for 65-inch TVs has begun. Building on its track record of providing equipment for the mass production of generation 10 panels, Tokyo Electron is already securing business in this area and aims to flex its competitive strengths to win other customers’ planned investment going forward. In addition, Tokyo Electron’s PICP™ etch systems currently boast overwhelming competitiveness for small- and medium-sized panels; we are beginning to roll out these systems for large-sized panels in preparation for investment in high-resolution 4K and 8K displays.

Furthermore, Tokyo Electron is well positioned to take advantage of the coming widespread adoption of OLED TVs. The Company’s inkjet printing system offers drastically improved material efficiency compared with conventional vaporization systems. To build a robust position as the inkjet equipment market takes shape, Tokyo Electron is repositioning its printing technology in this area with the delivery of systems to customers’ development lines.