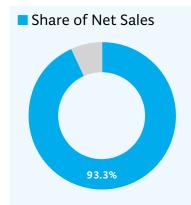
TOKYO ELECTRON ANNUAL REPORT 2018

Review of Operations and Business Outlook

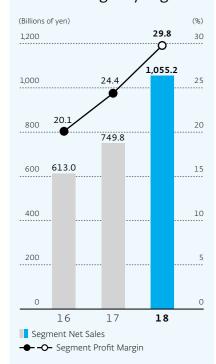
Review of Operations and Business Outlook

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Semiconductor Production Equipment (SPE)



Net Sales and Profit Margin by Segment



Segment profit corresponds to income before income

taxes on the consolidated statements of income

2017 Business Environment

Investment in data center servers was brisk, backed by growing transmission volumes due in part to the spread of streaming video and other services. Supply of DRAM was especially tight, and in 3D NAND,¹ the use of SSD² 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)³ grew 37% year on year to surpass US\$50 billion for the first time.

- 1 3D NAND: A new type of non-volatile memory in which memory cells are stacked vertically
- 2 SSD (Solid state drive): A high-volume data storage device that uses non-volatile memory
- 3 Wafer fab equipment (WFE): The semiconductor production process is divided into front-end production, in which circuits are formed on wafers and inspected, and back-end production, in which wafers are cut into chips, assembled and inspected again. WFE refers to the production equipment used in front-end production and in wafer-level packaging production.

Fiscal 2018 Business Overview

- > 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 etch, deposition and cleaning. Sales of etch systems rose to 40% of the segment's total new equipment sales.
- Sales in the field solutions business (encompassing sales of parts and used equipment, modifications and maintenance services) rose 20.5% year on year to ¥251.0 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

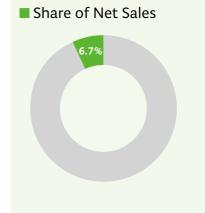
With the full-scale arrival of IoT, the use of data centers with high-speed processing and services that leverage big data is rapidly expanding. This expansion relies on semiconductors and is driving a boom in semiconductor demand. Reflecting this demand, the WFE market is expected to grow to over US\$60 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 increase its profitability and market share.

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 its three key fields by leveraging such strengths as its deep hole etch technologies for high aspect ratio features, surface modification and drying technologies that prevent pattern collapse caused by cleaning chemicals, and ALD/quasi-ALE⁴ technologies that enable atomic level film formation and removal.

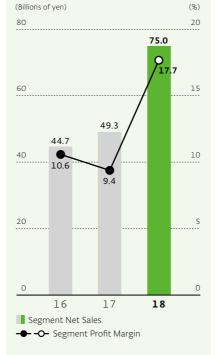
The advance of new technological generations will lead to even more formidable and complex technological challenges going forward. Tokyo Electron will leverage its lineup of equipment for a diverse range of processes to quickly develop and offer integration technologies that optimize multiple processes to one another. By taking part in joint development with customers from an early stage according to their respective technological roadmaps, the Company will advance business growth from a long-term perspective.

4 ALD (atomic layer deposition)/quasi-ALE (atomic layer etch): Atomic level film deposition and etch techniques

FPD Production Equipment



Net Sales and Profit Margin by Segment



Segment profit corresponds to income before income taxes on the consolidated statements of income.

2017 Business Environment

Investment in small- and medium-sized OLED panels for smartphones and other mobile devices 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\$10 billion.

1 Thin-film transistor (TFT) array processes: The processes of manufacturing the substrates with the electric circuit functions that drive displays

Fiscal 2018 Business Overview

- > Segment net sales rose 52.0% year on year to ¥75.0 billion.
- The segment profit margin rose significantly, from 9.4% in the previous fiscal year to 17.7%.
- \bullet Customers continued to transition to highly profitable PICPTM2 etch systems for small- and medium-sized panels.
- Tokyo Electron used its track record in generation 10 panels to secure a large share of the market for generation 10.5 large-sized panel equipment.

 $2 \ \ \text{PICP}^{\text{\tiny{TM}}} : \text{A plasma source that produces extremely uniform high-density plasma on panel substrates}$

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 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 undergoing recent 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 lengthier processes. In addition, new etch processes are emerging for flexible display production. In addition to PICPTM etch systems, which offer excellent processing uniformity, Tokyo Electron is working toward business growth by introducing BetelexTM, a new platform with higher productivity, and equipment for new processes.

Looking at large-sized panels for TVs, investment 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, as 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 evaporation systems. To build a robust position as the inkjet equipment market takes shape, Tokyo Electron is readying its business framework in this area with the delivery of systems to customers' development lines.