Semiconductors

In response to growing demand for power semiconductors, we aim to expand sales and profits by increasing production capacity through continued active investment.

Toru Hosen
Senior Managing Executive Officer
Corporate General Manager,
Semiconductors Business Group

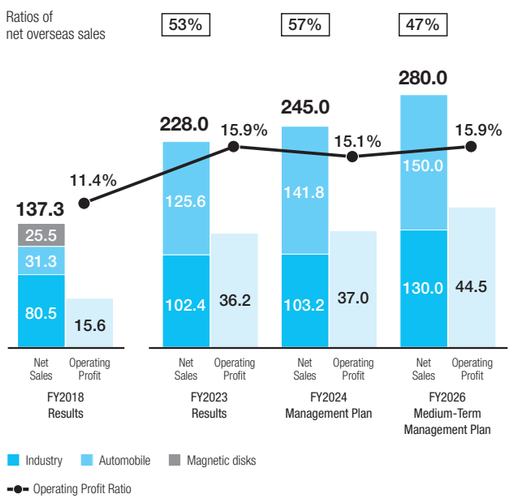
Q. What were the achievements and challenges of the FY2023 Medium-Term Management Plan?

Our record-breaking performance in fiscal 2023 was primarily driven by expansion of sales centered on power semiconductors for electrified vehicles (xEVs). Our challenges were in increasing production capacity and developing new products to meet the growing demand for power semiconductors.

The impact of the withdrawal from the magnetic disk business was offset by the power semiconductor business, which resulted in record highs for net sales, operating profit, and the operating profit ratio in fiscal 2023. In particular, to respond to rising demand for power semiconductors, especially those for xEVs, we expanded our production capacity for 8-inch silicon (Si) wafers to be more than five times that of fiscal 2018.

Our challenges were in further raising production capacity in response to the growing demand for power semiconductors, especially those for xEVs and renewable energy, and in maintaining and improving market competitiveness by developing next-generation IGBTs and silicon carbide (SiC) products.

Business Performance Trends (Billions of yen)



Q. What are the key policies and initiatives of the FY2026 Medium-Term Management Plan?

We are working to ensure specifications are incorporated for power semiconductors for xEVs and renewable energy as well as to establish a production system to meet the increasing demand.

▶ Expanding power semiconductor sales in the growing xEV market

In the rapidly expanding xEV market, reducing power loss and extending driving distance are significant challenges. Power semiconductors, which contribute to solving these issues, are in rapidly increasing demand, and there is a growing need to further improve efficiency.

We continuously engage in activities to encourage use of Fuji Electric's specifications for our Si-based RC-IGBT* products, which we developed ahead of our competitors, as well as for SiC products that achieve significantly lower power loss compared to Si products. We are expanding both in Japan and overseas the number of manufacturers and vehicle models that adopt our products, thereby increasing our sales.

Particularly for SiC products, we anticipate market growth and demand expansion that exceeds that of Si products. We plan to increase the net sales ratio of SiC within our automotive modules from about 1% in fiscal 2023 to approximately 5% in fiscal 2024, and further to about 20% by fiscal 2026.

While there may be a temporary reduction in sales volume due to model changes for some customers in fiscal years 2025–2026, our activities to encourage use of Fuji Electric's specifications will continue, and we expect sales growth to accelerate further from fiscal 2027 onward.

* RC-IGBT: A product that integrates two types of semiconductors having different functions (IGBTs and freewheeling diodes) laid out alternately in a linear arrangement on a single chip. This chip structure significantly reduces power loss and enables miniaturization.

▶ Expanding sales of modules for renewable energy

We intend to expand our product lineup of the 7th-generation IGBT modules, which feature high heat dissipation and high reliability, to increase their sales particularly in the renewable energy field, which keeps strong demand.

In the renewable energy field, there is a growing need for higher voltage, higher output, and higher efficiency products that contribute to miniaturization, system cost reduction, and longer equipment lifespans. We are working to develop the 8th-generation IGBT modules, which will increase output by about 20% compared to the 7th-generation IGBT modules, and large-capacity modules equipped with 3rd-generation SiC, which will increase output by about 50%.

We plan to continue to capture strong demand, with net sales in the renewable energy field expected to grow by 27% in fiscal 2024 and by 54% in fiscal 2026 compared to fiscal 2023.

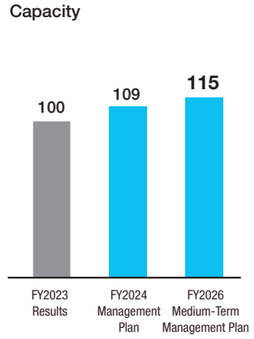
▶ Aggressive investment in Si and SiC production capacity expansion

In response to the robust demand for power semiconductors, we plan to invest a total of 180 billion yen in plants and equipment over the three-year period through to fiscal 2026.

For power semiconductor chips (front-end process), our production capacity for 8-inch Si wafers will increase by 9% in fiscal 2024 and by 15% in fiscal 2026 compared to fiscal 2023. For 6-inch SiC wafers, production capacity will double in fiscal 2024 and expand by about nine times in fiscal 2026 compared to fiscal 2023. We will start full-scale mass production of SiC at the Tsugaru Factory in fiscal 2024, and preparations are underway for capacity expansion from fiscal 2025 onward. Additionally, we are developing mass production technology for 8-inch wafers in anticipation of medium- to long-term demand growth from fiscal 2027.

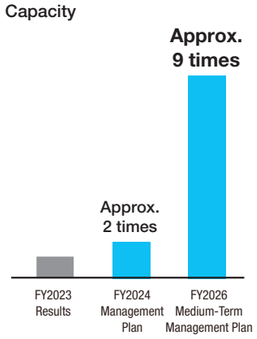
For the assembly process (back-end process), we will continue to invest to increase production capacity for automotive and industrial products while promoting local production for local consumption to improve productivity.

8-Inch Si Wafer Production Capacity



* For production capacity (year-end comparison), FY2023 is assigned 100 for comparison purposes.

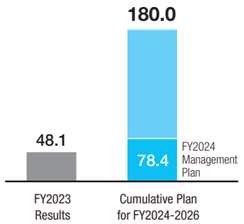
6-Inch Si Wafer Production Capacity



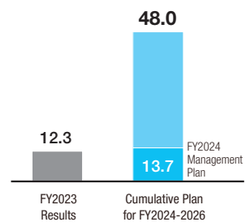
* Figures are indicated as multiples of production capacity as of the end of FY2023 (comparison of capacity at the end of each fiscal year).

Plant and Equipment Investment and R&D Expenditures

Plant and Equipment Investment
(Billions of yen)



R&D Expenditures
(Billions of yen)



Key Plant and Equipment Investment Plans

- Strengthen front-end production capacity (6-inch SiC and 8-inch Si wafers)
- Strengthen back-end production capacity (industrial and automotive applications)

Key R&D Plans

- 8th-generation IGBT and 3rd-generation SiC
- Next-generation packaging
- Mass production technology for 8-inch SiC

* Figures for R&D expenditures are classified by segment according to theme and therefore differ from the figures stated in the consolidated financial report.