Electronic and Mechanical Components Business (EMC)

Domains

Corresponding SDGs

Devices and Modules that Support OMRON Growth

The mission of the Electronic and Mechanical Components Business (EMC): "With our devices and modules, create customer value, and contribute to society." EMC is OMRON's core business unit as a global component supplier of relays, switches, connectors and sensors that act as eyes and ears for wide variety of products playing a vital role in switching and connecting devices, for customers across various industries including smartphones, home appliances, automotive and industrial equipment manufacturers.

Managing Executive Officer
Company President, Electronic and Mechanical Components Company

Shizuto Yukumoto

Transformation into a Business That Creates Value for Customers and Continues to Develop Innovative Module Products that Contribute to People and Societies around the World

The EMC segment has faced three major changes in recent years. The first is social changes. Social issues are becoming more diverse and serious, as evident from labor shortages due to the declining birthrate and aging population, and the widening use of electric vehicles and renewable energy as a response to rapid global warming. The second is the change in customer behavior. Technological innovations in AI, IoT, and robotics have advanced at a much faster pace than expected, and customers are looking for partners with technological capabilities. The last change relates to competition. The emergence of multiple new players, particularly in emerging economies, has led to rapid commoditization.

For EMC to continue to grow sustainably in its own right in the face of these changes, it required a significant change in its conventional business model. To that end, since 2017, we have focused on three key initiatives to transform our business into one that provides not only stand-alone devices but also modules that combine multiple technologies, in order to be a partner of choice with the ability to co-create value with our customers.

The first involves redefining the target customers for our modules, in other words, the focus domains. We see the accelerating "shift to smarter equipment" and the "shift to battery-powered and direct-current power sources," as typified by electric vehicles and storage battery systems, as two major trends, and have identified industries related to these trends as our focus domains.

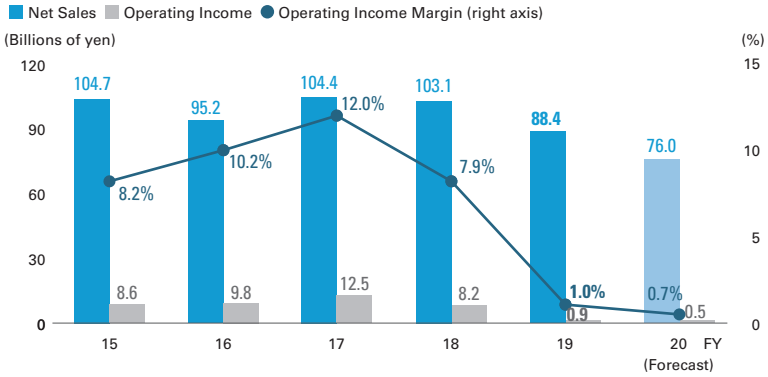
The second is the provision of value through a combination of the strengths we have cultivated. The strengths of the EMC are "devices" such as relays and sensors, and the "technologies" in producing these products, such as fine-processing techniques and software embedding. We are building a framework and organization for developing modules that deliver value to our customers by combining these strengths.

The third is the consolidation of strengths that support the development of modules. Before, the EMC's strengths in technologies, quality, and production, cultivated through providing devices over many years, were scattered globally. By consolidating these elements, we were able to not only reinforce our organizational strengths but improve efficiency. This has resulted in a significant improvement particularly in production efficiency.

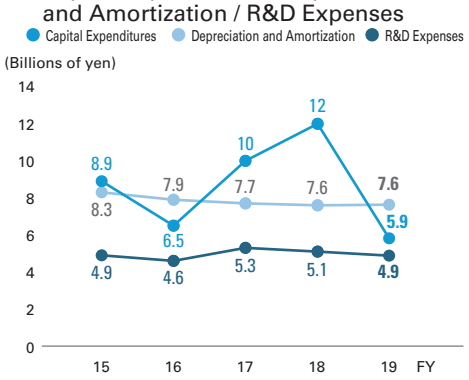
With the current COVID shock, there is a growing demand for smarter equipment, such as non-contact temperature measurement systems and devices that operate without manually activating a switch. EMC will realize its transformation into a business that continues to develop devices and modules that create value for customers and contribute to people's lives and the advancement of societies around the world by supplying core components that help solve social issues through our customers' products and services.

Business Highlights

Net Sales / Operating Income / Operating Income Margin



Capital Expenditures / Depreciation and Amortization / R&D Expenses

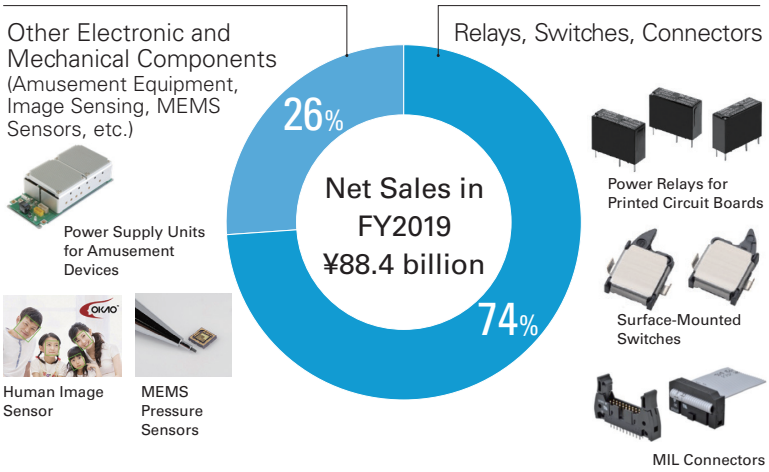


Fiscal 2019 Results and Fiscal 2020 Plan

In fiscal 2019, in China, home appliances, machine tools and automotive demand declined significantly as a result of reduced capital investment caused by lower exports and decline in consumer purchase sentiment. Demand also declined in the Americas and Europe due to weak customer sentiment. Combined with the impact of foreign exchange due to yen appreciation, net sales decreased significantly compared to the previous year. Operating income also decreased significantly compared to the previous year due to the impact of foreign exchange in addition to lower net sales to external customers and OMRON Group businesses.

In fiscal 2020, we expect the impact of the spread of COVID-19 to continue, and that it will take time for a market recovery to be seen in the automobile industry in particular. The business environment for the consumer and commercial products market is also expected to continue to be challenging, and we forecast net sales for fiscal 2020 to be lower than the previous year. Due to the decline in net sales and the impact of yen appreciation, we forecast operating income to decrease compared to the previous year.

Sales by Product



Progress of Sustainability Initiatives

Social Issues to be Solved	Fiscal 2020 Goals
• Solve social issues relating in the domains of FA, Healthcare and Social Solutions	• As a device and module business supporting focus domains, contribute to achieving sustainability goals in each domain

Fiscal 2019 Progress

INPUT

- Number of employees: 7,743
- Research and development expenses: ¥4.9 billion
- Capital expenditures: ¥5.9 billion

OUTPUT

- Net sales: ¥88.4 billion
- Operating income: ¥0.9 billion

OUTCOME

- Advanced sustainability goals in each domain through the provision of devices and modules

Development of Devices and Modules that Create Value for Customers

In EMC, we have cultivated our strengths in "devices" such as relays and sensors, and the "technologies" in producing these products, such as fine processing techniques, algorithm development, and compact software embedding. We are developing devices and modules that create value for customers by combining these strengths. Here are two such examples.

Seismic Sensor That Detects Tremors and Damage to Buildings from Earthquakes

OMRON contributes to enabling people to live safe and secure lives by providing advanced electronic component for equipment and devices that support society.

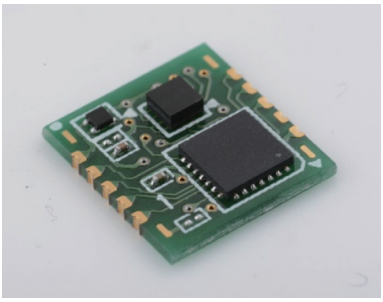
One such component is the mechanical seismoscope for gas meters installed in homes and commercial facilities. The seismoscope is a key component of a gas meter that detects strong shaking above a certain intensity as an earthquake. It has been used in gas meters for many years as a security function component to prevent secondary disasters such as a fire by automatically shutting off the gas supply in the event of an earthquake.

In Japan, the importance of securing the lifeline after a major earthquake came to be widely recognized after the Great East Japan Earthquake of 2011. With respect to gas meters, there was increasing demand for a system to shut off the gas supply automatically only in the event of an earthquake registering 5 or above on the seismic intensity scale, not only as a safety measure to detect and shut off the gas supply during an earthquake, but also to ensure a stable supply of gas in areas with less damage. To meet this demand, there was a need for a sensor that could accurately determine seismic intensity than the conventional seismoscopes.

To solve this problem, we developed the world's smallest class* seismic sensor that incorporates a 3-axis acceleration sensor with OMRON's unique algorithm. This seismic sensor analyzes the data obtained from the 3-axis acceleration sensor using a unique SI value calculation algorithm to calculate the SI value which enables the scale of the earthquake to be determined with high precision. This enables accurate earthquake determination of 5 or above on the seismic intensity scale, and gas companies can provide a stable supply of gas according to the extent of the damage.

In addition, the compact and low power consumption features of this seismic sensor make it ideal for installation in equipment. This was achieved through a combination of OMRON's in-device edge processing technologies.

Moreover, the sensor comes with a memory function that can record the magnitude of earthquake, for use in further enhancing the safety of gas supply system itself. This will enable gas companies to collect earthquake data and formulate appropriate recovery measures based on the seismic intensity and collapsed building information, and the damage situation, in each area.



Seismic sensor

Gas meter installed with a seismic sensor

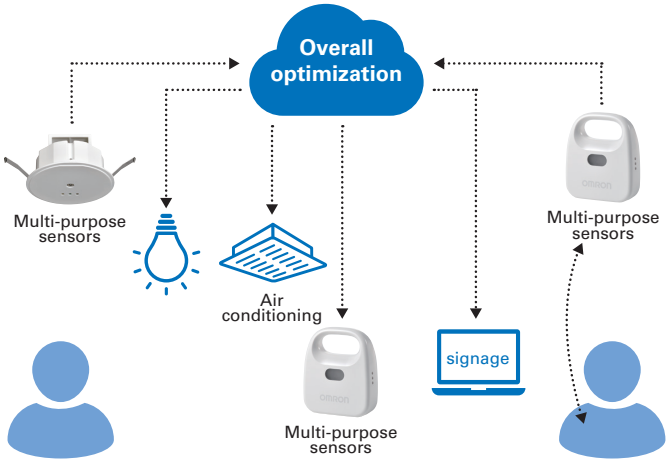
* As a sensor for measuring and outputting SI values. As of November 6, 2015. Internal survey.

Virtual Modules Essential for Creating Comfortable Work Environments While Also Saving Energy

Work styles in which people actively choose their work locations according to their individual circumstances, such as the content and progress of their work, have drawn much attention in recent years. Such styles of work are expected to lead to improved productivity by facilitating communication and collaboration with a diverse range of people and enabling people to handle individual tasks with a high level of concentration. Eliminating the need for fixed seating can also be expected to improve operational efficiency in the office and thus save energy.

However, in the past, air conditioning, lighting and other equipment in a buildings had their own sensors and were controlled independently. To operate office spaces more comfortably and efficiently, and to promote further improvement in productivity and energy saving, it is necessary to develop a system that optimizes the office space overall.

OMRON, Nikken Sekkei Ltd, KYOWA EXEO CORPORATION, WHERE, Inc., and Kanda Tsushinki Co., Ltd. have been working together since April 2020 to develop and test a sensor and facility control network system to save energy and optimize office spaces at the same time. The network system aims to optimize the overall office space by analyzing environmental data on temperature, humidity, brightness level and other conditions obtained from various sensors installed in the office, and then centrally controlling air conditioning, lighting and other equipment.



Overview of the sensor and facility control network system

OMRON's environmental sensor and thermopile motion sensor provide "vision and senses" which are indispensable to this network system. The environmental sensor is an ultra-compact, complex sensing device packed with six sensors. By analyzing the data from each sensor, it can measure eight types of environmental data, including temperature, humidity, illuminance, atmospheric pressure, and discomfort index. The motion sensor uses a unique algorithm to analyze temperature data obtained from non-contact temperature sensors to accurately determine how many people there are within a scope of approximately 13m^2.*

By combining the environmental sensor and the motion sensor and using these as a virtual module, it is possible to ascertain in real time how many people there are in the office and where, as well the conditions of the space around them. This makes it possible to provide a comfortable space that has been optimized overall in which the temperature and brightness levels are adjusted according to actual conditions.

Environmental sensor

Thermopile motion sensor

* Detects conditions in an area measuring 3.6 m × 3.6 m when installed on a 3 m ceiling.