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MEC's Past and Future  
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Date and time of the event : Saturday, March 25, 2023

Attendees :	MEC	CEO & President	Kazuo Maeda
	MEC	Director & CFO and Executive Operating Officer	Toshiko Nakagawa
	MEC	Corporate Communication Office Head	Yoshihiro Sakamoto

Overview of the Fiscal Year Ended December 2022

Regarding the business environment, amid declining demand worldwide, due in part to inventory adjustments of especially consumer PCs, smartphones, TVs, and other products, demand for these products has declined considerably. Meanwhile, server investment in data centers that support networks continued to be strong. However, servers also went through an adjustment phase around the fall. It is not a clear silicon cycle as in the past, but such a period occurs about once every four years. In addition, PCs and tablet PCs sold well during the roughly two years of the COVID-19 pandemic, and replacement demand has declined.

In this environment, what contributed to the year-on-year increase in sales and profit was the growth of the CZ series, the Company's main products. The CZ series were used for package (PKG) boards, centered on data centers. The weak yen also helped. The performance started to deteriorate in the middle of the year, but the Company was able to achieve an increase in sales and profit.

As for an overview of major products, the CZ series performed well. In terms of V-Bond (VB), EXE, and SF, the VB series of products did not grow because most of them are used for electronic boards for automobiles and smartphones, especially those models selling well in China. The EXE series is mostly for TVs, and currently TVs are not selling well. The SF series is for tablet PCs, and their demand has come full circle.

As a result, net sales were 16.3 billion yen and operating income was 4.0 billion yen, up 8.6% and up 1.6% compared with the previous period, respectively.

The Fiscal Year Ending December 2023: Consolidated Financial Forecasts

The Company forecasts net sales of 15.0 billion yen and operating income of 3.0 billion yen, a decrease in revenue and profit compared with the previous period. For the first half of the year, the Company expects net sales of 6.5 billion yen and operating income

of 800 million yen. The Company sees the first half as an adjustment phase, followed by a recovery in the second half.

Shares and Shareholder Returns

Dividends were 45 yen for the year ended December 31, 2022, making for a payout ratio of 27.9%, and are expected to be 45 yen for the year ending December 31, 2023, for a payout ratio of 38.9%.

The Company's dividend policy is to pay stable dividends with a consolidated payout ratio of 30% in mind.

The Company has acquired treasury stock five times in the past.

With respect to shareholder benefits, shareholders with 100 or more shares receive a Quo Card worth 1,000 yen and those with 1,000 or more shares receive one worth 2,000 yen.

Outline of the Company

The head office is located in the city of Amagasaki in Hyogo Prefecture, where the research laboratory and the head office factory are found. It was established in 1969.

Company Motto and Management Principle

The company motto is "Enjoy your work." The management principle is "Visionary Technology," "Reliable Quality," and "Meticulous Service." The Company adheres to the following statement: The MEC group will contribute to the creation of a prosperous and diverse society and sustainable environment, inspired by an unconventional approach based on the principles of "Visionary Technology," "Reliable Quality," and "Meticulous Service," thereby creating and fostering value at various interfaces through our global activities.

In particular, regarding "Visionary Technology," the Company is promoting its business activities with an emphasis on pioneering new things. The company motto, "Enjoy your work," is one of the many company mottos adopted in recent years. However, it is said that when the Company first established the motto, people said that it was a rather unusual one. The Company regards this motto as very important.

The Company's Business

The Company is engaged in developing, manufacturing, and selling chemicals for the manufacture of electronic boards and components in a single, integrated manner. The Company also has global operations. The chemicals melt the surface of metal and add

value. They are chemicals for manufacturing electronic boards, and the Company does not manufacture electronic boards. The Company supplies chemicals to electronic board manufacturers.

It is not a plating manufacturer. Plating adds a layer of metal, but the Company's chemicals are used to put something thin on top of the metal or melt the metal to add value to the surface.

The Company is emphasizing research and development (R&D), with approximately 10% of consolidated net sales going to advance investment therein. About 80 employees, or one-third of all personnel on a non-consolidated basis, are engaged in R&D.

In the manufacturing process of semiconductor-mounted organic PKG boards, the CZ series has gained an exclusive market share as a copper surface treatment agent.

Trend of Net Sales since the Company's Foundation

The Company has steadily grown by developing and selling what is needed in the world. Today, 5G, the IoT, AI, and autonomous driving, digital transformation (DX), and green transformation (GX) are keywords and drivers of the Company's growth.

Domestic Bases

There are three places now. The Company has its head office, R&D center, and factory in Amagasaki, Hyogo Prefecture, a sales office in Tachikawa, Tokyo, and a mass-production factory in Nagaoka, Niigata Prefecture.

Global Bases

The Company has been operating overseas since 1990. MEC Taiwan, MEC Europe (Belgium), and MEC in Suzhou and Zhuhai in China. And in 2017, the Company set up a factory in Ayutthaya, Thailand, which is currently working towards full operation. South Korea is also a big market, and the Company operates through distributors. The Company also sells through distributors in the United States.

The Company's Product Flow

R&D is first conducted by compounding material on a small scale in beakers to test what functions a substance may have. Once some functionality is recognized, the Company scales it up.

In a factory, for example, raw materials are put into a 10-ton tank and agitated to make a product. Chemicals are packed in plastic containers and tanks and delivered to customers.

Areas Where the Company Can Play an Active Role

The Company's chemicals are used to manufacture electronic boards and components, especially in very high-value-added boards called organic PKG boards, upon which semiconductors are mounted. PKG boards are mounted in smartphones, PCs, automobiles, and other devices that require semiconductors.

It is safe to assume that the Company's technology is involved in the equipment used in almost all aspects of daily life in one way or another.

Especially large applications are PCs and smartphones. Recently, they have also come to be used in servers and base stations. Though they do not account for a large amount, there are also applications in supercomputers, robots, and medical-related products. And mobility, automobiles, and infrastructure are also very promising markets.

Keywords for areas where the Company can grow

5G, AI and the IoT. When these things become frequently used, more semiconductors will be needed, and many PKG boards will be required. Then, many of the Company's chemicals will be in demand. And automobiles. The Company can contribute to driver assistance systems, autonomous driving, safety systems and connected cars.

The Company's Core Technologies

There are four major ones.

1. Improving adhesion to resin mechanically by roughening a copper surface

The main chemicals are the CZ and VB series. The CZ series is used especially for PKG boards.

2. Forming wiring

Forming a wiring pattern. The main chemicals are the EXE series. More detailed wiring can be made more accurately.

3. Selective etching

When two or more metals of different types are on the same board, this technology is used to leave only one type and melt and remove all the other metals.

4. Improving adhesion to resin chemically by processing a copper surface

The process of 1. creates unevenness on the metal surface, and the resin is pressed to adhere to the surface. However, 4. is a technology that does not create unevenness, and the resin is pressed to adhere to the flat and smooth copper surface.

Primary Chemical Uses and End Product Examples

Key products include the CZ, VB, EXE, and SF series. The CZ series is mainly used for

PKG boards on which semiconductors are mounted. In end products, the CZ series is often used in 5G, data centers, PCs, smartphones, etc. The VB series is used for automobiles and smartphones. The EXE series is used for TVs, PC monitors, etc. The SF series is used for tablet PCs.

They are widely used in various electronic devices.

Areas Where the Company Is Strong

There are various kinds of electronic boards. If production volume and technical difficulty are represented as a pyramid, the higher the technical difficulty, the higher they are placed in the pyramid. The most difficult one is a PKG board. PKG boards are used for PCs, smartphones, data centers, etc. The Company has gained a high market share in this area. A high density interconnect (HDI) is the motherboard of a smartphone. High-density multilayer boards are used for supercomputers, for example. The Company has a moderate market share in this area as well. The Company has a low market share in multilayer boards. General uses of multilayer boards include digital cameras and car navigation systems. A flexible board is a soft film-like board that can be folded and placed in a small device. Such functions are very important. The Company has recently increased the market share in this area. Double-sided boards and single-sided boards are widely used in white goods. However, the Company's chemicals are rarely used there.

PKG Boards and CZ Series

In PKG board manufacturing, the CZ series is used almost 100% as a copper surface treatment agent. It creates a unique roughened copper surface topography and is crimped with resin. There is a problem that the heat generated by the semiconductor causes the copper and resin to peel, and if they peel, the product will be defective. The Company's CZ series of products are always used because they do not peel even at high temperatures and high pressures.

Evolution of PKG Boards

The simplest and most common structure is a single semiconductor on a single PKG board. Recently, a new PKG board has emerged. Multiple semiconductors are mounted on a single PKG board to increase the designed treatment speed for servers. This will increase the dimensions of the PKG boards, mean there are more layers, and certainly increase the amount of the Company's CZ consumed.

CZ Series Roadmap

The current mainstay is CZ-8101. The next generation CZ-8201 roughens copper surfaces more finely. The finer the roughened copper surface topography, the greater the advantages, such as not interfering with electrical signal transmission. We are now at a point of change. Make the roughened copper surface topography finer. Or, attach insulated resin to the roughened copper surface topography while maintaining a flat and smooth copper surface without roughening it. In this area, the Company is developing technologies for the following purposes: exchange data faster or in larger volumes with 5G and beyond; have lower power consumption; and minimize the heat generated by electrical signal transmission. This is the most important area the Company focuses on.

Aiming to Expand Business Areas

In addition to the fields related to electronic board manufacturing, where the Company has the four core technologies introduced earlier, the Company is also expanding the application of these technologies to other fields. The Company also aims to create new businesses.

Medium-term Management Plan

The first year is 2022, and the Company is working on a three-year plan for 2030. The Company's vision is to create new value with innovative technologies and take on the challenge of realizing a sustainable society.

Corporate Image the Company Aims For

"Become a truly global company that creates new value with visionary technology"

"Continue to be an R&D-based company"

"Present an image as a visionary AI company"

The Company espouses the above three goals. The Company is thinking about how the Company can work with AI in the future and how the Company will apply it to its business; these are especially important.

Numerical Targets of the Current Medium-term Plan

The Company aims to maintain an operating margin of at least 20% regardless of the business environment. The same applies to ROE. This does not mean that this is the final point. It is said that the amount of semiconductors will grow exponentially. Therefore, the Company is also pursuing investment plans to ensure stable supply.

Q&A

Question 1: Is your company one that doesn't need so much capital investment?

President: Our company's chemicals are basically made by placing some effective elements into water or common acids. The equipment needed to make it is a relatively minor investment. If you imagine it to be a beer factory, it becomes easy to understand, and it is like a much smaller one.

Question 2: Competitiveness and market share of chemicals

President: For example, very few our company's chemicals are used to make a smartphone. However, if such chemicals do not perform well, the end item has no value as a product. Attempting to maintain quality, manufacturers have come to adopt only our chemicals. Therefore, the CZ series is used 100% as a copper surface treatment agent in the manufacture of PKG boards. Our company's products may be a little expensive. But customers will use them. We have this kind of competitiveness.

Question 3: I think a 10% investment in R&D is amazing. Please tell me one thing you are focusing on, or something that, if it works, will make you number one worldwide.

President: Naturally, it is difficult to produce chemicals without spending money on R&D. Therefore, our investment target in R&D is about 10% of our consolidated net sales. From the customer's point of view, the price of our products may be said to be expensive. However, the cost includes the idea of making investments. We repeatedly carry out a cycle: we ask our customers to recognize our product's value, earn a solid profit, and invest it in R&D.

If we had to choose one thing, the technology to improve adhesion and be close to semiconductors would be the most important. With it, the speed of the electrical signal is increased. An electrical signal runs more smoothly on a flat and smooth copper surface than on an uneven one. The most important thing is to hone the technology necessary for that.

Question 4: Regarding CZ, the core of the company's net sales, I would like to know the ratio between Japan and overseas.

President: The CZ series accounts for about 60% of net sales. Exports are large, and the ratio of Japan to overseas is roughly 1:2.

Question 5: I would like to know your sales strategy and how board manufacturers rate you.

President: We ask our customers to use our chemicals and evaluate them. We manufacture products according to the customer's roadmap, while customers evaluate the products' technical aspects.

Question 6: Semiconductor manufacturers are making strong capital investments. Will supply be sufficient?

President: The supply and demand of semiconductors was tight a while ago, but it has eased slightly at the moment. Looking back, there has been such a period about once every four years. In the future, more services will simply use AI and the IoT. The calculation, linguistic analysis, and memory functions required for these services will increase. We assume that the more you use something like ChatGPT, for example, the more information you process, and the supply and demand will be tight soon. Our company is responsible for supplying products, so we are taking measures to cope with it.

Question 7: Who are your competitors?

President: We don't have a competitor in the current PKG board market. There will be some competition for development in new areas in the future.

Question 8: Is the CZ series patented?

President: Yes, it is patented.

Question 9: Have counterfeit products ever been sold?

President: Yes, they have. However, no customer takes the risk of using them.

Question 10: Are your company's chemicals always necessary for PKG boards? If so, can we assume that the more PKG boards increase, the more your company's market will expand?

President: Our company's chemicals are almost always used in PKG boards. We are investing in R&D to keep our position in the future.

Question 11: Do the U.S. export controls on China regarding semiconductors concern your company?

President: So far, our company hasn't had a big impact yet. China is an important market

for our company, and we will deal with it properly. However, we think that in the future, if anything deviates from the government's policies or our corporate ethics, we may need to withdraw from some businesses.

Question 12: What is the product life of your company's chemicals?

President: It depends on the product, but usually it is several months. We try to set it as long as possible.

Question 13: Please tell me about the exchange rate.

President: Most of our transactions are in Taiwanese dollars and Chinese yuan, and very few in U.S. dollars.

Question 14: With global inflation, are there any increases in purchase prices? In those cases, is it easy to raise the prices?

President: The purchase prices of raw materials have increased. We negotiated price increases from the summer to the fall of 2022, and our customers understood them.

Question 15: I believe that copper and resin adhesion improvers are the mainstay of your company. Is there any possibility of substituting metals or other materials for copper in the future, and are you researching such alternatives?

President: We are also researching metals other than copper, for example, nickel and stainless steel. However, copper is inexpensive and stable in terms of performance as a conductor and resource abundance. So it will undoubtedly continue to be used extensively.

Question 16: What are the business risks other than the silicon cycle?

President: Poor R&D performance and heavy reliance on boards. And since we have subsidiaries in Taiwan and China, the so-called China Risk always follows us (a term used in Japan to refer to various contradictions and imbalances in China such as political corruption and opacity due to the one-party dictatorship of the Communist Party, income disparity, infringement of intellectual property rights, and a flood of counterfeit products).