

## Q&A for Briefing on Robotics Business (Summary)

Yaskawa Electric Corporation

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[Speaker]

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Q The value added factor behind operating profit's change in the robotics business has been negative for the past 2 consecutive years. I assume this is not only due to the decline in capacity utilization, but also to a decline in sales prices. Will capacity utilization's improvement lead profit to recover in the future?

A The selling price has not decreased. So profit will return if revenue improves with an increase in capacity utilization. In recent years, there has been a growing number of solution-level conversations with customers, breaking away from price competition at the component level. It is unlikely that prices will rise significantly in the future, but at least we have been able to avoid selling at lower prices. During the Corona crisis, the ratio of after-sales service to revenue, which is usually about 20%, temporarily decreased. Since after-sales service is highly profitable, it may have affected the added value of the business, but now it is back. In Japan, the deterioration in capacity utilization has had a significant impact, so efforts will be made to improve the situation.

Q I think the market for small robots (payload: 10 kg or less) will expand in the future. What is the current share of Yaskawa robots that are small and what is the future outlook? Also, is there a view that the manufacture of car parts will be an area where small robots will play a role?

A Yaskawa's production of small robots with a 7 - 8 kg payload accounts for about 20% of total robot production. In the 3C market, robots with payload of 10 kg or less are the main products, and in the general industrial field, robots with payload of 20 - 30 kg or less for welding and handling applications account for the majority. Large robots are used in spot welding of automobiles and palletizing applications to carry bricks, etc., but the current mainstream is small robots, and we think this area will become important. In the automotive market, the next application of arc welding is expected to be adhesion, pressure welding, laser processing and welding. Such applications will be concentrated in the 25 - 50 kg payload range and drive demand.

Q Which areas will be more competitive in the future? Are there any decisions to not compete with other robot makers in that area?

A Competition will intensify for robots with 4 axes or less. Yaskawa does not compete in this field on its own, but instead seeks cooperation with its partner companies. However, there is a need for robots with four or fewer axes when customers are asked to unify the brands. It will not be a source of revenue as a mainstay model, but the lineup will be prepared so that its absence will not become a bottleneck in our solution proposals.

Q What is your assessment of the past growth of the robot business relative to competitors?

What are your efforts in the semiconductor field, which is a growing market?

A Aiming to produce robots that can replace human productivity, we have described a scenario in which robots that can realize a variety of motion abilities are developed and functions such as sensors are added to grow. However, no matter how much we improved the performance of the robots, due to environmental constraints and other reasons, we were unable to build a high-value-added manufacturing system. In response to this challenge, we believe that the use of data in the i<sup>3</sup>-Mechatronics concept and the appearance of the collaborative robot that realizes the safety fence-free will be breakthroughs. In the future, we will utilize the technologies we have developed so far to pursue the optimization of solutions. In the case of a semiconductor robot that has recently been released as a new product, the development of semiconductor chip lamination technology has required the semiconductor robot to have an anti-vibration function at the time of wafer transfer. A direct drive system without reduction gears was developed and adopted to achieve technical breakthroughs.

Q I think the biggest obstacle to the introduction of collaborative robots is cost. How do you think?

A It may be correct to think that cost is a bottleneck in the current collaborative robot market, but I think that pursuit of cost is not the only decisive factor for purchasing collaborative robot. In the future, we believe it is important to focus on collaborative robot's development potential in order to contribute to improving customer productivity.

Q Will the use of robots in the medical field increase in the future?

A Digitization and automation in the medical field are necessary for the future, and the use of robots in fields such as drug discovery, treatment, and examination will expand. Through a subsidiary called Robotic Biology Institute, Yaskawa is working on robotic applications for cancer genome analysis.

Q What is the difference between other companies' efforts for Industry 4.0 and Yaskawa's i<sup>3</sup>-Mechatronics?

A As a unique effort, Yaskawa aims at perfect synchronization by i<sup>3</sup>-Mechatronics. By improving the traceability of manufacturing, the company aims to realize a response to diversity by transforming production sites into autonomous decentralized control driven by data. Yaskawa strives to differentiate itself by offering solutions that utilize data at the edge level, and in the future will strive to add even more value to the value chain, including procurement, production and design.

Q What are the characteristics of the EV battery market? What is Yaskawa's position and competitive advantage in this market?

A Demand for battery manufacturing equipment for EV is driving demand of Yaskawa AC servo motor, and demand for robots is growing in the assembly process. Specifically, advanced laser bonding technology is required to ensure safety when assembling batteries. Thus, this market is a growth area where the fusion of equipment and robots is expected, and Yaskawa is advancing its own approach in cooperation with AC servo business.

Q At the briefing on the robotics business in FY 2017, you may have mentioned that you are aiming for a operating profit ratio of 15%. Once again, what image do you have of the level of production units and the ratio of service revenue required to reach this level?

A As the business environment has changed drastically, I will refrain from mentioning the specific time for realization, but I am still considering the target of operating profit rate of 15% as a passing point. In FY 2017, capacity utilization made a big improvement along with the increase in sales volume, but we didn't expect the growth of the industrial robot market to be negative afterwards. As a result, it took time to rebalance the production system of robots when the sales volume turned to decrease. This time, the Corona crisis led to a fundamental review of the cost structure of the business and the establishment of a system capable of flexibly following the business environment rather than the management to precede the environment. By optimizing and reallocating production capacity and maintaining a high capacity utilization rate, we believe that a return to the high demand environment in FY 2017 will enable us to meet our target of a operating profit ratio of 15%.

Q As for the balance of production capacity, the capacity is planned to be reduced in Japan and increased in China, but what do you think about dealing with the United States and Europe, which imported robots from Japan?

A. As local production has started in Europe, exports to Europe, which had been covered by plants in Japan, have been revised so that production capacity in Japan cover Japan, Asia and US. From now on, we will promote automation on a global basis, reorganize production lines while having the capacity to cope with increased production, and increase the flexibility of production capacity to meet varying production volume. In addition to capital investment made in FY 2018, we plan to boost production capacity in China to more than 1500 units/month, to meet the growing demand.

Q What is the profit impact of a higher utilization rate mainly in China and a higher production ratio in demand regions including Europe?

A With Japan as the mother factory, while securing quality and costs, the company is deploying demand-region production, including localization of supply chains. In the future, we will strive to maintain high profitability by maintaining a minimum cost structure and avoiding excessive production capacity.

Q How will the concept and approach to automobile manufacturing change as the production process is transformed by the penetration of EVs?

A The transition to EVs will take time and ICE vehicles will remain for a certain period of time. During this time, we will consider how to deal with the risk of losing the exhaust system. On the other hand, the replacement of engines with motors and batteries represents a change in the supply chain and will stimulate new demand for related production equipment. I look forward to seeing it as new potential for Yaskawa. Also, with the increase in EV sales volume, there is a possibility that automobile manufacturing methods will change drastically, for example, by changing manufacturing platforms in consideration of production efficiency. Under these circumstances, I believe Yaskawa's solution concept i<sup>3</sup>-Mechatronics will have a lot to do with it.

Q Based on the outlook after FY 2020, I feel that 5% CAGR (average annual growth rate) of the industrial robot market is low.

A This forecast is prepared as a Yaskawa estimate based on IFR data. It is not clear when Europe and the United States will recover to FY 2017 or 2018 levels, and considering the situation in China and Japan, I think it is appropriate to estimate the global growth rate at about 5 - 7% at present.

Q Can we expect higher profit margins in the 1<sup>st</sup> half of next fiscal year if revenue recovers with a better profit structure?

A As various conditions, such as forex rates, change from year to year, there are some areas that cannot be evaluated by figures alone, but the profit structure is certainly improving. We expect profits to increase if the revenue is in the same level as the past.