

Field Reports

All-around Company Training: Key to Success — A Small Firm Leads the World In Speaker Parts —

By Yutaka Kogure

Smaller firms in Japan usually rely on big corporations to keep business going, often acting as their subcontractors. But some are doing business on their own with unique self-developed technology.

Yokoyama Electric Mfg. Co. is an example. A manufacturer of electrical equipment and precision machinery, the company is one of a number of successful smaller Japanese businesses. It accounts for three quarters of world output of a certain speaker component and more than half for another. Playing a leading role in the company's development has been its success in harnessing its employees' cooperation and participation in improving product quality.

Headquartered in Kawasaki, adjacent to Tokyo, Yokoyama operates five factories across the country, including one in Yamagata Prefecture, northern Japan, and another in Fukuoka Prefecture in Kyushu, the southernmost main island. The company has 322 employees, including part-timers, and almost all are committed to voluntary quality control (QC) activities. In addition to 53 QC groups, the workers hold research meetings, with each employee acting as a lecturer on a given subject. The company leadership is carrying out a training program for senior staff, and President Morio Yokoyama calls a meeting of all employees at the main factory in Kawasaki before work begins on the first day of every month to explain policies concerning company operations for that month. To ensure worker communication, the manager of each factory and the chief of each section also sponsor morning meetings.

These measures have gone a long way toward the company's growth into the world's leading producer of two speaker components—a cap, or vibrator, which keeps off iron powder, and a damper (also known as a spider) that controls speaker vibration. The company has also entered various new fields, including silos and automatic film developers for business use. QC activities are contributing to cutting costs and improving profitability in



President Yokoyama is proud of the quality control system of his company.

these new operations as well. In a practice not common to smaller firms, Yokoyama operates all its factories under the system of independent financing. Following is a look at the company and its operations, based on this writer's recent visit to the main factory and an interview with President Yokoyama.

Kawasaki is west of Tokyo, across the Tama River. Yokoyama's plant there is in an area bristling with the factories of many smaller companies. It was Friday evening when I visited and there was not the usual overtime work at the end of regular working time because the factory was to close the next day for a Saturday holiday. But workers began their QC group meetings after work as if it were a routine job.

Starting around 1957, QC activities now comprise roughly three groups—one discussing how to eliminate the need for dirty work, another looking into ways of improving productivity, and the third seeking means of cost reduction. "The time of QC activities ranges from morning to evening," said President Yokoyama. "They start as early as 7 a.m., well before the beginning of daily working hours, and

continue during lunchtime and a 3 p.m. break as well as after work. Our employees work really hard, night and day."

From humble start to world leader

The company was inaugurated in 1945 in the aftermath of World War II. Seeing the war end while he was an army cadet, Yokoyama could not return to school nor find a job. He began the business of repairing radios from scratch. "I hit on the idea of making speakers myself," he recalled. "That's how I entered this business." The company was legally registered in 1950.

Among the company's initial customers was today's Pioneer Corp., a leading audio equipment firm. This gave Yokoyama a chance of diversifying into electrical machinery. Most speaker dampers used then were of U.S. make, based on silk. But American products posed a problem in terms of quality as the silk portion did not fit Japan's high humidity. "I developed a new damper made of parachute cloth through which a special resin solution was infiltrated," Yokoyama said. "The idea was registered officially as a utility model." He contracted to supply the new product to Toshiba Corp. in a first step toward the tiny firm's development. As damper supply expanded to other major clients, such as Nippon Columbia Co. and Victor Co. of Japan, Yokoyama terminated the production of speakers, which constituted the company's largest source of income, and began to specialize in dampers. Behind the move was his belief that continued dependence on big firms as their subcontractor could not guarantee the company's growth.

Today, Yokoyama is producing 12 million dampers a month, while a Taiwanese firm, Kou Hua Electric Co., is making a further three million under a licensing agreement with the Japanese company. This brings monthly output of Yokoyama dampers to 15 million, or 75% of the world total.



A small group of engineers and operators hold a mini study session at Yokoyama Electric Co.

As an example of how productivity has improved, Yokoyama required 330 workers to produce 3.3 million dampers monthly about 20 years ago, according to the president. Today only 56 workers are producing 12 million. "Raw material costs have soared 20 times in the past two decades while product prices have remained almost unchanged," Yokoyama said. "We have covered the extra costs by improving productivity through automation and other cost-cutting efforts. And thanks to productivity improvement, the production of 12 million earns us a net profit of ¥9 million (\$37,500) a month." The company plans the same monthly output with 35 workers in a few years, he added.

QC activities play vital role

Yokoyama is also producing 10 million speaker caps a month. Adding the 300,000-400,000 units produced in Taiwan, this covers more than half the world's total demand. Facing a rush of orders which left the Kawasaki plant unable to keep up, the company has constructed a specialized cap factory in Tochigi Prefecture, northeast of Tokyo. The QC groups have played a key role in improving productivity of the two items. In fact, the company's automatic damper production equipment is based on QC-group proposals.

Products emerging as major items for the future are industrial photographic equipment—such as automatic film developers—and silos made of fiber-reinforced plastics (FRP). Development of both products began in 1956, and after some 20 years of R&D they were put on the market in the late 1970s. The company has also entered into other new areas such as voice coils, metalworking, cooling towers and ozone generators, characterizing itself as a venture business.

At first glance the three main products—the speaker components, automatic developers and silos—have nothing in common. But, in fact, they do: the application of chemical technology. Yokoyama's growth as a modern company is based on the production of dampers, us-

ing technology for chemically treating resins. The other two main products have diversified from that technology.

The company came up with equipment made of rigid polyvinyl chloride for laboratory experiments around 1960, and supplied it to a number of customers, including the research institute of NHK, Japan's public broadcasting concern. NHK was then experimenting with a photographic playback system for use in telecasting traditional Japanese *sumo* wrestling, giving Yokoyama an opportunity of committing itself to the automatic developer business. Initially the company produced a large developer, making it more compact later. It began supplying the product to Fuji Photo Film Co. and other firms from 1971. For a decade Yokoyama concentrated on boosting its market share. Again, needless to say, QC activities played a leading role in coming up with developers compact enough for small camera stores to provide film development, printing and enlargement services. The company is now producing 30 developers a month, but cannot keep up with the growing demand. U.S. and Southeast Asian interests are especially keen on the new product, according to Yokoyama.

Emphasis on human resources

The company's FRP silo was born of the rigid polyvinyl chloride technology. When the company was trying to commercialize an FRP speaker box, being developed as a new generation of resin succeeding polyvinyl chloride, a poultry farmer asked for repairs on a corrugated-type feedstuff tank of U.S. make, which then dominated the market for such tanks. After failing to stick polyvinyl chloride film on the tank surface due to its corrugation, the company replaced the resin with FRP for successful fixing, opening the way for production of FRP storage tanks. The company now produces not only tanks alone but a set of silo equipment for large-scale temporary storage before transportation to other points.

Behind the success in developing such completely different products are the supply and training of suitable manpower. The company has been recruiting university graduates as well as junior and senior high school leavers since 1953, with the emphasis on engineers. Of the 125 workers at the main factory, 115 have technical backgrounds. With a 30-man staff specializing in technical development, the company is aggressively accumulating technological expertise.

Contributing greatly to the development of new products and production technology are semi-annual contests of value analysis. A "cup silo" devised by the winner of a recent contest was registered officially as a utility model, helping boost sales in the silo division. These contests have become an arena for the development of new products and advanced techniques.

To boost its R&D, the company strives to automate production, which allows workers more time for thinking. As part of this effort, the company has transferred to subsidiaries and subcontractors the production of main parts and the assembly of product units, permitting it to specialize in the assembly and testing of finished products. To keep up with rapid technical innovations in the electronics area, Yokoyama is itself designing as many of the electronic parts of its automatic film developers as it can. It plans to make the product lighter and smaller by adopting large-scale integrated circuits (LSI's) and other up-to-date technology.

The company aims at a 13% annual cost cut except for raw material costs. "We've achieved a cost reduction of some 10% a year so far," said Yokoyama. "With this year's new capital spending limited to ¥50 million (\$208,000), we expect a slightly reduced cost cut of around 9% in 1983." The company projects the current year's sales at ¥6.5-¥6.6 billion (\$27.1-\$27.5 million) and after-tax earnings at slightly more than ¥300 million (\$1.3 million). It is seeking to attain sales of ¥100 million (\$417,000) per employee in 10 years' time. For this purpose it is beefing up its marketing capability and strengthening its R&D operations.

Yokoyama credited the company's emergence as a business devoted to R&D to its workers. "I think we owe much of our success to our employees, who work and study from morning to evening," he said. "I am eternally grateful to them." ●

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