Teradyne K.K.

Teradyne Inc. was founded in 1960 in the student quarter of Boston, Massachusetts to provide Automated Test Equipment (ATE) for electronic parts to the world. The company now boasts the largest sales in the global ATE market for semiconductors (based on its own research). Its only non-US research and development site of ATE for semiconductor is in Kumamoto Prefecture. Even after the 2016 Kumamoto earthquakes, the company was determined to continue business there, where there are many experienced and competent engineers and, with talented professionals, rebuilt the local factory. We talked to Hiroshi Takashima, Representative Director & President of Teradyne K.K. and Yuzo Motomura, Manager of the Kumamoto site.

Mobile phones and smartphones are essential tools in our daily lives today. According to Mr. Takashima, “Sixty to seventy percent of the semiconductors used for those products hit the market after being tested with Teradyne testers.” With about 4,700 employees in 32 locations worldwide and sales of about 235 billion yen (2,137 million dollar) in 2017, the company is leading the semiconductor ATE market. According to the company, about 80% of the global market (as per sales forecasts) is led by two companies: Teradyne (50%) and the Japanese company Advantest (33%). According to the customer satisfaction survey for semiconductor manufactures by VLSI Research, a US semiconductor market research firm, Teradyne has achieved the highest score for six consecutive years since 2013, earning high credibility from its clients.

TERADYNE

Although the majority of Teradyne’s business is manufacturing ATE for semiconductors, in 2015 the company acquired Universal Robots, a Danish manufacturer and global leader of collaborative robots (cobots) that work alongside humans, and embarked on cobot development and manufacturing. There has already been an increase in inquiries from Japanese companies showing interest in their cobots, as the issue of manpower shortage continues to grow more severe in Japan.

Development and manufacturing in Kumamoto, a Japanese semiconductor industry center where clients who boast the world’s top market share operate

Teradyne K.K. started business in Japan as early as 1973 and celebrates the 45th anniversary of the establishment of its Japanese branch this year. The company founded its Japanese subsidiary in Tokyo in 1978 to enhance customer service and opened a development and manufacturing site for test systems for image sensors in Kumamoto Prefecture in 1995. The current number of employees is 60 at the Yokohama headquarters (relocated in 2008) and 120 at the Kumamoto plant.

Kumamoto Prefecture is home to Teradyne’s only non-US development base. It is where the company’s test systems for image sensors are developed and manufactured and then shipped worldwide. The J/IP750 series, one of its flagship products, reached accumulated sales of 5,000 units in 2016. Manager Motomura emphasized that the development of this flagship series is “only possible at the Kumamoto plant” because both client

companies and talented engineers are concentrated in the area.

The J/IP750 series shipped worldwide from Kumamoto

The Kyushu region in southwestern Japan is also known as Silicon Island, a center for the semiconductor industry. Kumamoto Prefecture in particular is a hub for major semiconductor-related companies, such as the world-leading Sony, Mitsubishi Electric, Renesas Electronics, and Tokyo Electron. A key to this concentration is the abundant groundwater from Mt. Aso, which is critical in the cleaning process of semiconductor manufacturing.

Furthermore, developing and manufacturing sophisticated testers requires scientific talents. Kumamoto Prefecture provides a large pool of the nation's most talented science and technology professionals. Every year, about 6,000 people graduate with degrees in science and technology in the area, and their talents are highly valued by many local companies. According to Manager Motomura, "In the prefecture, there are many talented students from local academic institutes, such as Kumamoto University, National Institute of Technology, and Kumamoto College. For students who aspire to work globally, we encourage them to join us here in Kumamoto, as they can be involved in such work without having to leave for Tokyo."

Overcoming disaster with "Human resources" and increasing production capacity at a new factory

In April 2016, an intensity 7 (magnitude 6.5) earthquake hit Kumamoto and strongly shook the company's building, collapsing its ceilings and walls and scattering desks and chairs. The damage was beyond restoration. President Takashima looked back at that time saying, "Since it is unthinkable for the company to stop production till restoration, we asked the production base in Suzhou, China to produce testers for image sensors, which had been done in Japan. Our main concern was that the entire development base might be transferred to China in the end. However, our talented engineers have been engaged in the whole process from development, design and manufacturing to marketing in Kumamoto for over 20 years. These 'human resources' with such accumulated experience are our most important assets. The corporate headquarters in the US has considered it best to rebuild the Kumamoto base because it is impossible to relocate the development base elsewhere."

On September 9, 2016, Mark Jagiela, Teradyne's CEO, met Ikuo Kabashima, Governor of Kumamoto Prefecture. At an internal event that night, Mr. Jagiela announced to employees the rebuilding of the Kumamoto plant. Kumamoto Prefecture also provided full support including subsidies to keep the world-leading company in the region and to promote the area's industrial competitiveness. Governor Kabashima himself also visited the Yokohama headquarters to show his commitment. In June 2017, the company commenced the construction of a new plant and completed it by the year's end. In January 2018, it successfully resumed operations at the new facility. In President Takashima's words, "To minimize damages by another earthquake, the new factory is one story instead of two. Since the equipment had become old and was completely damaged, we replaced it with the latest available. As a result, the production capacity increased by 50%. We greatly appreciate the support given by Kumamoto Prefecture and

Ozu Town." The employees also appreciated the continued operation in their area and were determined to step further forward, stating that "we are very happy to work again with the same members at the same place."

Reconstructed Teradyne Kumamoto Plant

Aspiration for development in a new field and business expansion

The Kumamoto plant, with 120 employees, has been working on development and manufacturing every day while analyzing global market needs. The US headquarters highly values the base because of its ability to develop highly creative testers. President Takashima stated that it could play a major role in developing testers for new fields. He also expressed enthusiasm for the future prospects of the tester market for semiconductors, saying, "The market will continue to expand. For example, we see a need for automated vehicles, as well as associated sensors and millimeter wave testers for distance measurement. Smartphone memory will get more complicated, requiring far more sophisticated testers. We see our business expanding."

Mr. Takashima, Representative Director and President of Teradyne K.K. (left);
Mr. Motomura, Manager of the Kumamoto Site (right).

(Interviewed June 2018)

Company History

1960	Teradyne Inc. established in Boston, Massachusetts, US
1973	Teradyne Japan Limited established in Tokyo
1978	Teradyne K.K. established in Tokyo
1995	Kumamoto plant established under the Japanese Business Department
2008	Headquarters relocated to Yokohama
2014	Chubu Service Office established in Nagoya

Teradyne K.K.

Establishment	1978
Business overview	Manufacturing and selling automated test equipment (ATE) for semiconductors, electronics and wireless devices
Parent company	Teradyne Inc. (US)
Address	(Head office) MM Park Building, 7th Fl., 3-6-3 Minato Mirai, Nishi-ku, Yokohama, Kanagawa Prefecture, 220-0012 Japan (Kumamoto office) 272-12, Heisei, Takaono, Ozu Town, Kikuchi-gun, Kumamoto 869-1232 Japan
URL	http://www.teradyne.co.jp

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