5. Precision Machine Sector

5.1 Electric measuring instruments, measuring equipment, analyzing equipment and electric controls

5.1.1. Supply and demand trend

(1) Outline

The production of electric measuring instruments, measuring equipment, analyzing equipment and electric controls in 2006 increased over the previous year except some electronic application equipment (radioactive substance application equipment, radiometric equipment and high-frequency power application equipment) and pressure gauges. The export and import of electric measuring instruments, measuring equipment and analyzing equipment also substantially grew as compared with 2005. From this fact, it can be said that the domestic market of electric measuring instruments, measuring equipment, analyzing equipment and electric controls was active.

(2) Production

As the figures below show, the production of electric measuring instruments, electronic application equipment, measuring equipment, switching control devices and switches in 2006 kept an upward trend, too. But the output of radioactive substance application equipment (down 5.75% y/y), radiometric equipment (down 12.59% y/y) and high-frequency power application equipment (down 4.47% y/y) declines as compared with 2005. In total, the production amounted to ¥3,631.7 billion, and it can be said that these products have formed very large industrial groups.

Fig. 5-1 Production of electric measuring instruments and electronic application equipment

(Calendar year, ¥100 million; amounts of ¥10 million or less rounded off)

	2002	2003	2004	2005	2006	Growth rate vs. 2005	Ratio (2005)
Electric measuring instruments/electronic application equipment	11,332.5	12,799.1	15,341.6	15,926.6	16,723.0	5.00%	100%
Electric measuring instruments	4,101.8	4,719.3	6,284.6	5,803.9	6,074.9	4.67%	36.3%
Electric meters	353.8	386.1	387.4	426.2	444.6	4.31%	2.7%
Electric measuring devices	2,052.9	2,801.2	4,442.6	4,018.1	4,155.1	3.41%	24.8%
Industrial metering and control equipment	1,695.1	1,532.1	1,454.6	1,359.6	1,475.2	8.50%	8.8%
Gas alarms	-	-	-	100.2	119.1	18.81%	0.7%
Electronic application equipment	7,230.7	8,079.9	9,057	10,022.5	10,529.1	5.05%	63.0%
X-ray devices	1,606.2	1,734.1	1,657.6	2,047.8	2,171.0	6.02%	13.0%
Radioactive substance application equipment	265.1	219.1	239.9	230.4	217.2	-5.75%	1.3%
Radiometric equipment	145.3	128.2	101.7	99.6	87.1	-12.59%	0.5%
High-frequency power application equipment	39.7	45.5	63.4	56.6	54.1	-4.31%	0.3%
Other electronic application equipment	3,503.2	4,241.6	5,194.1	5,885.3	6,240.1	6.03%	37.3%

Source: Based on the Ministry of Economy, Trade and Industry, " Annual Report of Machinery Statistics."

Fig. 5-2 Production of measuring equipment

(Calendar year, ¥100 million; amounts of ¥10 million or less rounded off)

	2002	2003	2004	2005	2006	Growth rate vs. 2005	Ratio (2005)
Measuring equipment	3,594.1	3,967.3	4,204	4,493.6	4,827.5	7.43%	100%
Industrial length meters	233.2	267.1	321	374.1	383.2	2.43%	7.9%
Displacement meters	628.1	629.3	553.4	615.9	743.4	20.70%	15.4%
Industrial weighing machines	323.4	329.5	338.8	337.6	358.1	6.09%	7.4%
Pressure gauges	100	111.6	128.8	137.8	131.6	-4.47%	2.7%
Precision measuring instruments	450.7	540.3	665.9	841.3	884.3	5.11%	18.3%
Environment measuring instruments	172	180.1	208.1	184.4	186.2	0.94%	3.9%
Testers	276.9	315.6	295.4	293.3	296.8	1.22%	6.1%
Surveying instruments	181.9	201.2	237.8	233.7	252.2	7.92%	5.2%
Analyzing equipment	1,228	1,392.7	1,454.9	1,475.8	1,591.8	7.87%	33.0%
Optical analyzing equipment	171	171.3	210.8	223.2	242.9	8.85%	5.0%
Electromagnetic analyzing equipment	225.8	283.4	305.1	321.1	340.7	6.10%	7.1%
Chromatographs, separators, distilling equipment	238	290.4	312.6	311.1	325.5	4.62%	6.7%
Other analyzing equipment	593.2	647.7	626.4	620.4	682.8	10.05%	14.1%

Source: Same as that for Fig. 5-1.

Fig. 5-3 Production of switching control devices and switches

(Calendar year, ¥100 million; amounts of ¥10 million or less rounded off)

	2002	2003	2004	2005	2006	Growth rate vs. 2005	Ratio (2005)
Switching control devices/switches	11,999.3	11,814.2	12,948.4	13,680.2	14,767.4	7.95%	100%
Switching control devices	6,406.4	5,796.2	6,252	6,820.9	7,456.3	9.32%	50.5%
Switches	5,592.9	6,018	6,696.4	6,859.3	7,311.1	6.59%	49.5%

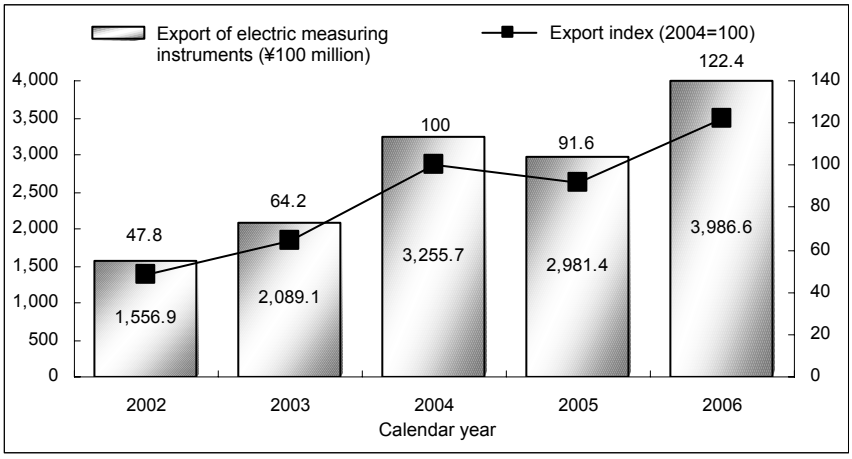
Source: Same as that for Fig. 5-1.

(2) Export and import

The situation of export of electric measuring instruments, measuring equipment and analyzing equipment in 2002 to 2006 is shown in Figures 5-4 to 5-7 below. The export can be said to have been on the increase recently. The export of analyzing equipment and switching control devices/switches achieved an especially high growth: the former rose by 27.3% and the latter, by 17.1%, as compared with the performance in 2004. The amount of switching control devices and switches in 2006 exceeded ¥1 trillion.

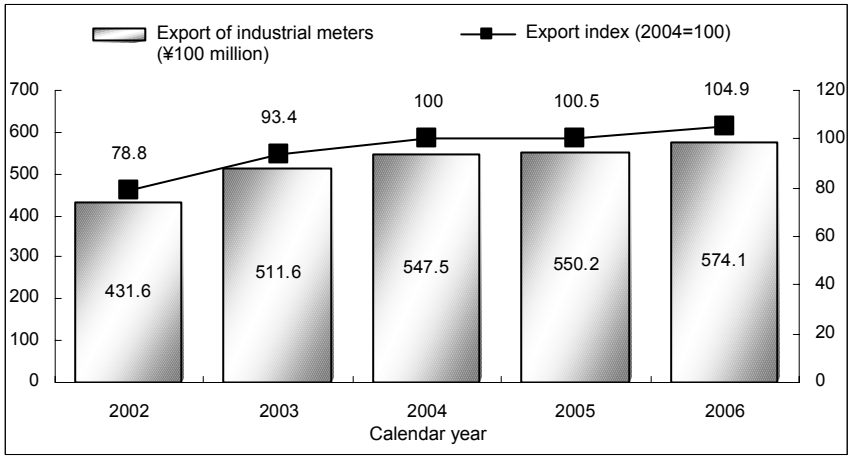
Similarly, the import of these products increased. The import of switching control devices and switches in 2005 rose by 31% over 2004 and exceeded the ¥300.0 billion mark (See Figs. 5-8 to 5-11).

Fig. 5-4 Export of electric measuring instruments



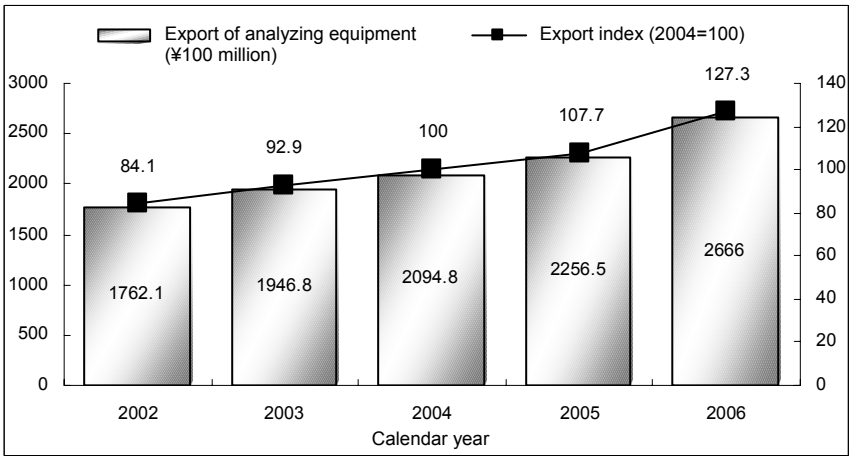
Source: Based on the Ministry of Finance, “International Trade Statistics.”

Fig. 5-5 Export of industrial meters



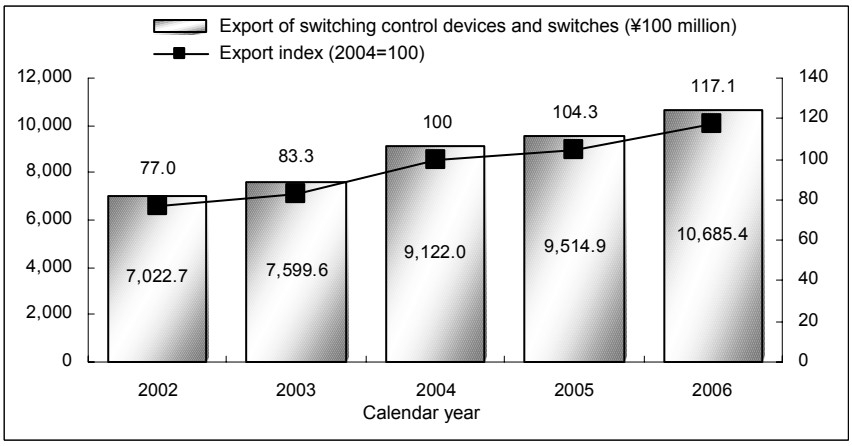
Source: Same as that for Fig. 5-4.

Fig. 5-6 Export of analyzing equipment



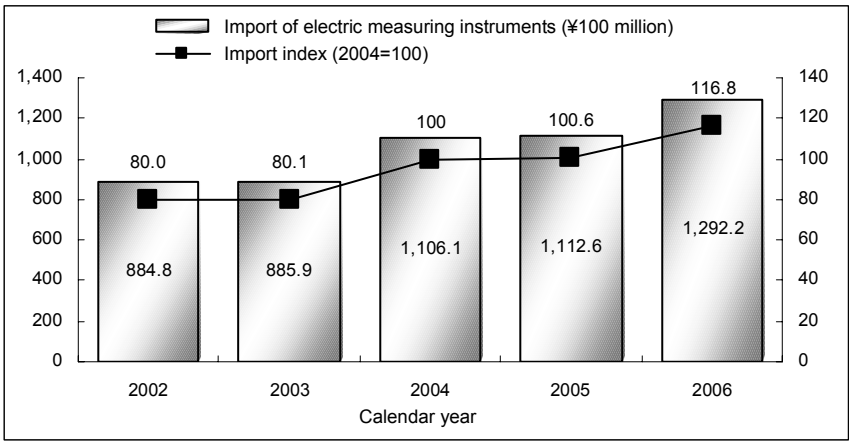
Source: Same as that for Fig. 5-4.

Fig. 5-7 Export of switching control devices and switches



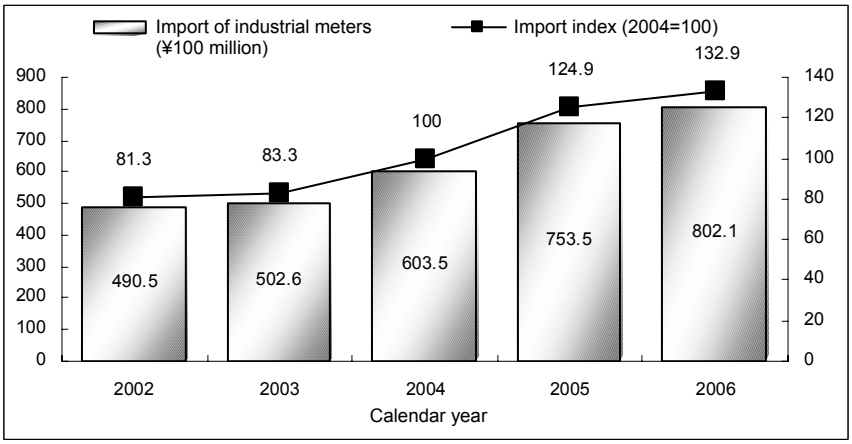
Source: Same as that for Fig. 5-4.

Fig. 5-8 Import of electric measuring instruments



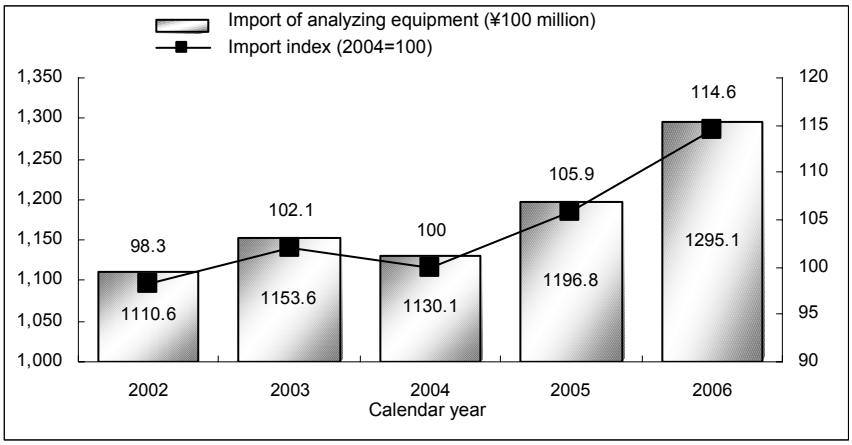
Source: Same as that for Fig. 5-4.

Fig. 5-9 Import of industrial meters



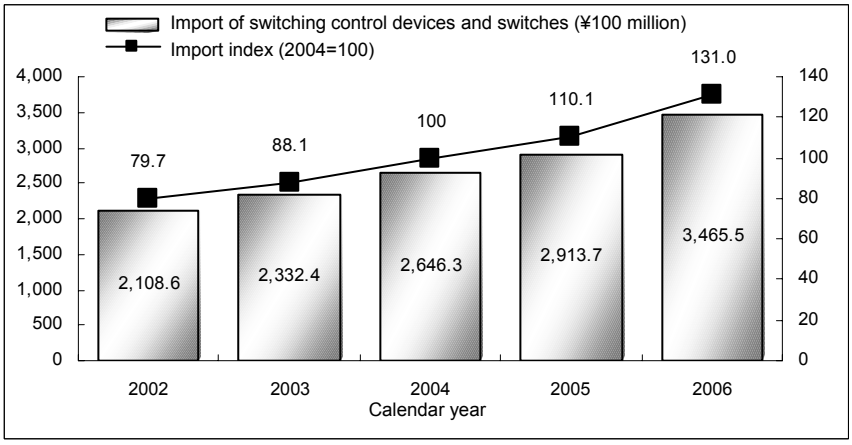
Source: Same as that for Fig. 5-4.

Fig. 5-10 Import of analyzing equipment



Source: Same as that for Fig. 5-4.

Fig. 5-11 Import of switching control devices and switches



Source: Same as that for Fig. 5-4.

5.1.2. Results of operations and the trend of the precision machine industry

(1) Trend of management

The trend of management of the main businesses associated with electric measuring instruments, measuring equipment, analyzing equipment and electric controls in FY2006 is shown in Figure 5-12.

The situation of management of these main businesses in FY2006 was generally in good condition. But Kimmon Mfg. Co. and Aichi Tokei Denki Co. suffered lower sales and operating profit (Kimmon's sales and operating profit declined by 0.7% and 61.1% y/y, respectively, and Aichi Tokei Denki's, by 0.1% and 57.0% y/y). The main factors behind this are the general fall of propane gas meter prices and lower demand for city gas meters and resultant declined demand for gas meter accessories.

All the other companies enjoyed substantial growth in sales due to the active domestic capital investment in the private sector and great demand in Japan and abroad. Anritsu Corp. recorded an increase of 12.0% over the previous year in sales, and Osaki Electric Co., 11.7% y/y (Mitsutoyo Corp., by 2.5%; Tokyo Seimitsu Co., by 5.8%; Shimadzu Corp., by 8.0%; and Hitachi High-Technologies Corp., by 9.0%).

Fig. 5-12 Consolidated settlement of accounts of main businesses associated with electric measuring instruments, measuring equipment, analyzing equipment and electric controls (as of the most recent announcement)

(Consolidated; ¥100 million; amounts less than ¥100 million rounded off)

	FY2005		FY2006		Growth rate vs. FY2005	
	Sales	Operating profit	Sales	Operating profit	Sales	Operating profit
Industrial length meters						
Mitsutoyo -	1,071	229	1,098	230	2.5%	0.5%
Precision measuring instruments						
Tokyo Seimitsu, measuring equipment segment	210	50	222	53	5.8%	4.7%
Anritsu, measuring equipment segment	651	53	729	47	12.0%	-10.8%
Analyzing equipment						
Shimadzu, measuring equipment segment	1,387	219	1,497	261	8.0%	19.3%
Hitachi High-Technologies, life science segment	871	88	949	123	9.0%	39.4%
Gas meters/water meters						
Kimmon Mfg. -	325	21	322.0	8	-0.7%	-61.1%
Aichi Tokei Denki, measuring equipment segment	337	16	336	7	-0.1%	-57.0%
Electric energy meters						
Osaki Electric Metering and control equipment segment	231	20	258	16	11.7%	-19.9%

Notes: 1. The description following the company name is the name of the segment to which the product's business belongs. Sales figures include sales between different segments.
2. The operating profit figures for Aichi Tokei Denki are those of the whole company.

Source: Prepared based on the financial statements of the companies.

(2) Technological innovation and the business environment

This section examines the trend of R&D activities at the main businesses associated with electric measuring instruments, measuring equipment, analyzing equipment and electric controls.

Fig. 5-13 R&D activities of the main businesses

	R&D Results
Mitsutoyo	"PJ-H30 series" of measuring profile projectors; "LH-600D/DG" linear height meters; "MF/MF-U series" of measuring microscopes; "HM200 series" of microhardness testers
Tokyo Seimitsu	R&D of more precise, higher-performance and less expensive measuring: "Handy Surf E35B," "Delcom 100," "Palcom V series," etc.
Shimadzu Corp.	Laser ionizing flying time-type mass spectrographs that feature considerably higher identification accuracy of protein, etc.
Hitachi High-Technologies	Next-generation automatic analyzing equipment
Kimmon Mfg.	New-type LP gas meters; next-generation electronic gas meters
Aichi Tokei Denki	New-type household ultrasonic gas meters
Osaki Electric	Development of multi-function, low-cost electronic meters

Source: Prepared based on the financial statements of the companies.

Figure 5-13 shows that the companies are doing a variety of R&D activities. For example, Tokyo Seimitsu Co. has developed such new products as "Handy Surf E35B," "Delcom 100 and "Palcom V series." Behind this is the fact that the company's customers have promoted the rationalization of manufacture and factory automation (FA), creating strong demand on the company for more precise, higher-performance and less expensive measuring equipment.

Osaki Electric Co. is among the companies that focus on the R&D of electronic-type electric energy meters, which will respond to the liberalization of electricity business, mainly the electric power field. The company regards electronic-type electric energy meters as a kind of information terminals and has carried out R&D activities aiming at giving these meters compound features and more functions.

Hitachi High-Technologies Corp. has positively cooperated with universities and other external organizations in order to develop technologies for the field of electronics and life science, where technical progress has been very rapid.

(3) Future prospects and problems

The scope of use of precision measuring equipment has recently been expanding as seen in the use of coordinate measuring machines in the automobile production line. Behind this lies the need to obviate the dependence on skilled workers in the test for securing the accuracy of automobile parts. Similar demand is said to exist in other areas than automobiles, such as the machine tool and construction machine industries, too. To meet these needs, Tokyo Seimitsu, for example, is working to increase the production capacity of its plant.

In addition, the progress of industrialization in Asian countries has been remarkable. If Japanese machine industries are to successfully compete with their counterparts in these countries, they should positively work to rationalize production and introduce factory automation. Thus, from now onward, the manufacturers of precision measuring equipment would face greater demand from their user

businesses for higher accuracy and performance.

As stated above, the manufacturers of electric measuring instruments, measuring equipment, analyzing equipment and electric controls will have to do technical development work in order to cope with growing demand and users' requests for higher performance. In other words, businesses in the precision machine industry will need to consider how they should distribute their management resources to the two subjects, increasing the production capacity and technical development, and to cooperate with universities and other outer organizations in running the company.