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 and electronic application devices in 2007 declined by 1.34% as compared with that in 2006 first in several years. The output of measuring equipment and switching control devices and switches rose only a little. Moreover, both the export and import and trade balance of electric measuring instruments showed a substantial decrease as compared with those in 2006. Even the products whose export went up, the growth was very small as compared with that in 2005 to 2006. From the figures described above, it can be said that prospects for the domestic industries for electric measuring instruments, measuring equipment, analyzing equipment and electric controls are growing uncertain.

(2) Production

Let's look at Figure 5.1.1. This figure shows that the production fell in the entire industry and in most product items. For example, the output of electric measuring instruments and electronic application devices dropped by 1.35%, that of electric meters, by 12.31% and that of X-ray devices, by 23.49%, as compared with that in 2006.

Measuring equipment, analyzing equipment and switching control devices and switches continued to register a higher production in 2007, but the increase rate was low except analyzing equipment that recorded an 8.53% increase in output. Of measuring equipment, the production of industrial length meters and precision measuring instruments dwindled by about 10% as compared with that in 2006.

Fig. 5.1.1 Production of electric measuring instruments and electronic application equipment

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

	2003	2004	2005	2006	2007	Growth rate in 2007 vs. 2006	Ratio
Electric measuring instruments/electronic application equipment	12,799.1	15,341.6	15,926.6	16,723.0	16,498.5	-1.34%	100%
Electric measuring instruments	4,719.3	6,284.6	5,803.9	6,074.9	5,647.5	-7.03%	34.2%
Electric meters	386.1	387.4	426.2	444.6	389.8	-12.31%	2.4%
Electric measuring devices	2,801.2	4,442.6	4,018.1	4,155.1	3,697.6	-11.01%	22.4%
Industrial metering and control equipment	1,532.1	1,454.6	1,359.6	1,475.2	1,560.2	5.76%	9.5%
Gas alarms	-	-	100.2	119.1	124.7	4.78%	0.8%
Electronic application equipment	8,079.9	9,057	10,022.5	10,529.1	10,726.2	1.87%	65.0%
X-ray devices	1,734.1	1,657.6	2,047.8	2,171.0	2,163.8	-0.33%	13.1%
Radioactive substance application equipment	219.1	239.9	230.4	217.2	166.1	-23.49%	1.0%
Radiometric equipment	128.2	101.7	99.6	87.1	97.6	12.05%	0.6%
High-frequency power application equipment	45.5	63.4	56.6	54.1	52.8	-2.48%	0.3%
Other electronic application equipment	4,241.6	5,194.1	5,885.3	6,240.1	6,396.8	2.51%	38.8%

	2003	2004	2005	2006	2007	Growth rate in 2007 vs. 2006	Ratio
Measuring equipment	3967.3	4204.0	4493.6	4827.5	4995.2	3.47%	100%
Industrial length meters	267.1	321.0	374.1	383.2	350.8	-8.46%	7.0%
Displacement meters	629.3	553.4	615.9	743.4	856.1	15.17%	17.1%
Industrial weighing machines	329.5	338.8	337.6	358.1	376.0	5.00%	7.5%
Pressure gauges	111.6	128.8	137.8	131.6	131.6	0.00%	2.6%
Precision measuring instruments	540.3	665.9	841.3	884.3	792.3	-10.4%	15.9%
Environment measuring instruments	180.1	208.1	184.4	186.2	208.7	12.10%	4.2%
Testers	315.6	295.4	293.3	296.8	294.8	-0.68%	5.9%
Surveying instruments	201.2	237.8	233.7	252.2	252.2	0.00%	5.0%
Analyzing equipment	1392.7	1454.9	1475.8	1591.8	1727.7	8.53%	34.6%
Optical analyzing equipment	171.3	210.8	223.2	242.9	258.9	6.59%	5.2%
Electromagnetic analyzing equipment	283.4	305.1	321.1	340.7	350.4	2.86%	7.0%
Chromatographs, separators, distilling equipment	290.4	312.6	311.1	325.5	326.5	0.31%	6.5%
Other analyzing equipment	647.7	626.4	620.4	682.8	791.9	15.98%	15.9%

	2003	2004	2005	2006	2007	Growth rate in 2007 vs. 2006	Ratio
Switching control devices/switches	11,814.2	12,948.4	13,680.2	14,767.4	14,818.0	0.34%	100%
Switching control devices	5,796.2	6,252.0	6,820.9	7,456.3	7,586.1	1.74%	51.2%
Switches	6,018.0	6,696.4	6,859.3	7,311.1	7,231.8	-1.08%	48.8%

(Source: Ministry of Economy, Trade and Industry, "Annual Report of Machinery Statistics)

(3) Export and import

Figure 5.1.2 shows the trend of export and import of electric measuring instruments, analyzing equipment, industrial meters and switching control devices and switches in 2007. The export of electric measuring instruments fell by 36.0% year on year to ¥255.21 billion. While the export of analyzing equipment, industrial meters and switching control devices and switches increased year on year, the import of these products grew at the same time. In particular, industrial meters suffered a trade deficit in 2007 for four years running after 2004.

The export of analyzing equipment went up by 13.1% year on year to ¥301.44 billion,

exceeding the ¥300 billion mark. That of switching control devices and switches also rose by 7.6% to ¥1,150.02 billion. This value is over twice that of the total of the export of electric measuring instruments, analyzing equipment and industrial meters.

In the past several years, a big trade surplus has been recorded in the area of electric measuring instruments, analyzing equipment, industrial meters and switching control devices and switches, excluding industrial meters. But the coefficient of specialization has been declining in these years. Therefore, it will also be possible to consider that the export competitiveness of the above-mentioned industries is on a downward trend, although the decrease rate is low.

Fig. 5.1.2 Trend of the export and import of electric measuring instruments and electronic application devices

	2003	2004	2005	2006	2007	Growth rate in 2007 vs. 2006
Electric measuring instruments						
Export	2,089.1	3,255.7	2,981.4	3,986.6	2,552.1	-36.0%
Import	885.9	1,106.1	112.6	1,292.2	678.6	-47.5%
Trade balance	1,203.2	2,149.6	2,868.8	2,694.4	1,873.4	-30.5%
Coefficient of specialization	0.404	0.493	0.927	0.510	0.580	-
Analyzing equipment						
Export	1,946.8	2,094.8	2,256.5	2,666.0	3,014.4	13.1%
Import	1,153.6	1,130.1	1,196.8	1,295.1	1,351.2	4.3%
Trade balance	793.2	964.7	1,059.7	1,370.9	1,663.2	21.3%
Coefficient of specialization	0.256	0.299	0.307	0.346	0.381	-
Industrial meters						
Export	511.6	547.5	550.2	574.1	587.6	2.4%
Import	502.6	603.5	753.5	802.1	1,010.3	26.0%
Trade balance	9.0	-56.0	-203.3	-0228.0	-422.7	-
Coefficient of specialization	0.009	-0.049	-0.156	-0.166	-0.265	-
Switching control devices and switches						
Export	7,599.6	9,122.0	9,514.9	10,685.4	11,500.2	7.6%
Import	2,332.4	2,646.3	2,913.7	3,465.5	3,824.0	10.3%
Trade balance	5,267.2	6,475.7	6,601.2	7,219.9	7,676.1	6.3%
Coefficient of specialization	0.530	0.550	0.531	0.510	0.501	-

Note: Coefficient of specialization = (export amount - import amount)/(export amount + import amount); the closer the value of the coefficient is to 1, the higher is the international (export) competitiveness, and the closer the value of the coefficient is to 0, the lower is the international competitiveness.

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

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

(1) Trend of management

Figure 5.1.3 shows the trend of management of eight main manufacturers of electric measuring instruments, measuring equipment, analyzing equipment and electric controls.

A half of the eight manufacturers of these products suffered lower sales than those in 2006. For example, Anritsu had a 0.1% decrease in sales year on year and explained about this that since 2008 its customers’ restraints on capital investment had increased due to the deteriorating external

environment. Aichi Tokei Denki increased its sales but said that rises in the price of materials and sluggish demand had affected its business environment.

Fig. 5.1.3 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)

	FY2006		FY2007		Growth rate vs. FY2006	
	Sales	Operating profit	Sales	Operating profit	Sales	Operating profit
Industrial length meters						
Mitsutoyo -	1,098	145	991	100	-9.7%	-31.1%
Precision measuring instruments						
Tokyo Seimitsu, measuring equipment segment	222	53	244	60	9.6%	14.1%
Anritsu, measuring equipment segment	73	47	73	41	-0.1%	-12.5%
Analyzing equipment						
Shimadzu, measuring equipment segment	1,497	261	1,645	262	9.9%	0.3%
Hitachi High-Technologies, life science segment	949	123	975	184	2.7%	49.6%
Gas meters/water meters						
Kimmon Mfg. weighing and measuring segment	322.3	8	320.2	9	-0.7%	5.1%
Aichi Tokei Denki, measuring equipment segment	336	-	353	-	4.9%	-
Electric energy meters						
Osaki Electric Metering and control equipment segment	258	16	15	20	-94.3%	24.9%

Note: 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.

Source: Based on the financial statements of the companies.

The above discussion suggests that the main manufacturers of electric measuring instruments, measuring equipment, analyzing equipment and electric controls were faced with a recession phase of the business cycle.

(2) Technological innovation and the business environment

Let's take a look at the research and development (R&D) activities in 2007 of the main manufacturers of electric measuring instruments, measuring equipment, analyzing equipment and electric controls. For example, Tokyo Seimitsu developed such new products as "RONDCOM 76A," a large-sized and high-precision roundness measuring instrument, and "CONTOURECORD 1710," a contour measuring instrument. Behind this is the fact that as the rationalization of production and factory automation (FA) are making steady progress at the customers of Tokyo Seimitsu, there is a strong request to the company for higher accuracy and functions of precision measurement and for lower prices. Osaki Electric is focusing on the R&D of electronic electric energy meters for dealing with the liberalization of electric power industries, mainly in the electricity field. For example, regarding electronic electric energy meters as a kind of information terminals, the company is doing R&D activities on industrial and household meters adaptable for the various billing systems of electric power companies.

Hitachi High-Technologies is positively cooperating with foreign businesses in order to carry out technological development work for the life science field, where technical progress has been remarkable.

(3) Future prospects and problems

The scope of application of precision measuring instruments is expanding recently as seen in the use of coordinate measuring machines in the production line of automobiles. One of the purposes of using the machine for automobile production is to obviate the need to depend on skilled workers in the inspection of precision of automotive parts. It is said that there are similar needs in machine tool and construction machine-related industries, too. Thus for example, Tokyo Seimitsu plans to increase the production capacity of its plants.

In addition, the progress of industrialization has been remarkable in Asian nations. If Japanese machine industries are to compete successfully with their counterparts in Asian countries, they should positively promote the rationalization of production and FA in their plants. Thus the demand of user businesses of precision measuring instruments for higher precision and functions of these instruments is likely to rise more in the future.

However, as global recession arising from the subprime loan problems in the U.S. is getting into full swing, Japanese manufacturers of electric measuring instruments, measuring equipment, analyzing equipment and electric controls are highly likely to be confronted with weakening demand in the domestic and overseas markets. In fact, in 2007, most of major manufacturers encountered poorer sales. This tendency will grow stronger in 2008. Manufacturers will also need to make technical development efforts in response to users' demand for higher functions. Measuring technology is a very important technology for Japanese manufacturers to compete effectively in the world in the coming years. In this situation, Japanese manufacturers in these fields will have to allot their management resources to more advanced technical development while coping with a global recession. Cooperating with other companies and outside organizations, including universities, in this process will be one of effective methods for manufacturers.