

## 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 2008 declined by 17.45% as compared with the previous year to ¥1,362.02 billion. All of the electric measuring instruments and electronic application devices experienced a smaller amount of production. As for measuring equipment, the output of industrial weighing machines, pressure gauges, testers and surveying instruments decreased as compared with the previous year. Moreover, the export and import as well as trade balance of electric measuring devices suffered a fall in almost all cases compared with 2007. Some of these devices registered a larger amount of export, however, the growth was very small.

##### (2) Production

Let's look at Figure 5.1.1. This figure shows that the production of electric measuring instruments and electronic application devices fell in all types of products. For example, the output of all electric measuring instruments and electronic application devices dropped by 17.45%, that of electric measuring instruments, by 28.34% and that of electronic application devices, by 11.87%, as compared with that in 2007.

Measuring equipment, analyzing equipment and switching control devices and switches registered a small increase in production in 2008, too, but the amount of output dropped from 2007 for industrial weighing machines (down 3.72%), pressure gauges (down 6.34%), testers (down 0.01%) and surveying instruments (down 11.95%).

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

(Calendar year, ¥100 million; rounded off to the ¥100 million)

	2004	2005	2006	2007	2008	Growth rate in 2007-2008	Ratio
Electric measuring instruments/electronic application equipment	15,341.6	15,926.6	16,723.0	16,498.5	13,620.2	-17.45%	100%
Electric measuring instruments	6,284.6	5,803.9	6,074.9	5,647.5	4,047.2	-28.34%	29.7%
Electric meters	387.4	426.2	444.6	389.8	370.3	-4.99%	2.7%
Electric measuring devices	4,442.6	4,018.1	4,155.1	3,697.6	2,197.3	-40.58%	16.1%
Industrial metering and control equipment	1,454.6	1,359.6	1,475.2	1,560.2	1,479.6	-5.16%	10.9%
Gas alarms	—	100.2	119.1	124.7	120.2	-3.64%	0.9%
Electronic application equipment	9,057	10,022.5	10,529.1	10,726.2	9,452.7	-11.87%	69.4%
X-ray devices	1,657.6	2,047.8	2,171.0	2,163.8	1,894.1	-12.47%	13.9%
Radioactive substance application equipment	239.9	230.4	217.2	166.1	196.3	18.15%	1.4%
Radiometric equipment	101.7	99.6	87.1	97.6	93.3	-4.41%	0.7%
High-frequency power application equipment	63.4	56.6	54.1	52.8	45.0	-14.69%	0.3%
Other electronic application equipment	5,194.1	5,885.3	6,240.1	6,396.8	5,742.7	-10.23%	42.2%
Measuring equipment	4,204.0	4,493.6	4,827.5	4,995.2	5,234.0	4.78%	100%
Industrial length meters	321.0	374.1	383.2	350.8	372.8	6.29%	7.1%
Displacement meters	553.4	615.9	743.4	856.1	876.8	2.42%	16.8%
Industrial weighing machines	338.8	337.6	358.1	376.0	362.0	-3.72%	6.9%
Pressure gauges	128.8	137.8	131.6	131.6	123.3	-6.34%	2.4%
Precision measuring instruments	665.9	841.3	884.3	792.3	802.5	1.29%	15.3%
Environment measuring instruments	208.1	184.4	186.2	208.7	256.5	22.88%	4.9%
Testers	295.4	293.3	296.8	294.8	294.8	-0.01%	5.6%
Surveying instruments	237.8	233.7	252.2	252.2	222.0	-11.95%	4.2%
Analyzing equipment	1,454.9	1,475.8	1,591.8	1,727.7	1,923.2	11.32%	36.7%
Optical analyzing equipment	210.8	223.2	242.9	258.9	275.5	6.41%	5.3%
Electromagnetic analyzing equipment	305.1	321.1	340.7	350.4	373.9	6.69%	7.1%
Chromatographs, separators, distilling equipment	312.6	311.1	325.5	326.5	352.6	8.00%	6.7%
Other analyzing equipment	626.4	620.4	682.8	791.9	921.3	16.34%	17.6%
Switching control devices/switches	12,948.4	13,680.2	14,767.4	14,818.0	15,245.2	2.88%	100%
Switching control devices	6,252.0	6,820.9	7,456.3	7,586.1	7,976.8	5.15%	52.3%
Switches	6,696.4	6,859.3	7,311.1	7,231.8	7,268.4	0.51%	47.7%

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 2008. The export of electric measuring instruments fell by 8.8% year on year to ¥232.65 billion. While the export of analyzing equipment showed a small increase (¥305.37 billion or up 1.3% year on year), that of industrial meters (¥57.35 billion or down 2.45%) and switching control devices and switches (¥1,075.77 billion or down 6.5%) fell from the level in 2007. It can be said that the upward trend of export of electric measuring instruments, analyzing equipment, industrial meters and switching control devices and switches, which had continued for the previous several years, ended finally.

In 2008, a considerable growth was observed in the amount of import of electric measuring instruments (¥104.09 billion or up 53.4% year on year). However, the import of analyzing equipment (¥120.27 billion or down 11.0%), industrial meters (¥91.2 billion or down 9.8%) and switching control devices and switches (¥361.17 billion or down 5.6%) decreased substantially. The impact of the worldwide recession had on the manufacturers of electric measuring instruments, analyzing equipment, industrial meters and switching control devices and switches can be seen from these figures, too.

It can be said that in the past several years, a large trade surplus was attained in the field of electric measuring instruments, analyzing equipment and switching control devices and switches excluding the industrial meter segment. But it should be pointed out that the coefficient of specialization has been on the decline.

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

	2004	2005	2006	2007	2008	Growth rate in 2007-2008
<b>Electric measuring instruments</b>						
Export	3,255.7	2,981.4	3,986.6	2,552.1	2,326.5	-8.8%
Import	1,106.1	112.6	1,292.2	678.6	1,040.9	53.4%
Trade balance	2,149.6	2,868.8	2,694.4	1,873.4	1,285.5	-31.4%
Coefficient of specialization	0.493	0.927	0.510	0.580	0.382	-
<b>Analyzing equipment</b>						
Export	2,094.8	2,256.5	2,666.0	3,014.4	3,053.7	1.3%
Import	1,130.1	1,196.8	1,295.1	1,351.2	1,202.7	-11.0%
Trade balance	964.7	1,059.7	1,370.9	1,663.2	1,851.0	11.3%
Coefficient of specialization	0.299	0.307	0.346	0.381	0.435	-
<b>Industrial meters</b>						
Export	547.5	550.2	574.1	587.6	573.5	-2.45%
Import	603.5	753.5	802.1	1,010.3	912	-9.8%
Trade balance	-56.0	-203.3	-228.0	-422.7	-338	-
Coefficient of specialization	-0.049	-0.156	-0.166	-0.265	-0.228	-
<b>Switching control devices and switches</b>						
Export	9,122.0	9,514.9	10,685.4	11,500.2	10,757.7	-6.5%
Import	2,646.3	2,913.7	3,465.5	3,824.0	3,611.7	-5.6%
Trade balance	6,475.7	6,601.2	7,219.9	7,676.1	7,146.0	-6.9%
Coefficient of specialization	0.550	0.531	0.510	0.501	0.497	-

Source: 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 seven main manufacturers of electric measuring instruments, measuring equipment, analyzing equipment and electric controls.

About a half of the seven manufacturers of these products suffered lower sales and operating profit than those in 2007. For example, Anritsu had a 21.0% decrease in sales and a 119.2% drop in

operating profit year on year and explained about this that, customers' moves to reduce and postpone capital investment increased after the second half of 2009 and that demand rapidly fell in general, including one from the U.S., which had been good in the past. Not only Anritsu but all other businesses in the field of electric measuring instruments, measuring equipment, analyzing equipment and electric controls must have experienced this business environment. From the situation mentioned above, it can be said that in 2008, owing to the impact of the global recession directly caused by the Lehman shock, the manufacturers of electric measuring instruments, measuring equipment, analyzing equipment and electric controls have faced with a downward business trend and that these industries were greatly affected by the recession.

**Fig. 5.1.3 Consolidated settlement of accounts of main businesses associated with electric measuring instruments, measuring equipment, analyzing equipment and electric controls (the latest announcement)**

(Consolidated; ¥100 million; rounded off to the ¥100 million)

	FY2007		FY2008		Year-on-year ratio	
	Sales	Operating profit	Sales	Operating profit	Sales	Operating profit
Industrial length meters						
Mitsutoyo	991	100	993	165	0.2%	64.8%
Precision measuring instruments						
Tokyo Seimitsu, measuring equipment segment	244	60	210	35	-13.8%	-42.2%
Anritsu, measuring equipment segment	729	41	576	-8	-21.0%	-119.2%
Analyzing equipment						
Shimadzu, measuring equipment segment	1,645	262	1,526	212	-7.2%	-19.2%
Hitachi High-Technologies, life science segment	975	184	979	194	0.4%	5.3%
Gas meters/water meters						
Aichi Tokei Denki, measuring equipment-related segment	353	-	382	-	8.3%	-
Electric energy meters						
Osaki Electric Metering and control equipment segment	388	15	403	24	3.9%	64.0%

Note: 1. The description following the company name is the name of the segment to which the product's business belongs. Sales figures include those of sales between different segments.

2. Figures for Mitsutoyo are those of the entire company.

Source: Based on the financial statements of the companies.

## (2) Technological innovation and the environment of the industry

Let's look at the situation of R&D activities in 2008 of the main businesses related to electric measuring instruments, measuring equipment, analyzing equipment and electric controls. Tokyo Seimitsu, for example, adopted "Nano Contour" and "TIMS II SOFT" as its main subjects of research for 2008. Behind this is the fact that customer businesses have made positive efforts to rationalize production and introduce factory automation (FA) and have great demand for the company's higher-precision and higher-performance and less expensive precision measuring instruments. Shimadzu has developed a "high-speed, high-sensitivity liquid chromatography mass spectrometer" capable of analyzing the infinitesimal ingredients of medicines and pollutants. Osaki

Electric focuses on the research and development of electronic electric energy meters that will address the needs to deal with the deregulation of electric power business mainly in the field of power generation. For example, Osaki regards electronic electric energy meters as a sort of information terminals and is doing R&D work on industrial and household meters applicable to the various billing systems of electric power companies. It should be added that Hitachi High-Technologies has started, for example, marketing and technical assessment activities for bacteria and gene tests in cooperation with a French business.

### **(3) Future prospects and problems**

At present, Asian countries continue to increase their efforts to industrialize themselves. If Japanese machine industries are to compete with these nations, they need to rationalize their production and introduce FA positively. Thus the demand of user businesses of precision measuring instruments for higher-accuracy and higher-performance products is likely to rise further in the future. As a result, the market of measuring instruments may expand both at home and abroad in the long run. In addition, demand for these instruments will grow in overseas markets due to increasing awareness of food safety and environmental conservation.

But the sub-prime loan problem and the global recession directly triggered by the Lehman shock, which is on an extension of the problem, will increase their impact on industries concerned with electric measuring instruments, measuring equipment, analyzing equipment and electric controls in the years to come. As Japanese and foreign businesses have reduced their capital investment and their demand for R&D has diminished greatly, these industries are faced with lower demand in Japanese and overseas markets, too. In fact, in 2008, most major manufacturers suffered poorer sales and operating profit. This trend will become more dominant in 2009. On the other hand, manufacturers will need to make technical development efforts to meet users' demand for products with a higher performance. "Measuring" will be a key technology for Japanese manufacturers in competing with their rivals in the world. In such a situation, measuring equipment manufacturers will have to allot their management resources to more advanced technical development work in the face of the worldwide recession and declining capital investment. A meaningful strategy for them will be an attempt to positively cooperate with businesses, universities, public research institutes and the like in Japan and abroad.