

Investment Casting Industry in Japan

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INVESTMENT CASTING INDUSTRY IN JAPAN

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When the investment casting process was introduced into Japan in the 1960s, the Japanese recognised the process as a significant one. Research and development began at government institutes and universities and at laboratories of the large-scale enterprises.

It was understood that the process was complex and the technology would be difficult to adopt in a short time. This perception was supported by reports of problems related to complexity, low productivity, poor casting appearance and poor reliability of the castings. In addition, all the machines, equipment and raw materials to make castings were not available from domestic markets. It seemed to be almost impossible to make investment castings under such conditions.

The large-scale enterprises, however, rushed into technical tie-ups with leading investment casters in the United States, resulting in what might be called the first boom of the investment casting industry in Japan. The introduction of technology and systems from the USA contributed to the establishment of the investment casting process in the Japanese industry.

While the investment casting industry in western countries began by applying the process mainly to aerospace and defence industries (until after World War II), Japanese industries began applying the process to commercial industries.

The technology of that time, however, did not lend itself to the solving of such problems as cost performance and quality of castings. For example, commercial parts were quite often sold on a price-per-gram basis in Japan, so that castings had to be made at low cost but at high quality to get market share.

Approximately 40 years after the introduction of the investment casting process into Japan, some foundries - licensees of US investment casters - deemed to exceed the licensor in production scale and quality.

Individual major foundries began investing large amounts of capital to automation and quality, and had a rich pool of qualified engineers.

The economic environment of the past three or four years has brought changes to the investment casting industry in Japan. Foundries have started re-engineering and reconstructing their organisation in an effort to apply their own technology to less competitive markets.



I believe we must begin to see the investment casting process as the predominant metal manufacturing technology, to recognise its role among modern high-tech industries.

The recent recession was a blow to Japanese industries and the investment casting industry is no exception. Government reports indicate, approximate annual turnover in 1994 was US\$386 million, but this figure seemed to be lower than actual turnover.

Although they are difficult to count, there are approximately 80-100 foundries at this moment. I believe actual turnover in 1994 was over US\$400 million.

Annual turnover in 1994 was 10-15% down compared to the previous year. Total output of 1994 of investment castings was approximate 7,850 tons. Total output of 1993 of investment castings was approximate 8,342 tons, equivalent approximately to US\$404 million.

These figures show actual casting prices to be lower than the previous year. In 1995, this tendency will be clearer. Approximate annual turnover in 1995 will be over US\$420 million, indicating an increase of 5-10% in total investment castings at approximately 8,500 tons.

One of the reasons for an increase of investment casting sales is the titanium golf club head market. Titanium golf club heads accounted for approximately US\$70 million, or 15% of the total Japanese investment casting market in 1995.

Approximate annual turnover in 1996 is expected to increase slightly, about 10% in total. At a recent meeting of the Japan Forging and Casting Association, sales turnover in 1996 was forecast to be flat or slightly increased, but some members were pessimistic of an increase in sales.

Members indicated almost all users would require casting prices to be lower than this year. End users seemed to threaten foundries with the price of castings imported from outside.

So far, because the casting quality of Japanese foundries is very high, end users of castings do not want to change their suppliers. However, there is acute downward pressure on price from customers. Many foundries in Japan try to resist this, but it is very difficult in a competitive World.

About 7-10 years ago, a similar pressure on price occurred and at that time the industry overcame the problem by re-organisation by foundries to greater automation. Today, foundries may look for another solution.