Review

Introduction of Ningbo Tongmuo as a Leading PM Industry in China

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SYNOPSIS
Ningbo Tongmuo New Materials Co., Ltd. (NBTM), which specializes in manufacturing PM components, has been enjoying rapid growth since 1995. This article gives a brief introduction of NBTM, as one of the largest manufacturers of sintered metal structural components in China.

KEY WORDS
Ningbo Tongmuo, powder metallurgy

1 Introduction
Ningbo Tongmuo New Materials Co., Ltd. (NBTM) is one of the largest sintered metal components manufacturers in China, with 450 employees and annual output of more than 8,200 metric tons of sintered metal structural components and sales of approx. $27 million US in 2002. The company operates in Ningbo City; China located about 300 km southeast of Shanghai. Fig. 1.

The company was found in 1960s as Ningbo Powder Metallurgy Factory, a state-run company. In 1983, Ningbo Powder Metallurgy Factory introduced a PM production system and technology from Japan. In 1995, Mutsumi Special Alloy Industries Co. bought 60% of the shares of Ningbo Powder Metallurgy Factory, and company became Ningbo Tongmuo Powder Metallurgy Co., Ltd. (NBTM). In 2001, the company became Ningbo Tongmuo New Materials Co., Ltd., with a registered capital of approx. $8.45 million US. NBTM has acquired two PM companies, Ningbo Mingzhou Tongmuo Powder Metallurgy Co., Ltd. (holds 75% of the shares) and Lianyungang Tongmuo Jianghe Powder Metallurgy Co., Ltd. since 2000. The company has expanded the facilities in these plants, including advanced CNC compacting presses from SMS Meer GmbH and EDM from AIGE, Charmilles and Sodick etc.

2 Facilities
During the past 20 years, the company has purchased powder metallurgy production systems from YOSHIZUKA, TAMAGAWA, TANAKAKAME, GASBARRE, SMS Meer, OSTERWALDER, SINTERITE, MAHLER, CREMER, tooling-making equipment from AGIE, SODICK, CHARMILLES, MAKINO and measuring equipment from TOKYO Seimitsu, OSAKA Seimitsu, etc.

The equipment inventory including 47 compacting presses (3 - 800 mt), 28 sizing presses (5 - 800 mt), 17 belt sintering furnaces (7 - 40 in.), 1 pusher high-temperature sintering furnace (8 in.), 8 steam-treating furnaces (500 - 1,000 kg), 2 vacuum sintering furnaces and secondary equipment for shot-blasting, turning, lapping, shaping and oil impregnation. The tooling-making equipment inventory including 38 EDM and 93 sets of CNC miller, grinders, NC turnings, jig boring machines, etc. Fig. 2. Most of the plants operate on two shifts seven days a week, while the compacting, sintering and steam-treating departments...
operate on three shifts.

All tooling used in NBTM (including two subsidiary companies) are also made in-house. Most of secondary machining is subcontracted, except key processes. But the quality and technical of the processes are controlled by the quality dept. from NBTM.

3 Markets

NBTM provides mostly provides components such as ferrous alloy parts, bronze parts and stainless parts. It also offers proprietary materials featuring improved hardness and strength. High-wear and corrosion resistant alloys were developed for engine parts and transmission parts. The manufactured components are wildly used in automobiles and motorcycles, household appliances, engineering machines, power tools and other applications. Fig. 3. The PM components markets (sales) of NBTM in 2002 shows as Fig. 4.

There are more than 200 customers and more than 80% of sales are in the mainland of China, including the joint-venture of Mitsubishi Motor, Tokiko, Showa, Honda, Suzuki, Sanyo, Mitsubishi Electric from Japan and LG Electric, Samsung Electric from Korea, etc. in China. NBTM is very much a team effort. NBTM encourage employees to react to customer needs quickly. The annual output of NBTM is increased faster recently. Fig. 5.
4 Team

Highly developing of NBTM depends on two supporters: Powder Metallurgy Engineering & technical Center and Tooling-making Center of the company.

The engineers, work in the Powder Metallurgy Engineering & technical Center are strong on materials research and experienced on PM processes. The employees, work in the tooling-making Center are also experts. With an experience of more than 40 years specializing in powder metallurgy industry, efficient teams of technical, sales and services and advanced PM facilities, NBTM remains close to the customers and react quickly in meeting customer needs and can solve customer problems quickly.

NBTM has achieved ISO9002 certification in 1997 and QS-9000/VDA6.1 certifications in 2002. The company received the design Awards from China General Machine Components Industry Association in 2000, 2001 and 2002 (Fig. 6) and Supplier Awards from the customers of Shenyang Aerospace Mitsubishi Engine Co. in 2001, Shanghai FCC Co. in 2002, etc.

Concentrating on creating a competitive enterprise that creates efficiencies through full utilization of manufacturing capacity, that make NBTM lower of production cost and more competitive price of products.

The business philosophy of NBTM is to benefit customers and employees, investors as well.

5 The Future

With the increasing demands of powder metallurgy components with better quality, better service and more competitive price, we are sure that NBTM will have a brighter future.

In 2003, NBTM plans to build a new plant (85,000 m²) in Ningbo to increase its production capacity and expand PM Engineering & Technical Center, Tooling-making Center as well for meeting the increasing demands of PM markets. Fig. 7.

Fig. 6 Awards from CGMCLA.

Fig. 7 Plan of the new plant.