

GEAR MANUFACTURING IN THE FAR EAST

Profiles and insight from gear manufacturers on the other side of the world

William R. Stott, Managing Editor

Introduction

This article proposes to give readers a glimpse of some companies that manufacture gears in the Far East. We've talked with more than a dozen companies in India, Taiwan and Korea—companies ranging in size from as small as 30 employees to more than 11,000 and serving a variety of industries, including fine-pitch gears, automotive gears and large industrial gears. We talked to both gear job shops and captive operations.

For your convenience, a complete list of the companies we interviewed is available at the end of this article, along with some additional sources of information on gear manufacturing in these countries.

This is not intended to be a scientific survey, and it shouldn't be taken as such. It's just a glimpse, and hopefully it will give those of you who are curious a better feel for what's happening in gear manufacturing on the other side of the world.

Rapid Growth

Virtually every company we interviewed is experiencing substantial—and in some cases, phenomenal—sales growth.

Shang Yang Industrial Co. Ltd. is a Taiwanese manufacturer of AC motors and gearmotors as well as a line of coin hoppers designed for use in slot machines and other casino games. The company employs 50 people.

"We have grown a lot this year and last year," says overseas sales manager Chen Tai Hui. "That's why we're preparing to move to a new factory." The company currently occupies a 2100-square-meter factory, but will be doubling its space in 2006, Chen says.

Shang Yang only recently began manufacturing gears, Chen says, because the quality of gears it had been buying from an outside supplier was not good enough. "So we decided to make the gears ourselves to suit our motors and gearboxes. We think the primary reason for our company's growth has been manufacturing gears to suit our product."

Chen expects modest growth for 2006 of about 5%.

Dae Seong Gear Manufacturing Co. of Incheon, Korea, has also grown substantially over the past five years. Dae-Sung Jung, managing director, says the company's sales have grown by about 35% over the past five years, and he expects additional growth of about 10% in 2006. Dae Seong manufactures large-diameter spur, helical, straight



Photos courtesy of Elecon Engineering Co. Ltd.

bevel and spiral bevel gears primarily for heavy industries such as cement, steel and iron processing. Its growth has been mainly from increased demand in those industries, he says.

One company that has seen only marginal growth is Precision Engineering and Chiming Equipments, located in Bangalore, India. Over the past five years, the company has grown only marginally, says proprietor B.V. Swaminathan, and he expects growth of about 8-10% in 2006.

Precision Engineering & Chiming manufactures mainly fine-pitch gears for electric meters, servo motors and automotive speedometers, wiper motors and window lifts. One of the challenges Swaminathan's company has faced is that the metal gears he manufactures are becoming obsolete in the applications he's traditionally served. "We do not feel much change, as most of our items get replaced by plastic gears."

Still, Precision Engineering & Chiming has managed growth by staying ahead of the capabilities of plastic gears, "getting into newer fields like from clock to telephone, from telephone to dot matrix printer, from printer to washing machine and so on," Swaminathan says.

Most of the rest of the Indian companies we interviewed have experienced tremendous growth over the past five years.

"In terms of annual sales, our business has multiplied many times over the last five years," says Arvinder Singh, managing director of Punjab Bevel Gears Ltd. "We hope to double annual sales in the year 2006."

Punjab Bevel Gears employs 213 people and occupies more than 170,000 square feet of factory space, 65,000 square feet of which is dedicated to gear manufacturing equipment.

Singh attributes his company's phenomenal growth to "the excellent quality of products and competitive prices, supplemented by a well-qualified and experienced marketing and technical backup."

Many Indian manufacturers have been boosted by the steady growth of the Indian automotive industry. Punjab Bevel Gears manufactures differential gears, transmission gears and transmission shafts for agricultural tractors, trucks, pick-ups and passenger cars.

According to the Automotive Component Manufacturers Association of India (ACMA), the Indian automotive component industry grew by about 30% in 2005, and the organization expects this growth to continue.

"The last three years have been good, and going by the prevailing trends, I am confident that this high growth shall continue for the next three years also," wrote Deep Kapuria, past president of ACMA in the organization's 2004-5 annual report. Kapuria is also chairman and managing director of Hi-Tech Gears.

Ashok Leyland is a manufacturer of buses and trucks with more than 11,000 employees and gear manufacturing operations covering more than 62,000 square meters of factory space in six locations in India, according to Rajinder Malhan, executive director-business development.

Ashok Leyland has seen year-over-year growth of about 30% over each of the last five years, and the company expects an additional 20% growth in 2006, Malhan says.

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The biggest gear manufacturing challenge facing the company is capacity constraint, Malhan says. Ashok Leyland is looking to expand its gear manufacturing capacity by at least 50%.

In addition to those serving the automotive industry, many of the traditional gear manufacturing industries also appear to be booming in India, according to the companies interviewed for this article.

The Jamal Group of Companies specializes in bevel gears, ranging from 5 mm to 850 mm in diameter. Although it is a supplier of automotive differentials, it also serves a wide variety of industries including machine tools, railway equipment, cooling towers, heavy industry, power tools, boats and radio-controlled cars and airplanes, among others.

Sulaiman Jamal, managing director, says the company has grown by more than 50% over the past five years, and he expects 30% growth in 2006. Jamal says much of his company's growth has been due to the introduction of new product lines and his company's use of increasingly higher levels of technology.

Trina Engineering, INGECO Gears Pvt. Ltd. and Universal Gear Industries & Engineering Works all manufacture gears for heavy industry. Each company has grown substantially over the last five years.

Elecon Engineering Co. Ltd., one of the largest manufacturers of industrial gears in India, has been growing at an annual rate of about 30% per year for the past five years, and the company expects to grow by another 25% in 2006, says B.I. Patel, chairman and managing director. Elecon's gear division employs 318 people and has more than 23,000 square meters of factory space devoted to gear manufacturing equipment.

The company's growth has been due to increased demand from steel, cement, sugar and material handling industries, as well as orders from the Indian navy, Patel says. Also, the company has expanded its manufacturing facilities and found new applications for its products.

Exponential Growth in Exports

Exports are driving much of the growth being experienced by the companies interviewed for this article.

At Kyung-In Gear of Incheon, Korea, export growth has been gradual. The company supplies large-diameter gears for the steel, shipbuilding and cement manufacturing industries. "We mainly have business relationships with Japan and other Asian countries," says Ju-Kyung Kim, CEO. The company sees America as the biggest potential market. Until now, the company has not been prepared to enter it, but he adds: "We are aiming to challenge the worldwide market such as North America and Europe."

While export growth has been gradual at a few of the companies we talked to, at others, it's transforming their businesses.

For example, Shang Yang Industrial Co. didn't export at all five years ago, but today, exports to other countries in Southeast Asia account for 70% of the company's business, says Chen. He sees additional export opportunity in China, Russia, Brazil and India.

Five years ago, exports accounted for about 10% of the annual sales at Punjab Bevel Gears. Today, they account for about 50%, says Singh. Punjab Bevel Gears' products are exported

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to countries around the world, including North America (USA & Mexico), South America (Chile & Argentina), Europe (UK, France, Germany, Italy & Turkey), Africa and the Far East.

Singh mentions the United States, Europe, Africa and Iran as all having large export potential for his company.

Trina Engineering didn't export at all five years ago, according to director of marketing Pankaj Khera, but today, exports to the United States, Canada, the United Kingdom and other countries amount to 60% of the company's business.

Most of the others tell similar stories. INGECO exported 15% of its business five years ago. Today, the company exports 45%. Over the same period, Dae Seong went from 5% exports to 20%. Precision Engineering & Chiming went from 10% to 40%. Elecon went from 5% to 15%. The Jamal Group went from no exports to 40%.

Clearly, it's becoming a much smaller world—and the pace is quickening.

Some of these companies have their eyes on the United States and European markets, but nearly all of them mentioned Africa, Russia, the Middle East and the Far East as having significant export potential.

Challenges

The primary challenges facing most of these companies are meeting demand and improving technology. Many of them are growing so fast that they can't keep up with the demand. Also, while most of the companies we talked to are buying quality used machinery to improve their technology, there are some notable exceptions, and you also get the sense that these companies are more likely to be new machinery buyers in the near future.


Shang Yang Industrial Co., for example, bought a new CNC gear measurement system in 2005 to help analyze gear noise, says Chen.

Dae-Sung Jung of Dae Seong Gear says that his company has invested in a new spiral bevel gear cutting machine and a new large-diameter profile grinder in 2005.

His counterpart, Ju Kyung Kim, at Kyung-In Gear admits that most Korean gear manufacturers are still using older technology. But that has begun to change over the past 15–20 years, he says. Kyung-In Gear has invested in newer equipment, and the company plans to install a new Gleason-Pfauter P5000G as part of a factory expansion next year.

In 2005 Trina Engineering invested in a number of machine tools. "Of course, these were good, pre-owned machines," says Khera, but he adds that next year, the company is considering a new CNC gear grinder.

Regardless of the type of machine tools purchased, nearly all the companies are concerned with improving productivity and quality. A number of them have instituted or begun instituting modern manufacturing concepts.

"We are continuously improving the quality of the product, as well as going towards the Six Sigma concept," says Patel of Elecon Engineering. He adds that "We are trying to pursue the concept of just-in-time to reduce inventory and reduce pressure on our suppliers." 

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Gear Division

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