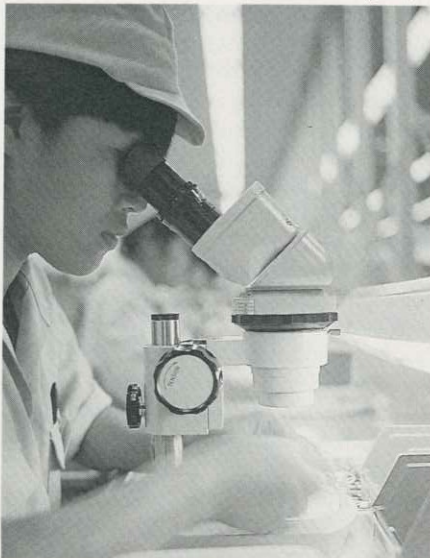


# Ultraprecision Products in Ayutthaya

**T**he Province of Ayutthaya is a one-hour drive north on National Highway No. 1 from the Thai capital of Bangkok. Ayutthaya was the seat of the Ayutthaya dynasty founded in 1350. Until it was invaded and destroyed by Burmese armies in 1767, Ayutthaya was a pinnacle of urban civilization replete with ornate palaces and Buddhist temples.

Now only the ruins of that civilization remain amid a predominantly rural landscape. In seeming contrast with those silent monuments, a modern factory completed in 1982 is producing miniature bearings and other ultraprecision products with Japanese technological support—products identical in quality and precision to those made at the parent plant in Karuizawa, Japan. Fifteen kilometers south, at Bang Pa In, instrument bearings, computer printers and keyboards and other ultramodern products have been rolling off the production line since 1984.

These factories are run by NMB Thai Ltd., Pelmec Thai Ltd. and Minebea Thai Ltd., three wholly-owned local subsidiaries of Minebea Co., Ltd. of Japan, a



In Ayutthaya Japanese-owned factories have been producing bearings and other ultraprecision products since 1982.

multinational business that has for the past decade been rapidly expanding sales in the mechatronics field.

NMB Thai Ltd. was founded in August 1980 with a capital of ¥3 billion, and its Ayutthaya plant, comprising 56,000 square meters (sq. m.) of grounds with 33,000 sq. m. of factory buildings, currently turns out miniature bearings less than 16 mm in diameter for video cassette recorders (VCRs) and peripheral computer equipment. Pelmec Thai Ltd., established in May 1984 and capitalized at ¥3.5 billion, owns the Bang Pa In factory whose grounds cover 165,000 sq. m. with 31,300 sq. m. devoted to factory buildings where instrument bearings less than 22 mm in diameter for VCRs and motors are produced. Minebea Thai, Ltd. also came into being in May 1984. Capitalized at ¥3 billion, it produces stepping motors, fan motors and strain gauges at its Ayutthaya plant while keyboards, printers, micro-speakers and stabilizing power sources are made at its Bang Pa In plant.

The three companies together employ 3,916 people, excluding 90 Japanese. About one quarter (1,030; 265 males and 765 females) of the local staff have received one year of training in Japan, and they contribute to maintaining the high technological level of the Ayutthaya plants.

The Province of Ayutthaya has a population of about 500,000, about 10% of whom work either outside the province or overseas. When Minebea chose Ayutthaya as the site for its plants, the governor of the province welcomed the project as a much-needed alternative to dairy farming, previously the only form of employment available to young people who stayed in the province.

Minebea has a long history of foreign involvement. In 1971 it took over the Chatsworth, California Reed Factory of SKF, the world's largest bearing maker, and went into local production. In 1972, Minebea set up NMB Singapore, Ltd., and began to produce in Singapore.

Labor-intensive industries were mushrooming in Singapore then as European and American businesses tried to capitalize on the cheap labor available. But soon afterward, the Singapore government stipulated a 30% annual wage increase for local workers and later raised the employer's share of the mandatory Central Provident Fund (CPF) monthly contribution to 25% while employees contributed another 25%. These increased personnel costs forced some foreign enterprises to leave Singapore, NMB Singapore among them. With its 3,000 employees, the company was hit hard by rising labor costs.

Minebea Co. decided to give the Singapore plant "mother plant" status, as a supplier of technology, parts and personnel like its Karuizawa plant in Japan, and to ship parts produced in Singapore to Thailand where labor is still relatively cheap. A Minebea-owned Boeing-727 jet now flies personnel and products between Japan, Singapore and Thailand twice a week. The decision to build assembly plants in Ayutthaya and Bang Pa In was motivated by the fact that the assembly is fairly labor intensive. Minebea stepped up investments in Thailand after assembly started in August 1982 and has sunk a total of ¥34.2 billion (about \$214 million at the rate of ¥160/\$) in the Ayutthaya and Bang Pa In plants in the past four years.

Employment at the Ayutthaya plants is stable and there is no "job hopping" as found in Singapore. One reason for the degree of worker satisfaction is the favorable working conditions and benefits, including a commuter bus service and air conditioning in the factories, provided by Minebea.

Because the import of finished products into Thailand is not allowed, electric appliances and other Japanese products on sale in Thailand are assembled locally. Still, Thais are disturbed by the seeming flood of Japanese goods in the local market. Minebea's products actually contribute to the promotion of Thailand's exports, since they are brought from Singapore and Japan and assembled in Thailand.

Thai-Japanese economic cooperation has made modern Ayutthaya a signpost to the industrial future, a fitting role for the center of a once-shining civilization. ●