

Precision Engineering

Factsheet 2012

At a Glance

Since Singapore's Precision Engineering industry began in the 1970s to support our pioneering manufacturing investments, it has grown to become a key piece of our manufacturing industry today.

In 2011, it contributed S\$26 billion (9%) of Singapore's total manufacturing output and S\$7.3 billion (13%) of its total manufacturing VA. In addition, the PE industry employed 92,000 people, over 20% of Singapore's manufacturing workforce.

Singapore – Centre of Precision Engineering Excellence

The PE industry forms the backbone of Singapore's complex manufacturing activities and is a core enabler for industries such as electronics, marine, aerospace, oil & gas, and medical devices. With its highly specialised skill sets, it is the essential ingredient in the manufacturing of the smallest semiconductor chip, to the most cutting-edge of medical devices, and the largest drill bits used in oil exploration. We will continue to grow businesses and create new opportunities in our three key pillars: Complex Equipment, Globally Competitive Suppliers and Technology-Intensive Component OEMs.

1. Complex Equipment

Singapore's complex equipment industry consists of semiconductor, solar, test & measurement and automation equipment, as well as machine tool makers. Today, these companies use Singapore as a base to conduct a full value chain of activities, including high-value manufacturing, R&D, and headquarter functions like supply chain management.

Applied Materials, the world's leading maker of wafer fabrication equipment, manufactures semiconductor equipment in Singapore. It also began an R&D collaboration with A*STAR's Institute of Microelectronics. The joint laboratory will develop new tools for the growing advanced wafer-level packaging market.

Kulicke & Soffa, a global leader in the design and manufacture of semiconductor assembly equipment, shifted its global headquarters from Fort Washington, Pennsylvania to Singapore in order to be closer to their global customers. Their CEO, CFO and other chief decision makers are now based out of Singapore.

Rohde & Schwarz, a German test and measurement instruments company, established in Singapore its first R&D centre outside of Germany with full product development responsibility. The team today is about 60-man strong, and develops new generations of test and measurement products.

Makino, a world leader in metal cutting and manufacturing technology, opened its International Research and Development Centre in 2009. A first outside of Japan, the new centre will spearhead machine tool research in emerging technology areas such as medical, engineering, alternative energy and power generation.

2. Globally Competitive Suppliers

The capabilities of our precision engineering suppliers are critical in supporting an increasingly complex high-mix low-volume manufacturing environment. Apart from contract manufacturing, they are now able to provide manufacturing solutions to their customers.

From serving primarily the consumer electronics industry, our suppliers today support a diverse range of industries such as aerospace, oil & gas, medtech and complex equipment. They have expanded their capabilities to include plastic-and metal-injection moulding, 5-axis machining, electro-mechanical system integration, specialized secondary services and more.

Ultra Clean Technology, a leading developer and supplier of critical subsystems for the semiconductor equipment, flat panel, medical, energy and research industries, opened its Singapore manufacturing operations to produce gas and liquid chemical delivery systems and

the assembly of complex sub-systems for semiconductor process modules.

Meiban, a Singapore-grown plastics supplier, has expanded more than 5 times over the past 2 decades to reach revenues of half a billion dollars. On top of plastic injection moulding and related tooling, it has developed capabilities in product and process development to serve regional customers. It has also diversified into the manufacture of electromechanical components as well as oil and gas parts.

Knust-SBO, a leading edge, 5-axis precision machining company, opened its manufacturing facility in 2011 to serve the oil and gas, geophysical/seismic and semiconductor industries.

3. Component OEMs

Component makers conduct manufacturing and assembly of critical components and modules in Singapore. They supply to customers in Singapore and importantly, also for the export market. These companies produce technology-intensive components such as optics, lasers, pumps, motors and connectors for diverse industries.

Singapore's highly-skilled workers are able to carry out high-mix, low-volume manufacturing of complex parts, while our strong turnkey automation capabilities can enable companies with low-mix, high-volume products to remain competitive.

FCI Microconnections, which manufactures flexible printed circuits (FPC) for contact smartcard applications, exhibited strong confidence in Singapore's manufacturing capability through its recent S\$51million expansion, which is expected to produce up to 5 billion FPCs a year.

ifm electronic gmbh, a world leading manufacturer of components and modules used in the automation industry, opened its first Asian manufacturing plant in Singapore in 2011. This will house a production and development centre with new products tailored for the Asian market.

Coherent, a leading supplier of precision laser marker manufacturing systems began production in Singapore in 2011. It will be the first company to build an advanced laser source in Singapore.

Key development thrusts

Growing a robust supplier ecosystem

As more OEMs in the semiconductor equipment, aerospace, oil & gas, medical technology and electronics sectors make Singapore their home, precision engineering suppliers in and around Singapore must remain relevant to the transforming manufacturing landscape. Together, the region's suppliers form a strong network that OEMs can tap into for their various components and service needs to increase competitiveness.

To ensure the relevance of this key segment of our manufacturing industry, the Singapore government is committed to upgrading local suppliers to meet more stringent requirements, as well as encourage investment from foreign suppliers to fill capability gaps in Singapore. We encourage OEMs to work closely with suppliers and take a leadership role supplier development.

Strengthening our Talent Pool

A second key thrust is the development of talent for the future of the PE industry, which will require good hands-on skills as well as design and integration capabilities. To this end, EDB is working with the various institutes of higher learning and the industry on manpower development programmes to build up this talent pool through both pre-employment training and continuing education and training.

As part of our manpower initiative, the Centre for Digital and Precision Engineering was opened in 2010 at Nanyang Polytechnic to train PE technologists. In 2012, Singapore will also introduce a new master craftsmen programme for our experienced industry craftsmen to become technical and teaching specialists within their companies. We are also in constant review of engineering programmes offered by Singapore's universities.

Together, these programmes aim to prepare our students with industry-relevant skills for a variety of positions within high-skilled manufacturing, engineering and R&D.

Improving R&D capabilities

As Singapore continues to focus on knowledge-intensive activities, the PE industry is also transforming beyond production activities. EDB encourages companies to leverage on the research and development infrastructure in our institutes of higher learning and research institutes to innovate and commercialize. For example, the Precision Engineering Centre of Innovation (PE COI), hosted at the Singapore Institute of Manufacturing Technology (SIMTech), offers a broad spectrum of technologies and manpower training to upgrade PE companies' manufacturing capabilities and accelerate development of new products, equipment and processes.

Increasing Productivity

Productivity continues to be a key driver in ensuring Singapore's continued competitiveness in the global economy. The PE industry also recognizes the need for productivity-led growth, and launched a plan in 2011 which aims to triple productivity in the industry by 2020. This will be achieved through industry transformation to high value activities, improvement in firm-level operational efficiency and development of deeply-skilled master craftsmen.

About the Singapore Economic Development Board

The Singapore Economic Development Board (EDB) is the lead government agency for planning and executing strategies to enhance Singapore's position as a global business centre. EDB dreams, designs and delivers solutions that create value for investors and companies in Singapore. Our mission is to create for Singapore, sustainable economic growth with vibrant business and good job opportunities.

EDB's 'Host to Home' strategy articulates how we are positioning Singapore for the future. It is about extending Singapore's value proposition to businesses not just to help them improve their bottom line, but also to help them grow their top line through establishing and deepening strategic activities in Singapore to drive their business, innovation and talent objectives in Asia and globally.

For more information on EDB, please visit www.sedb.com

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