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Keeping tricks of the trade alive

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SOME of the oil and gas industry's top secret parts are manufactured right out of CKE Manufacturing's humble operations in Tagore Industrial Avenue. Passers-by might not notice the imposing machines within, churning out parts for customers that include aerospace and defence firms as well.

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But the family-run business, founded by the Kwan family in 1946 out of a shophouse in Jalan Besar, is doing brisk business. To accommodate its operations, CKE moved several times before settling at its current premises at Upper Thomson in 1980. It is also expanding to a second site in Tampines.

CKE is currently run by the second and third generations of the Kwan family. The founder's two sons run the operations, while various other family members keep the business churning from sales to marketing to backend support.

The rest of the firm's 40 staff are on the shop floor.

CKE has machined parts for several industries, but booming business from the oil and gas vertical has taken it to its latest move, expanding to a space twice as large in Tampines, says Kwan Li Feng, sales manager at CKE. Mr Kwan's father, Kwan Lok Suen, is managing director of the firm.

To compete with larger manufacturers, the SME recently adopted an intelligent planning software aimed at cranking up efficiency.

Mr Kwan says one of the issues hampering productivity is the nature of low volume, high variation productions that are a hallmark of precision, high-value industries, where each part that is cranked out is specialised, and not ordered in large quantities. This restricts the company's ability to reap economies of scale.

Typically, parts are ordered in small quantities of between one and four units, and CKE makes up to 3,000 unique components for the oil and gas industry alone, he adds.

Traditionally, planning for the firm was done by Mr Kwan's father and uncle. The family decided that they should pass down their methods in a systematic way to the next generation. "We wanted a way to get their experience over to a platform that we could tap on," he says.

The company's employees went through a series of operations methodology training under the government-initiated WSQ (work skills qualification) programme.

The programme, now called Omni (operations management innovation), exposed a number of areas in which the Kwans wanted to improve their operations.

"We managed to find a way to match the system to my dad's and uncle's experience," says Mr Kwan.

This led to the integration of a planning and scheduling system for its shop floor, based on the method.

Full implementation took about a year. The system tracks job loads with customer orders. "The status of the job floor is very dynamic. There are a lot of factors that could change the delivery of individual components," says Mr Kwan.

A common request from customers is to move certain jobs up in the queue. This creates disruption in the flow of jobs, because a part is typically set in the machine and left to run in a certain order.

The new system shows which parts of the process are affected by changes in the customer request, and intelligently routes some jobs to other machines in order to keep the disruption minimal. Idle machines can also be used by the rerouted jobs, bringing efficiency up.

The new system has boosted labour productivity by 33 per cent, says Mr Kwan. And automation has also reduced delivery and set-up times.

Moving to the digital system has reduced human error in the processes, he adds. Prior to this, jobs were written down on paper. "When there are multiple changes, it becomes confusing and error-prone, not to mention sometimes illegible handwriting and stains on the shop floor," he laments.

The Omni programme is a joint effort by the Singapore Institute of Manufacturing Technology (SIMTech) and Workforce Development Agency (WDA). SIMTech is a research institute with the Agency for Science, Technology and Research (A*Star).

Lee Eng Wah, director of the manufacturing productivity technology centre (MPTC) with SIMTech, says the prohibitive cost of new technology is one of the main barriers preventing local SMEs from adopting automation and intelligent systems.

A*Star has been recruiting SMEs into a trade association for precision engineering firms in order to provide its technology platforms to members.

One of its research areas seeks to alleviate the financial pain suffered by SMEs in dealing with high-mix, low-volume production lines. By pooling member SMEs together, SIMTech hopes to offer technology that is typically only accessible to larger firms which have the R&D dollars to invest. The cost of researching and rolling out the platforms is divided by the participating members, allowing them to tap on new technology at a fraction of the cost.

CKE is the third company that has received the system so far. About 12 companies are in the consortium together, and two more are slated to receive their systems this year, said a member of the SIMTech team that helped the SME implement its system.

About 50 unique customisations were done to match the processes to CKE's methods, he said.

Mr Kwan says the company's new system was also 70 per cent funded by a grant from Spring Singapore. Typically, such automation systems can run into the several hundreds of thousand dollars.

He says the SME has further plans for its new system. It plans to gather the data generated by it and have a team of skilled employees examine it for hidden inefficiencies, in order to further streamline processes.

"Each day, we have about 200 to 400 'streams' of live data," he says.