

BY MINDY TAN

CHAMPIONS AMONG US

Companies can corner the market by focusing on niche capabilities

FIRMS today understand the concept of a quantum leap. They know that making that move is necessary – whether to get around existing labour constraints, or to enable them to expand their offering sufficiently to give their companies a boost. Most have gone down the route of improving productivity by purchasing machines and automating. But while this is certainly effective for industries that are heavily reliant on manpower, some companies are looking to other models to gain an edge.

Of the various models that have made their rounds, one that has been steadily gaining traction is that of Germany's hidden champions. "When you look at German companies and Singaporean companies, there are some differences in the way we operate. They are very focused on niche capabilities," says Ted Tan, Spring Singapore's deputy chief executive.

These hidden champions – so called because they are highly successful even though they may not be well known outside their sector – have, ironically, been in the limelight in recent years as government officials and company heads flock to Germany to learn its secrets. They are also, notably, small and medium-sized enterprises (SMEs) or *mittelstand*.

"We can learn from the German concept of hidden champions, whereby companies can develop capabilities so that they can be the top three in the market," says Mr Tan. He adds that this boils down to three factors: identifying a unique capability; focusing on that capability so that the company is the best in the field in this one aspect; and setting clear goals so that they deepen their competitive advantage and harness their full potential.

A SINGAPOREAN HIDDEN CHAMPION

One such local SME that has found a unique niche and is thriving in its field is Nanofilm Technologies International, which focuses on high quality vacuum coating applications.

In the camera lens industry for instance, Nanofilm is the global market leader for digital single-lens reflex (DSLR) camera lens mould coatings. Put simply, the design of the lens surface is generated on computers before these patterns are transposed onto a mould. The lens maker would then heat the glass until it is soft before pouring it into the mould to make the aspherical lenses.

"It sounds simple, but it is a very difficult process because these are optical glass, which are very complex in terms of composition," says Shi Xu, chief executive of Nanofilm Technologies International. "When the glass is heated up, it emits gas and this gas is very corrosive. Also, the glass itself is very brittle – you can't heat it until it's molten because the composition will change and it will become a different material. So you have to maintain a half-solid state."

In the early days, gold or platinum was used to coat the moulds as they are inert and resistant to corrosion. Over time however, the focus shifted to diamond-like carbon, or DLC. "Carbon has many different forms. It can be soft, like a pencil, or graphite. Or, it can be very hard, like a diamond. Normally, you generate a thin-film coating that is closer to graphite. If you can make it closer to diamond, of course that would be very useful. Our main work in this company is to produce a carbon coating that is very close to diamond," explains Dr Shi.

DLC would appear to be the perfect solution as a mould coating, given its qualities such as a very low frictional coefficient – meaning that when the lens is pressed against the mould, the lens surface and the mould will slide against each other instead of sticking and thus damaging the lens – and its anti-corrosive qualities.

The problem is that ordinary DLC cannot withstand very high temperatures and starts to disintegrate because it has a lot of hydrogen in the coating structure.

According to Dr Shi, ordinary DLC is only able to withstand temperatures of around 400 degrees Celsius while the moulding process is generally conducted at temperatures of around 600 degrees Celsius, and up to 800 degrees Celsius in special cases.

Dr Shi recalls that when Nanofilm first entered the market in 2005, he laughed then when asked if his DLC could withstand temperatures of up to 600 degrees Celsius. Today, the company's DLC coating is able to withstand temperatures of between 700 and 800 degrees Celsius.

"Now our technology is standard, especially in the Japan market. All camera makers use our machines, and many compatible lens manufacturers use our machines (which create the coating for the moulds)."

According to Dr Shi, using Nanofilm's thin film coating can increase the lifespan of the mould by five to 10 times. "We are the only company providing this. But of course, it's not such a big market," says Dr Shi.

"Even if they are producing millions of lenses, they

don't need millions of moulds. Each camera maker may need three or four machines."

As part of efforts to increase its reach, Nanofilm has recently taken steps to move away from being a pure equipment manufacturer to being a component supplier.

In photocopiers for instance, there are many parts which require coating such as the photo drum, the developer sleeve and the discharger unit. Entering this segment of the market is a win-win situation as it upgrades the product quality for companies, and it generates savings for end-users, says Dr Shi.

"There are many parts we can do which are very crucial for this industry. The first is charging. Originally, they used normal metal (to make the photo drum) ... they have to put very high voltage – 500 volts, 600 volts – to charge it. At this kind of voltage, it reacts with other molecules in the air and generates NOX, a nitrogen oxygen compound that is gaseous and very corrosive. So the lifespan of the metal is very short.

"For example, 10 years ago, we studied this specific high-end photocopier. This piece, without protection, could only last for two weeks. Would you buy a photocopier where every two weeks you have to take it apart? With this coating, the maintenance interval is now three months instead of 15 days. And they don't need to use very expensive materials, like a gold coating. They just need one layer of carbon coating."

Moving into the field of end-consumer products is but a first step. While the company previously sold the machines that produced the coating, it has, in this specific industry, progressed into being a service provider, ie providing the coating.

Today, it gets suppliers to produce the parts before adding the coating, providing the coated component to the copy machine manufacturers.

"This is an example of the process we went through over the past 10 years, from a pure equipment manufacturer, to a service provider, then to a component supplier," says Dr Shi.

SOURCE OF SUCCESS

Nanofilm's success in the field, while seemingly wide-ranging, stems from a single source, its patented FCVA (filtered cathodic vacuum arc) technology. This is the platform technology which allows it to produce its superior grade of DLC.

Apart from the camera and printing industries, Nanofilm's coating is used in other areas such as wear and tear parts, cutting tools, sewing machine parts, sports wear and piston ring coating for the automobile industry.

Dr Shi credits his company's success to sheer hard work. Back at the Nanyang Technological University (NTU) – Nanofilm was spun-off from NTU in 1999 – Dr Shi conducted all his research and experiments on his own.

"I had many students, but the students had their own projects, and I had mine. Developing the machinery, developing the technology, that was my own, and I set targets for myself. With a few of my staff partners, we did things ourselves. We were probably the only team that did things like that," he laughs.

"We had no help from students, which is why we could really move forward . . . If, as a professor, my work everyday is to sit at the table waiting for reports from students, and students do all the work, although I will enrich my knowledge bit by bit, I will never make any drastic sort of breakthrough.

"Because students (may) sometimes give false information, sometimes make a wrong observation . . . It's very difficult for you to make a judgement . . . (To do it right) you have to see, you have to do."

It is this sort of focus that Spring is trying to inculcate in SMEs here which tend to spread themselves too thin in trying to be a jack of all trades. Says the agency's Mr Tan: "We challenge companies – are you really good in doing all these things? What are your main revenue contributors? Our job is to help them focus. Out of 10 things, it may actually be two or three things which actually contribute 80 per cent of (the company's revenue)."

Focusing on what you are good at ultimately feeds back into the productivity loop, complementing automation adoption and measures taken to reduce reliance on manpower.

"I think if you look at the whole landscape in Asia, there're a lot of challenges in Singapore in terms of manpower, land and rising business costs. Productivity will be the name of the game. Germany is a good model for us because they are not cheap but they can be competitive because they have found themselves unique capabilities and unique products," says Mr Tan.

"I think our companies need to continue to upgrade their capabilities and their technology . . . You can automate so one person can do the jobs of multiple people, and increase the pay of this individual. I think this is the way we will move in Singapore as we cut down reliance on low-cost foreign labour. We can increase the skill set of the people, then we can afford to pay more. And that I think is the way to go." ■

◀ GETTING THERE

Dr Shi credits Nanofilm's success to sheer hard work



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OTHER PRODUCTIVITY MODELS

THERE have been a plethora of productivity models introduced over the years. Some are more specific, targeting manufacturing processes; while others are more general, and are easily customised and implemented across industries.

MONOZUKURI

One of the methodologies being adopted in the food manufacturing sector is Monozukuri, generally referred to as the Japanese Art of Manufacturing.

It is an approach that defines how a company delivers products from the customer's perspective, holistically applying a wide range of technologies, know-how, and management skills to the total process – from product development and design to production, sales and service.

Though widely used in the manufacturing sector, the concept can be applied to non-manufacturing sectors as well.

THE KAIZEN MODEL

Essentially the practice of continuous improvement, Kaizen has been applied in health care, psychotherapy, life-coaching, government and other wide-ranging industries.

One of the key foundations of Kaizen is that it involves all employees, from the chief executive officer down to the assembly line worker. It also involves all processes – from logistics to supply chain management, and even talking to a customer.

SHARED FACILITIES & SERVICES

A model that JTC has been pushing out in its new generation factories is one of shared services and facilities. Leveraging shared facilities will help reduce operational costs, while outsourcing of non-core activities will allow these companies to focus on their core business practices.

Examples of these facilities include the future JTC Food Hub in Senoko, which will feature shared integrated cold-room warehouse facilities operated by a third-party logistics service provider, who will in turn offer a full suite of logistics services to tenants. ■



PHOTO: YEN MENG JIN