

SKILLSFUTURE

Singapore taps German model to deepen technical skills

Strategy also aims to attract leading German firms to set up base here

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A FLEDGLING programme sending local polytechnic graduates to Germany to get a degree and in-depth work experience has gained momentum, with Singapore's latest national drive towards skills mastery.

Apart from how it fits into Singapore's SkillsFuture initiative, the Economic Development Board (EDB) also sees this as a selling point that might sway more of the German Mittelstand – the private, often family-owned medium-sized businesses that are niche global leaders – to make Singapore their base in Asia.

Under the pilot version of the "Poly goes UAS (University of Applied Sciences)" programme launched last year, four German firms with operations in Singapore – Festo, Pepperl+Fuchs, Rohde & Schwarz and SICK – are sponsoring eight polytechnic graduates to join Germany's long-established dual-studies programme, which blends the pursuit of a degree with an apprenticeship.

This year, Heraeus and Ifm electronics joined the initial four, so more study-and-work sponsorships will be available. In addition, a local version – "Poly goes SIT" – has sprung up with support from some of the six "Poly goes UAS" firms and three others – Uhlmann, Weidmueller and Bosch. Those on the local option will similarly alternate between semesters of study at the Singapore Institute of Technology (SIT) and semesters of work at their sponsor companies.

EDB international director (Europe), Beh Kian Teik, said: "There are about 1,500 Mittelstand leaders and many are very excited about Asia. We think that if they know that we have such a programme, they will look at Singapore as a great location for business, with access to practice-oriented engineers."

Such engineers have become increasingly scarce in recent years, as changes in Singapore's manpower policies resulted in a tighter labour market.

Pepperl+Fuchs managing director Juergen Seitz said that the problem is magnified because his company's brand is known in the B2B market but not recognised by the average person – even though the industrial sensor manufacturer has been in Singapore since 1979. Especially needed now are people skilled in electronics, mechatronics and mechanics, he says.

Jack Goh, managing director of SICK Singapore, which also produces industrial sensors, said that recruiting experienced engineers was not difficult six years ago. "But since two years ago, it has become more challenging and we are now accepting younger engineers to join us and we spend more to train them."

Skilled optical and electronic software engineers are particularly scarce, because of the deeper skill-sets needed, he added.

Mr Goh sees EDB's dual-studies programme as one way for SICK to expose potential hires to German engineering and technology. "In both aca-

demical and industrial aspects, they would absorb the German engineering culture, which we believe would strengthen our local R&D competency," he said. Learning German would also make the programme's graduates more effective links between SICK's Singapore offices and German headquarters.

EDB's Mr Beh said that the sponsor companies seem confident of getting desired outcomes, being long-time beneficiaries of the talent pipeline the dual-studies system in Germany has built for them.

As a founding member of one of Germany's main universities of applied sciences – the Duale Hochschule Baden-Württemberg – Pepperl+Fuchs has been working on its dual-studies programme for 40 years now. Similarly, SICK's more than 10-year-old programme sends a good, constant stream of fresh engineers familiar with SICK technology to its headquarters in the small town of Waldkirch, Mr Goh said.

And the outcome the EDB is gunning for is this: that more Mittelstand champions set up regional headquarters in Singapore. It is about strengthening an existing affinity for the Singapore market with access to talent, said Mr Beh.

The dual-studies programme will be evaluated on the opportunities created for Singaporeans interested in engineering careers too. "We'd also call the programme a success if we're able to maintain the number of Singaporeans who are excited about engineering and pursue this path," said Mr Beh.

Singapore has been studying the German model of apprenticeship and vocational training for decades. But this particular dual-studies programme was conceived in November 2013, in the small German town of Teisnach. There, Mr Beh met two 17-year-old students on an internship at a factory of Rohde & Schwarz, a Mittelstand company with a Singapore presence.

"These two young people, spunky explorers, were people who were attracted by Germany's reputation for engineering and wanted hands-on experience at a world-class company. And we knew that if we can create a pathway, more students would come on board," said Mr Beh.

Within half a year, the EDB launched its pilot run with four companies. Mr Beh thinks the extension of the dual-studies programme to SIT has the potential to reach non-German companies in Singapore eventually, since a key thrust of the SkillsFuture initiative is to get employers to put in place processes and structures for skills progress and recognition.

"We started with the German companies because they already know how to do this. I'm sure more companies will come on board in future – it makes sense for the employer and employees too. But it's not something that you can start immediately. Employers need to know how to run such a programme; the government needs to come in and set out accreditation, and so on," said Mr Beh.

Pepperl+Fuchs' Mr Seitz thinks



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this will work. "SIT is providing the scientific approach, we as companies are providing the practical background. We are in discussion about curriculum and framework for the students," he said. But SICK's Mr Goh thinks effective replication will take a few more years. "In Germany, companies traditionally have a rich, long history in advanced technology and they provide good environments for students to learn in. This is still somewhat missing in Singapore."

And a good set-up will still require marketing. Said Mr Seitz: "What is needed, in my opinion, is advertising to Singaporeans, in a way that they understand, that there is another opportunity besides the traditional way of getting an education. This way is practical and more related to the smaller companies, but it will be as worthwhile for students as traditional tertiary education."

Indeed, some from the pioneer "Poly goes UAS" batch, who leave for Germany next month, say choosing this path was not straightforward.

Kafka Woo and Tham Shi Yi both landed full-time engineering jobs after graduating with diplomas in digital and precision engineering from Nanyang Polytechnic and planned to pursue part-time degrees at local universities.

For Ms Tham, resigning from her job of two years felt like "gambling". "But in the end, I decided to take the risk because it might be the only chance in my lifetime to study in Europe," she said. A previous internship in Germany also gave her a glimpse of the difference in training and the greater responsibility she thinks she'll be given as a trainee at SICK's Waldkirch headquarters.

Mr Woo, 25, describes leaving his first employer Carl Zeiss, where he developed his technical knowledge, as an "uneasy" decision but the right one, because of the chance to further his studies and work with Pepperl+Fuchs in the city of Mannheim. He intends to build his career in technical applications and sales engineering, but is quick to add that he is not constraining himself to any narrow path just yet.

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Beh Kian Teik, EDB international director (Europe)



German dual-study system aims for skills mastery

Companies pay to train students as they alternate between studies and practical on-the-job training

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FROM Adidas to Volkswagen, Siemens to Bosch, many German multinational companies have made dual-study programmes a mainstay of talent and recruitment strategies. But it is probably the less-recognisable names among Germany's Mittelstand which have benefited the most.

These small and medium-sized enterprises – typically private, family-owned businesses that have found success in niches on the global stage – account for more than half of Germany's total economic output and generate 60 per cent of jobs.

They also employ over 80 per cent of the country's trainees, according to Germany's Federal Ministry of Economics and Technology. Which is why admiration for the Mittelstand model often extends to Germany's dual-study system, one that has caught the attention of policymakers from the US, the UK and Spain, to India, China and Singapore.

Companies pay to train students

as they alternate between formal university studies and practical on-the-job training with one company throughout the three or four-year degree course. Typically, graduates of these dual-study courses go on to work at their sponsor companies, supplying the Mittelstand with a steady flow of skilled, practice-oriented workers.

The modern dual-study programmes were first offered in the state of Baden-Württemberg in the 1970s – largely thanks to demand from industrial companies. It has since been adopted by many universities of applied sciences and dual-study programmes are now offered in all German states.

But the tradition of vocational hands-on training can be traced further back to the 1870s' medieval guild system, under which workers would progress from being apprentices, to journeymen, to masters of various trades and crafts.

Dual-study courses have risen in popularity in Germany. Statistics from Germany's Federal Institute for Vocational Education and Training (BIBB)'s database show that there were 1,505 such courses on offer in 2014. That is close to triple the 512 available in 2004 and a 48 per cent jump from the 1,014 on offer in 2013.

The number of students enrolled in such courses has also risen to

95,000 in 2014, from 64,000 in 2013. Of the 2014 courses on record, the majority were engineering (39 per cent) and economics or business (32 per cent) ones.

This could partly be because such courses integrate academic studies with work experience, and are seen as a bridge between perceived rigid divisions between vocational training and higher education in Germany's education system, which start with the streaming of students at the secondary school level.

In research institute WZB's 2014 report, Lukas Graf, a University of Luxembourg researcher writes: "In the past two decades, the education schism has increasingly come under attack as a barrier to social and institutional mobility. The service and knowledge-based economy has ever-rising expectations of employees' skills and qualifications, and more and more young people now want to earn a higher-level degree. That is why calls for improving mobility between vocational training and higher education have been growing louder."

But rising demand creates its own pressures. The number of participating companies – and hence supply of training places – has not risen as quickly as the number of dual-study courses has, and in fact fell from a peak of 45,630 in 2012 to 39,622 in 2013 before rising to 41,466 in 2014.

Earn-and-Learn headstart for grads eyeing food-manufacturing careers

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FRESH polytechnic graduates eyeing a career in food manufacturing can get a headstart by joining the SkillsFuture Earn and Learn programme set up for the food-manufacturing sector.

Those on the programme attend classroom lessons in three areas, corresponding to eventual career tracks in these aspects of food manufacturing – food-product innovation, food processing and food safety and quality management.

Programme participants will at the same time receive structured on-the-job training (OJT) at their workplace.

Developed by the Singapore Workforce Development Agency (WDA) and Singapore Polytechnic (SP), the programme is supported by Nanyang Polytechnic (NYP), Temasek Polytechnic (TP) and SPRING Singapore.

The 20 polytechnic graduates now on

the programme are working for a dozen food manufacturers – eight small and medium-sized enterprises (SMEs) and four multi-national corporations (MNCs).

Their classes are held at SP. The OJT at their respective workplaces follows training plans developed by SP, NYP and TP; they are also each involved in a company-specific capstone project, supervised by company mentors and SP facilitators.

At the end of the 18-month programme, they earn an advanced diploma in applied food science awarded by SP.

Senior Minister of State for Manpower and for Health Amy Khor, who was at the launch of the programme at Nestle's R&D centre on Wednesday, said:

"The local food manufacturing industry is aiming to move higher up the value chain, with food science and technology gaining importance as industry players intensify their R&D efforts."

She added that the programme would benefit graduates and participating companies alike: "From the industry's perspec-

the programme strengthens the local talent pipeline. From the fresh graduate's perspective, it provides a career headstart through industry-relevant and on-the-job training, leading to industry-recognised certification."

Programme participants can expect a minimum starting salary of S\$1,900, and may get a 10 per cent increment if they do well.

Joining the companies as food technologists, quality assurance officers, or food processing engineers, they can later be promoted to more senior roles.

Companies which have pledged their support for the programme include global names such as Nestle and homegrown brands like The Soup Spoon.

Anna Lim, the executive director of The Soup Spoon, said the company benefits from the knowledge acquired by the graduates through their studies while working. However, she told *The Business Times*: "There is a need to align graduates' expectations with the needs of SMEs. They should

be resourceful and dynamic, because that's what the transition to work life from being a student involves."

Under the WDA's manpower and skills development plan, S\$888,000 has been set aside to support up to 12 masters-level scholarships.

These two-year research-based scholarships, set up with Newcastle University, seek to develop professionals, managers and executives – collectively known as PMEs – for the manufacturing sector. Scholars will continue supporting their company's operations while pursuing this higher degree.

The food manufacturing sector is the first sector for which WDA has launched the SkillsFuture Earn and Learn programme.

The programme will be launched in seven other sectors this year; they are food services, games development, logistics, infocomm technology, marine/offshore engineering, retail and precision engineering.