HOPE TECHNIK

A Hope for the future

Hope Technik has evolved from its free-spirited start-up beginnings to become the rigorous, multi-faceted engineering firm it is today.

TRANSFORMATION is often seen – if erroneously – as an exercise meant for traditional firms which have not yet made the leap from old methods to future-ready approaches.

Yet even cutting-edge technology firms have to reinvent and redefine themselves.

Hope Technik is one firm that has evolved from its free-spirited start-up beginnings to become the rigorous, multi-faceted engineering firm it is today.

Granted, it saw its share of false starts along the way. The first course correction occurred barely half a year after the company was founded in 2006.

The four co-founders – Jeff Tang, Peter Ho, Michael Leong and Ng Kiang Loong – were originally brought together by their love for motorsports. All four were engineering students at the National University of Singapore, though across two different cohorts.

In their time at the university, they took part in the Formula SAE programme, an international competition in which student teams design and build racecars.

A while after graduation, they got back together and decided to try to go into the automative industry.

But after trying for half a year, they discovered that the industry was practically "non-existent" in Asia, recalls Mr Tang, who is the firm's chief technology officer.

So the founders took their first and most defining turn: they went into engineering services instead.

"We wanted to change the perception of engineers as a profession – (to show that) it's cool," says Mr Tang.

The young engineers had long been irked by how the engineering profession did not seem highly regarded in Singapore.

There were not many success stories of people in the engineering industry making it big, either. "So we wanted to prove everybody wrong."

Initially, as the founders comprised three mechanical engineers and one civil engineer, many of the jobs they took were largely mechanical in nature. The firm did some electrical work, but for its first three years or so, it had no expertise in electronics and software.

In time, the founders realised that they would need to add these skills to their team in order to take on more complex jobs.

"Of course it's inevitable," says Mr Tang. "Once you move from small sub-systems to system-level work, you need electronics and software."

They thus began hiring. Yet that process, too, was very different from how it is today.

"Initially, we looked for jacks of all trades." As a small start-up, the only way to survive was for everyone to do everything, he adds.

Their recruitment method was also highly informal: they would go to online forums for radio control enthusiasts – those keen on remote-controlled model vehicles – and send messages to members.

"Our first electrical engineer was from a radio control forum," Mr Tang recalls with a chuckle.

Now, of course, the firm is more targeted and specialised in its recruitment – a necessary change as it gained focus and direction.

"You have to evolve and go deep in terms of what expertise you want to hire, as you start to be more strategic in your business model."

For the first four years or so, the firm's approach was "very opportunistic", with the founders accepting whatever jobs were available: "There was no selection process."

But from the fifth year onwards, they decided they had to be more focused. Since then, two business units have been spun off: Sesto Robotics and Trigen Automotive.

The central Hope Technik team works on special projects, "keeping the innovation within Hope" and always looking out for the next potential business unit.

FIRST SPIN-OFF

Their first spin-off, Trigen Automotive, deals with special function vehicles. Hope's first big break, after all, was helping to redesign and rebuild the Singapore Civil Defence Force's Red Rhino fire-fighting vehicle in 2009.

Sesto Robotics focuses on automated guided vehicles – though its journey has seen some twists.

Previously, Hope Technik had worked with the military on drone projects. Having built up capabilities and expertise in this area, the founders felt it was a waste not to reapply this knowledge in the commercial market.

Hope Technik wants to rely less on projects – which may be irregular – and more on steady product revenue. "We need to create a sustainable business to sustain the innovative side," says chief technology officer Jeff Tang.

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Enter Sesto. From around 2014 to 2015, the business unit started out with the aim of providing automation for the medical industry.

The team came up with robots that could move beds or transport linen and food around the hospital. "That didn't turn out very well," Mr Tang admits.

Although there was management interest in such automation, it was difficult for the medical community to embrace it, he explains: "On the ground, everyone's key concern is the patient."

It was thus hard for Sesto to conduct product trials, as the ultimate priority was – understandably – not hindering the care of patients.

What they learnt from that detour, says Mr Tang, is that any drive for automation has to come "from the bottom", with workers on the ground truly believing that they need this change.

Sesto therefore decided to pivot towards the manufacturing industry instead, where it has since made much more progress.

Manufacturing is admittedly a trickier sector to work with due to its numbers-driven nature, says Mr Tang: "The cost-benefit analysis is very, very clear-cut." Sesto thus has to prove very rigorously that its products make business sense for clients.

Though Hope Technik runs on ideas, Mr Tang has no fear that they will run out. Quite the opposite, he says: "There will always be ideas out there. What is difficult is that there are too many.

"To be able to decide, to identify what is actually aligned with our direction and our strategy – that is the challenging part."

Given the firm's previous false starts in the automotive and medical automation directions, this caution is understandable.

"The ideas are not difficult. It is difficult to decide what to go into and whether it is relevant in the long term."

Some technologies may appear on the scene, make a big splash, yet disappear within a few years, he notes.

"We need something that's more sustainable, that has a way to scale and proliferate in the next 10 years, 15 years."

Back during 2013 or 2014, about 70 per cent of Hope Technik's business was in the form of projects, with the rest coming from products.

The firm wants to swap these proportions, relying less on projects – which may be irregular – and more on steady product revenue.

"We need to create a sustainable business to sustain the innovative side," concludes Mr Tang.

Long-term sustainability also requires knowing how and when to adapt. Mr Tang gives the example of drones. Initially, there was a huge gulf between the hardware standards of hobbyist drone and military drones, with the latter market providing plenty of room for companies such as Hope Technik to develop.

Yet with technological advancements, the differences in hardware are no longer as stark. As a result, says Mr Tang: "We no longer focus on the hardware (for drones)." Instead, Hope Technik's expertise is now in software and programming of drones.

Software is a particularly promising area to be in, he adds. Unlike hardware improvements which are usually linear, innovations in software, when applied to automation, can have exponential results.

MARKET FOCUS

"You need to know how to shift your focus and your business based on the market," he concludes.

As the firm's focus shifts, so have its needs. Hope Technik is looking for people with deep technological capabilities, particularly in software – but it has been hard due to both competition and limited supply.

"Everyone's looking for software engineers," says Mr Tang.

And when they do find engineers, out of every 10 of them, only about two or three are Singaporean.

Still, the firm is making efforts to reach out. It has ties with most of the tertiary institutions, from the Institute of Technical Education to polytechnics and universities.

Besides being involved in judging projects and competitions in the institutions, Hope Technik also takes in about 100 interns over the course of each year.

Those in longer internships even get a chance to participate in design work, with some projects being 70 to 80 per cent designed by interns.

"We want to let students see a better side of engineering," says Mr Tang with a grin. The founders have not forgotten their dream of making engineering cool.

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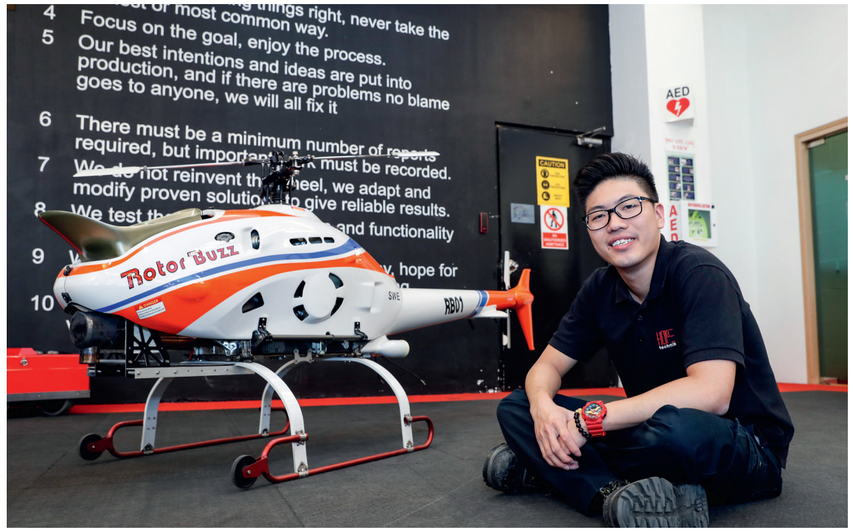
– Hope Technik chief technology officer Jeff Tang



From machinist to production team leader

SHORTLY after Yeo Kain Thiong joined Hope Technik, he went from controlling shopfloor tools to building flying machines. Now, years later, he helps their new products take flight.

At the Institute of Technical Education, Mr Yeo was trained as a machinist, dealing with CNC machines – computer-controlled machine tools such as lathes.

After graduating and National Service, Mr Yeo joined Hope as a machinist in 2010. He did not know much about the firm at the time – he wanted to "just find a job".

But after six months in that role, he moved up to become a technician, working on the firm's special projects.

For the next few years, he was doing exciting hands-on work, building drones completely from scratch – "down to the electrical wiring".

Then, in 2015, he was appointed to join the Sesto Robotics business arm, which focuses on industrial products and solutions.

"At first I wanted to concentrate on hands-on skills, to become a master craftsman," he recalls.

But the management convinced him that while skills such as welding and machining can be trained within a few years, the company crucially needed proper internal systems – which he could help to develop.

Mr Yeo agreed. Now, at the age of 29, he is Sesto's production team leader. Instead of making products himself, he manages the business unit's production of automated guided vehicles (AGVs). This includes product documentation: setting out instructions so new staff can easily pick up the work process.

He also prepares documents for maintenance, which involves highly detailed work: "You have to know the hardware in each AGV, so you can track back (any issue)."

Fortunately, as a model kit enthusiast – a hobby which involves assembling complex plastic models from many tiny parts – Mr Yeo is used to being meticulous.

Yet in his current role, he looks at the bigger picture as well, from making manpower plans to thinking of ways to improve product quality.

He has drawn up proposals on how to set up maintenance teams, and devise systems that allow for the easy tracking and tracing back of what is being done.

And he comes up with ideas to increase output or make production more efficient.

With his experience as a technician, for instance, he can propose that engineers design product parts in a certain way that would allow technicians to install them more efficiently.

From being mentored during his first three years as a technician, Mr Yeo now manages and trains the junior technicians in most areas except software, including electronics and mechanical engineering.

He also works with the many interns who do stints at Hope Technik – hoping to make their time at the firm as eye-opening as it has been for him.

"They have to go through the internship process to know exactly what engineering is about. It's not just what you learn in school."

Mr Yeo Kain Thiong now manages Sesto's production of automated guided vehicles. This includes product documentation: setting out instructions so new staff can easily pick up the work process.

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