

K H ROBERTS

# Getting a flavour of the future

**Food flavourings and ingredients maker KH Roberts automated its production in 2017, and now finds itself in a sweet spot, enjoying higher productivity while maintaining low error rates.**

**B**EHIND the familiar tastes of many beloved food and beverage products, both local and regional, lies the hidden hand of KH Roberts. Since 1968, the food flavourings and specialty ingredients maker has created thousands of flavours for its clients, which are mainly food and beverage manufacturers and food services firms with central kitchens.

With under 100 employees, KH Roberts manages to hold its own against multinational giants. Its success is due to its efforts in innovation and internationalisation, journeys it embarked upon decades ago.

However, it was only upon moving to new premises in Buroh Lane in 2017 that the firm automated its production activities.

"People talk about automation as being the ultimate solution. However, this would depend on the nature of the manufacturing activity," says chief executive officer Peter Ong.

"In a high-mix, low-volume scenario, with hundreds of products, in my opinion the challenges are greater in the implementation of automation – particularly for an SME (small and medium enterprise)."

## INTERNATIONAL AND INNOVATIVE

The nature of KH Roberts' business meant that internationalisation and innovation were obvious moves.

Since the start, the firm has manufactured for foreign markets. In the 1990s and 2000s, it began to expand overseas in earnest.

Today, the firm has sales offices in Malaysia, Thailand, Indonesia and China, and manufacturing facilities in Indonesia and Thailand. "We have no choice," says Dr Ong. "The majority of food manufacturing activities reside outside of Singapore."

"Even Singapore food companies have over the years relocated or expanded their manufacturing operations overseas," he notes. As a supplier to these manufacturers, KH Roberts thus had to go abroad

too. The firm has received government support for its overseas efforts, tapping Spring Singapore's Capability Development Grant in 2012, and International Enterprise Singapore's Market Readiness Assistance grant and Global Company Partnership grant in 2016 and 2017, respectively.

As a creator of customised flavours, KH Roberts also relies necessarily on research and development.

"For us to continue to stay relevant to our customers, and distinguish ourselves from our competitors, we have no choice but to continue to focus and invest in R&D, specifically innovation," says Dr Ong. "The consistent and regular introduction of new products in the market helps our company sustain sales momentum."

In the late 1990s, the firm became one of the first SMEs here to provide "encapsulated" flavourings.

"At the time, only big MNCs had it," recalls Dr Ong. Encapsulation technology, which came from the pharmaceutical industry, involves applying a protective coating around concentrated flavours. This allows for the controlled release of flavours – upon the addition of water, for example.

KH Roberts' encapsulated flavourings have supported the growth and popularity of instant and "3-in-1" beverages in the region, says Dr Ong.

Soon afterwards, the importance of having R&D capabilities became more pronounced. KH Roberts was originally a joint venture between a Singapore company and an Australian one, but the Australian partner divested in the mid-2000s, leaving the local outfit to go it alone.

Part of the firm's strategy has been to work with external research partners, including institutes within the government's Agency for Science, Technology and Research (A\*Star).

Since the early 2000s, KH Roberts has collaborated with such partners for research in olfactory and taste systems, as well as nutrition.

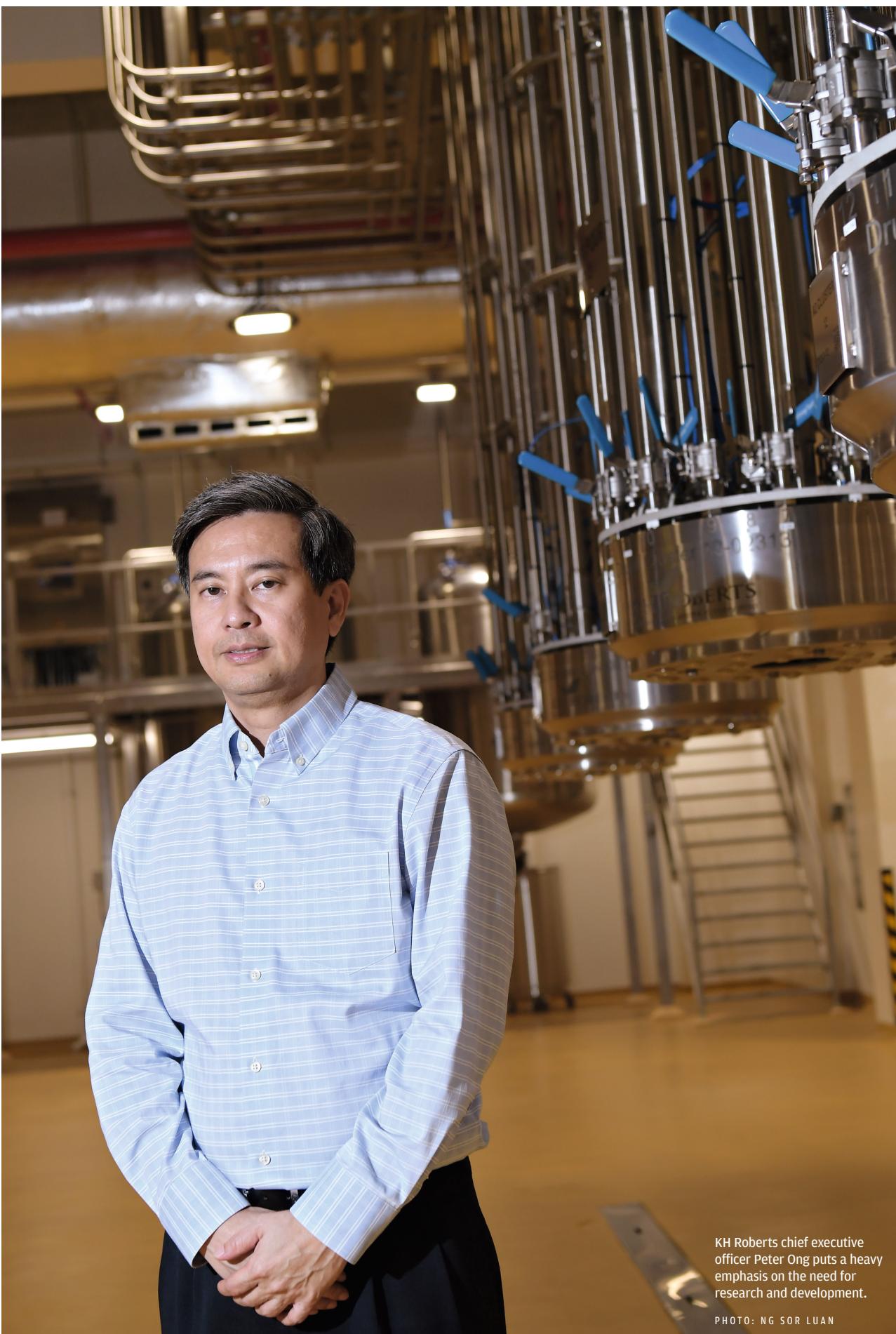
"The tie-ups that we've had, whether with institutes of higher learning or A\*Star, were really to provide us an extension of the small group of people that we have," says Dr Ong.

Although KH Roberts had its own R&D space, it also conducted some research using external facilities or equipment, such as those in institutes of higher learning.

With the move to new premises, however, KH Roberts now has its own full-fledged R&D centre.

Its laboratories allow for flavour creation, analytical testing, bench-top chemistry and sensory evaluation.

There is also a dedicated pilot plant space, where product development trials and small-batch test production can be carried out. This allows KH Roberts and its customers to see how the created flavours perform under actual production conditions, and



KH Roberts chief executive officer Peter Ong puts a heavy emphasis on the need for research and development.

PHOTO: NG SOR LUAN

how they work in final products such as baked goods or beverages.

#### GOING AUTOMATIC

The new integrated manufacturing facility marked another milestone for the firm: a shift to automation.

In 2014, when planning the new facility, KH Roberts started to think about how to introduce automation into its production processes.

In this, it had help in the form of a grant under the Automation Support Package rolled out in 2016 by Spring.

"The grant helped in defraying some of the cost, particularly in us obtaining assistance from expert consultants in our specialised field," recalls Dr Ong.

Automation is often seen as a way to boost output. But that is perhaps more relevant for high-volume, low-mix manufacturers with mass production lines, notes Dr Ong.

Instead, KH Roberts' business is low-volume, high-mix, with an extremely wide range of products.

Furthermore, its customers range from large multinationals to local SMEs, with order requirements varying accordingly. Some automation equipment may have a minimum output volume that far exceeds the needs of smaller clients.

So when planning for the move, the firm had to keep an important question in mind, says Dr Ong: "How do we also continue to support the SME food manufacturers? That meant we also had to still have small batch production."

Nonetheless, the firm was clear that it wanted to go ahead: "For us, it was a necessity."

After all, automation's advantages are not just about quantity. Moving away from manual work can also improve quality. As producing flavours involves mixing precise amounts of ingredients, accuracy and consistency are paramount.

Says Dr Ong: "As a manufacturer of customised and high-value products, operational errors can easily lead to expensive re-works, write-offs and delays that impact both our company and our customers."

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- KH Roberts chief executive officer Peter Ong

Previously, production operators simply weighed ingredients on scales. If they made an error, there was no way to tell immediately.

Only after the mixes were blended would quality control checks take place – by which time it would be too late for that batch, resulting in a "very expensive, unfortunate mistake".

In KH Roberts' new facility, about 50 to 60 per cent of materials are automatically dispensed in the required quantities, at the touch of a button.

The exceptions are viscous liquids or solid ingredients, which cannot be easily dispensed from nozzles and are still poured by hand.

Automation has allowed the firm to raise productivity while maintaining consistently low error rates, says Dr Ong. It is also important for coping with manpower constraints, "particularly with the current difficulties in hiring workers, especially for menial and/or repetitive tasks", he adds.

As the new facility is larger, KH Roberts did not reduce its production headcount, instead raising it to some thirty- or forty-odd. But a team of this size can now produce more than would have previously been possible.

Automation also makes the job more pleasant and potentially attractive: "We've been able to take away quite a bit of the menial tasks."

Admittedly, some staff were averse to change. This was to be expected, says Dr Ong: The move to digital screens, for instance, might not have been easy for older workers.

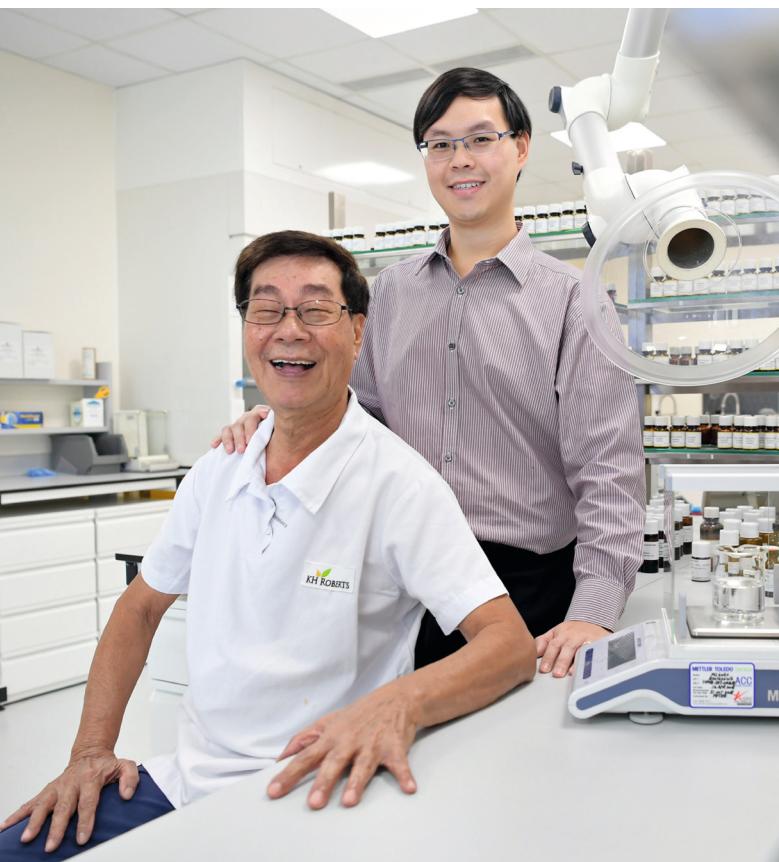
"Being mindful of this hurdle, we have designed our workflow with embedded smart systems to be as intuitive and elder-friendly as possible."

For example, though the work process is now digital, staff do not need to type; they simply scan the labels of the ingredients they are using. Digital displays also feature simple bilingual instructions in large font sizes.

Apart from helping older staff make the transition, KH Roberts is also keen to attract young blood. It has been hosting interns for more than two decades, in departments including R&D, quality, production and administration.

Interns are always assigned a manager who oversees and mentors them, and – as far as possible – are tasked with specific projects. There is always a risk that after being trained at KH Roberts, some of these interns may end up working for competitors. But that risk does not faze Dr Ong.

"If their internship or work experience with us makes them an attractive candidate for our competitors in the future, then I suppose we can be proud that we are doing something right," he quips.



## Refining tastes made easier

THE mission remains the same: delivering flavours customised to clients' needs. But KH Roberts has grown better and more efficient in doing so – as new product development manager Derrick Heng, 33, has seen since joining the firm in 2009.

In earlier years, for instance, he often received project briefs in informal ways. "If we were lucky, we'd get email," he recalls. "Sometimes it would be a phone call."

The information received might be incomplete or unclear, making it "a bit of a struggle" to figure out exactly what the client needed.

In 2011, KH Roberts moved to an online form with specific fields that clients had to fill in – making things much clearer.

The firm also introduced an online system for logging work, so teams can track what has been done and what stage the project is at.

Product development has also grown more sensitive, with Mr Heng's role going beyond technical lab work.

"As KH Roberts operates regionally and flavour requirements are so diverse, something is often lost in translation between the customers and our technical team," he says.

"Over time, my role evolved to bridge that gap,

Production operator Lim Kwee Liang (left) has benefited from the digital system introduced on the factory floor while new product development manager Derrick Heng finds his job made easier by the firm's enhanced R&D capabilities and online efforts.

PHOTO: NG SOR LUAN

involving a lot of direct communication with our customers, understanding their needs and also presenting what we could do for them."

The firm's enhanced research and development capabilities have also helped. Previously, the product development team might have had to go back and forth with a client "10 or 15 times" – sending a flavour over, getting feedback, refining it, sending it back – while still "not getting it".

Part of this was because the same flavour can manifest differently depending on application: that is, how it is used in different products.

KH Roberts has since developed in-house application capabilities, allowing it to test how a flavour works in a product and adjust it accordingly before sending it to the client.

Mr Heng recalls one client which was developing a mango drink and rejected the initial flavours offered.

The team decided to see how the flavours worked upon application, using one to create different styles of mango drinks. The client liked one of the drinks, not knowing that they had initially rejected the flavour used.

Efficiency gains have been made on the factory floor too. Production operator Lim Kwee Liang, 67, joined the firm in 1996, when it had just 10 staff. For two decades, his job stayed much the same: consulting printed formulae to mix ingredients, while writing down what he had done.

This changed with the new factory in 2017. Work orders are now displayed on screens. Instead of writing down his work, Mr Lim scans each material which he mixes in, with the digital system confirming it is the correct material and logging its use.

As he pours out each one, the screen displays his progress: turning yellow as he nears the required amount, then green as he hits it, and going red if he overshoots.

Getting used to the digital system took a while, he admits: "I was initially not so sure how and whether it would work out."

But with training and practice, Mr Lim got used to the change – and is glad for it. "The best part is that I won't make a mistake (without knowing)," he says. "The accuracy is there."

His load has also been lightened. Previously, he had to manually transfer some liquids from a giant drum into bottles, carrying one to two kilogrammes at a time.

Now, such "bulky materials" and other commonly used ones are dispensed at the touch of a button. Mr Lim estimates that more than half his workload today is automated. "It's really cut down a lot."