

Made-in-Singapore brackets to embrace world market

It all began with a S\$40,000 grant given by the former National Science and Technology Board (NSTB) of Singapore. As part of the national funding plan called Innovator Assistance Scheme (IAS), this modest state-sponsored incentive could prove to be "seed money" that helped to grow Singapore's largest dental company yet.

By Danny Chan

The IAS beneficiaries were Dr Lim Hong Meng and Dr Tan Kok Liang, also the collective brainchild behind Singapore-based Innobrace Orthodontics Pte Ltd – possibly the first full-service orthodontic manufacturing company in Asia, outside Japan.

Former dental faculty mates and now business partners, Lim and Tan made the successful NSTB pitch, based on an idea to manufacture orthodontic brackets using a then relatively unknown production technique called "Metal Injection Moulding" or MIM.

That was about five years ago, before this revolutionary technique caught on and slowly gained wider acceptance for its orthodontic applications. Today, the enthusiastic pair is brimful with expectations to market their locally-produced wares in the global dental arena. Meanwhile, they have also roped in two other varsity pals – and orthodontic practitioners themselves – as investors.

Dr Hong Yong Huat and Dr Alfred Cheng were former course mates at the National University of Singapore. "We were the pioneer batch to graduate from the orthodontic program at NUS' Faculty of Dentistry," Lim reminded his

team-mates, all beaming with alumnus pride.

With the exception of Hong – a Malaysian dentist who runs two clinics, one on each side of the causeway – the rest of them are Singaporeans. It is thus fitting that these pioneer graduates are also the ones to spearhead the Republic's foray into orthodontic manufacturing.

In the driver's seat

Interestingly, they are all in their 30s, and who belong to that age group their government leaders are referring to as "3G" or third generation Singaporeans.

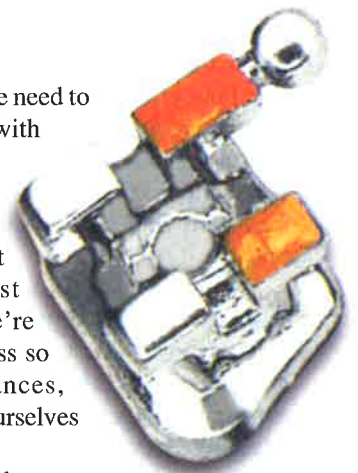
In his recent National Day rally speech, Prime Minister Goh Chok Tong said that because the country was going through a 'generational change', it was time for the younger generation of Singaporeans to take over the 'driver's seat' to steer the Republic to greater heights of economic success. Senior Minister Lee Kwan Yew calls them "the result of a new generation educated after Independence", and wondered aloud their chances of surviving the dynamism of the new economy.

To them, he offered this trinket of

advise on the need to keep pace with the exploding Internet world: "If we do not change fast enough, we're going to miss so many chances, we'll kick ourselves for it."

Despite the uncertainties awaiting Singapore and Singaporeans, SM Lee can take heart in the educational and social framework he himself had painstakingly laid the foundation for, that has not only yielded an Internet-savvy bunch but also a sizeable crop of IT-realistic, global-minded individuals who are capable of giving the world's top technopreneurs a run for their money. Examples like Sim Wong Hoo of Creative Technology and Ong Peng Tsin of Interwoven may be few and far between, but the trend is definitely not bucking yet.

Whether Singapore's health sector – namely dentistry – can add a few names to that list, remains to be seen.



Marketing the dot.com way

Although not exactly technopreneurs themselves, Lim and his compatriots are by no means traditional, brick and mortar manufacturers. The fact that Innobrace's Epsilon range of products is also known as "e-brackets" immediately alters that perception.

Indeed, the IT aspects of the business do not end there at the mould designing stage, which utilises specialised software. The reason for adding "e" to the name has lesser to do with the product itself than how it will be marketed – over the Internet. Tan explained the rationale behind going onto the World Wide Web to sell their proprietary wares:

"Our advantage is that we have obtained the CE and four different ISO certifications on quality system and production; and are also registered with FDA in America. That means our products can be sold almost everywhere in the world."

To illustrate the rapid changes brought on by the Internet, he gave an example of a dentist who practises in the outback regions of Australia, who finds it less of a hassle to make his orthodontic purchases online than to contact his local supplier.

"With the World Wide Web, that person can view our products 24 hours a day and buy anytime he wants.

"And for us to ship the products to him, it would probably not take any longer than say, from a major Australian city. Moreover, freight costs out of Singapore are also relatively inexpensive."

Lim likened their marketing style to that of Dell Computers, quipping, "We also skip the middleman, and pass the savings back to our customers." He revealed that the company would also be launching a networking facility whereby dentists can recommend other dentists via a referral system to enjoy privileged offers and benefits.

MIM'S the word

It was Tan who, in 1998, first mooted the idea of manufacturing their own brackets. Noting the sometimes volatile



The sintering process makes use of high temperature furnaces to forge-produce the final shapes of the brackets

pricing of brackets in those day, he began to question how "such small parts could cost so much". Exploring the various alternatives of manufacturing the tiny devices, he came across a relatively new method in the MIM. Fascinated by this unique technology which allows complex and intricate parts to be produced in large quantities at an economical cost, he sought out a local company with MIM facilities to find out more.

"I was told it would cost a few hundred thousand dollars to make the mould and after that, you can produce millions and millions of the same thing."

It was also around this time that he began to involve Lim in this seed of an idea, which later became a full-fledged proposal that was submitted to the the National Science and Technology Board. The monetary award, although hardly substantial, did help to start the ball rolling.

"It was a form of encouragement that our ideas can actually become or spin off to become marketable products," Lim said of the incentive grant, "It also acted as seed money in the beginning."

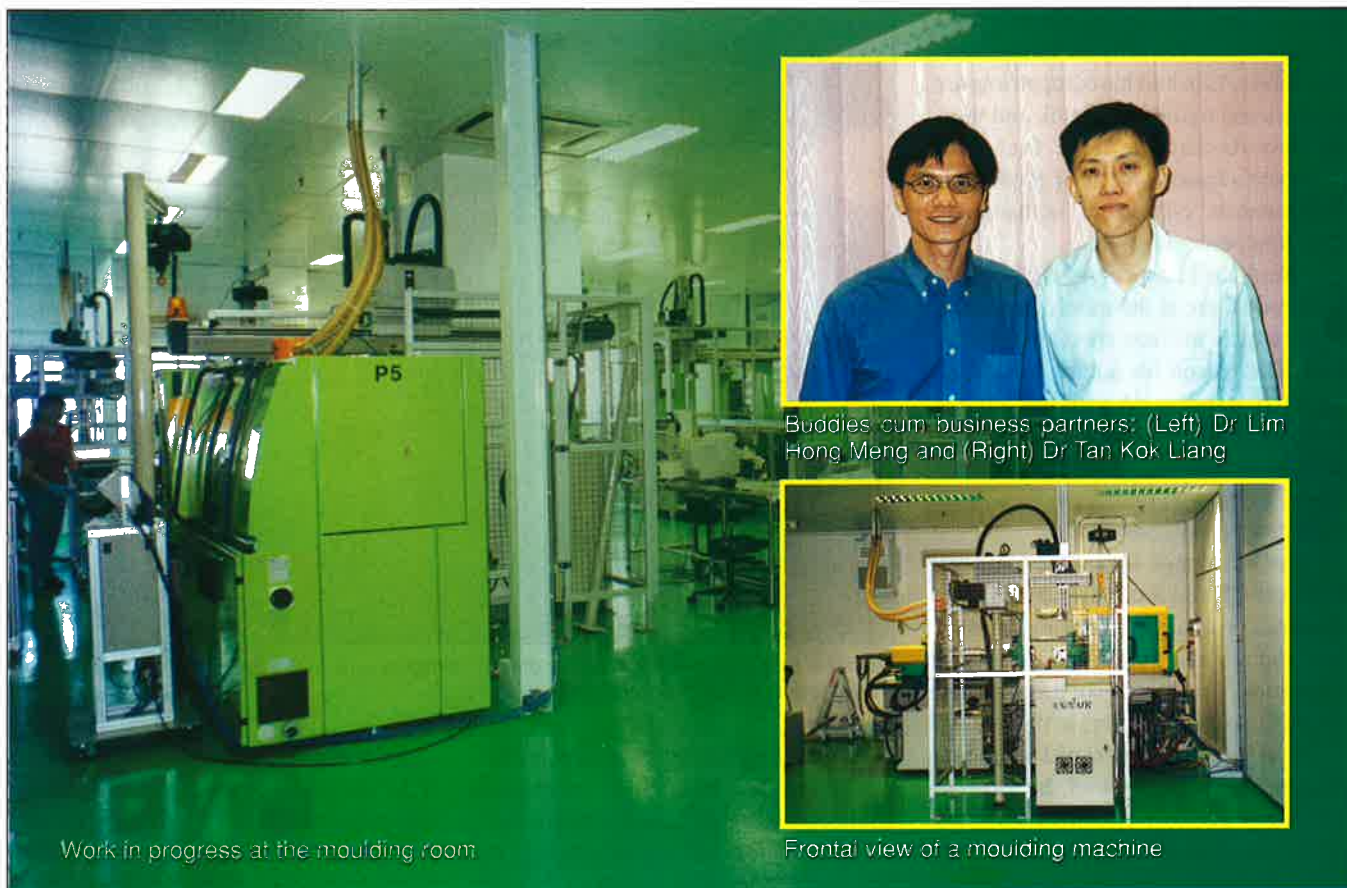
Following more research and devel-

opment, the two dentists went on to produce their first batch of products using the MIM technology. MIM is an advanced metallurgical technology; which is a hybrid technique that combines plastic injection moulding and powder metallurgy.

The MIM process

Using computer-aided software, the engineers would work closely with the orthodontists to come up with the complex designs and illustrations for the MIM process. Thereafter would be the blending stage, during which different metal powder are blended to form the alloy composite. The metal powder is then mixed with a number of wax and plastic materials – commonly known as a binder system – to form the feedstock. At the moulding stage, the feedstock is injected into a mould cavity to form the part shape. At this point, the parts injected are known as "green parts".

The debinding process would strip the binder from the parts to form "brown parts". Using high temperature furnaces, the brown parts are processed to close the voids created at the debinding stage,



Work in progress at the moulding room

Buddies cum business partners: (Left) Dr Lim Hong Meng and (Right) Dr Tan Kok Liang

Frontal view of a moulding machine

to produce the near-complete MIM parts.

This method is vastly different from the more commonly used milling process. "Previously, all the other manufacturers were using the milling process which essentially refers to the cutting of blocks of stainless steel to size," explained Lim, "whereas the MIM technique casts the parts from computer-designed moulds."

Anonymous beginnings

The duo tasted initial success with the technology when they found a buyer in the UK who bought from them 5,000 sets or 100,000 pieces of brackets. However, their new-found confidence wavered when they tried to market the products themselves in Taiwan and Malaysia, and found the regional markets less promising. They attributed the unflattering results to a lack of marketing expertise and the newness of the MIM

technology. Undaunted, they continued to produce an improved second generation of the products.

This time, it was an American buyer who ordered in bulk volume of about 1-2 million brackets, but in turn requested their anonymity as OEM (Original Equipment Manufacturer) suppliers.

"That means that our company name don't actually appear on the final product," Lim said of the OEM arrangement.

"After producing one or two products for this client, we realised that this is not the way we want to move forward in the long run."

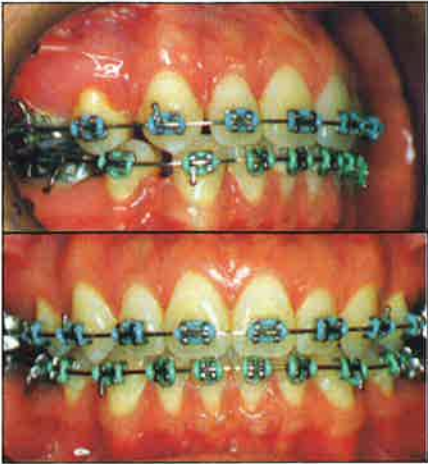
The two also decided that instead of renting and paying for the manufacturing facilities – as was the case with the first batch of products – they would form a joint venture with Dou Yee Technologies, a local manufacturing plant for subsequent production. DYT was made the major shareholder of the joint venture.

With expansion on the cards, they also found new investors in old friends, Hong and Cheng. As orthodontists themselves, the foursome are confident that the doctors will be "the best judges" of the quality and usefulness of Innobrace products.

Expand to full range of products

By targeting the end users, they hope that the company will be able to serve the total needs of dentists who make use of such products. The company's vision of being a full-service manufacturer is slowly taking shape as Tan put it candidly, "to at least have the skeleton of a full range orthodontic company". A basic range consists of brackets, bands, wires and instruments.

"We try to be as complete as possible so that they don't have to go to another company to buy something else."



The cuspid and bicuspid brackets are available with integral hooks for minimum discomfort and maximum utility

According to Tan, manufacturing the basic range alone would probably make Innobrace the first full-range orthodontic company in Asia, outside Japan.

Closing the affordability gap

Although the marketing strategies are not geographically specific, the prime target market for Innobrace is still Asia-Pacific. Just like in America – where the orthodontic consumer market accounts for half of the global share – Lim hopes that someday, braces wearing would be-

come a “rite of passage” for Asian children as well. He conjectured that Asia is slowly moving towards such a market scenario, based on his personal encounters with Singaporean parents and teenagers, who are turning to braces for more cosmetic reasons now than before. With higher demand from Asia’s domestic markets, therein also lies the growth potential for Innobrace.

“Of course, there is this ‘affordability gap’ that we hope to close, by offering dentists and their patients an alternative to expensive American and European products.”

Harking back to Tan’s first reasons for starting the company, Lim reasoned: “Dentists of this region are also powerless to the rising prices of foreign products because of a lack of substitutes and choice.”

Asked about the pricing difference that Asian doctors can expect, Tan replied emphatically, “Our products will definitely be priced significantly lower than what other people are charging – up to 50%.”

Ortho giant in Asia?

Apart from the major shareholder, all the partners are full-time private practi-

tioners. Being the active members of the company, Tan and Lim often found themselves straddled between their downtown clinics and the DYT plant at the Bedok Industrial Park.

Asked whether they could afford the time, Tan replied wistfully, “We will take things one step at a time and when necessary, will devote more time to running the business. Personally for myself, I will be more than happy to run this full-time if it becomes successful.”

As for their personal ambitions for the company, Tan reckons that in 10 years’ time, Innobrace would be “a giant in Asia in the field of orthodontics”. He aspires for it to be “as big as any orthodontic company in the world”. On a relatively conservative note, Lim desires that Asian dentists would in time to come, turn to Innobrace for their complete range of orthodontic products, without the company having to market the products excessively.

Giant or no giant, they have already taken gigantic steps towards achieving their respective dreams and goals. More significantly, they have given fellow dental colleagues a glowing example to follow. Believe it or not, there is *life* beyond the clinical practice. DA

DENTALASIA
has moved to a new address...
Block 101 Boon Keng Road #07-03/04
Kallang Basin Industrial Estate
Singapore 339773