

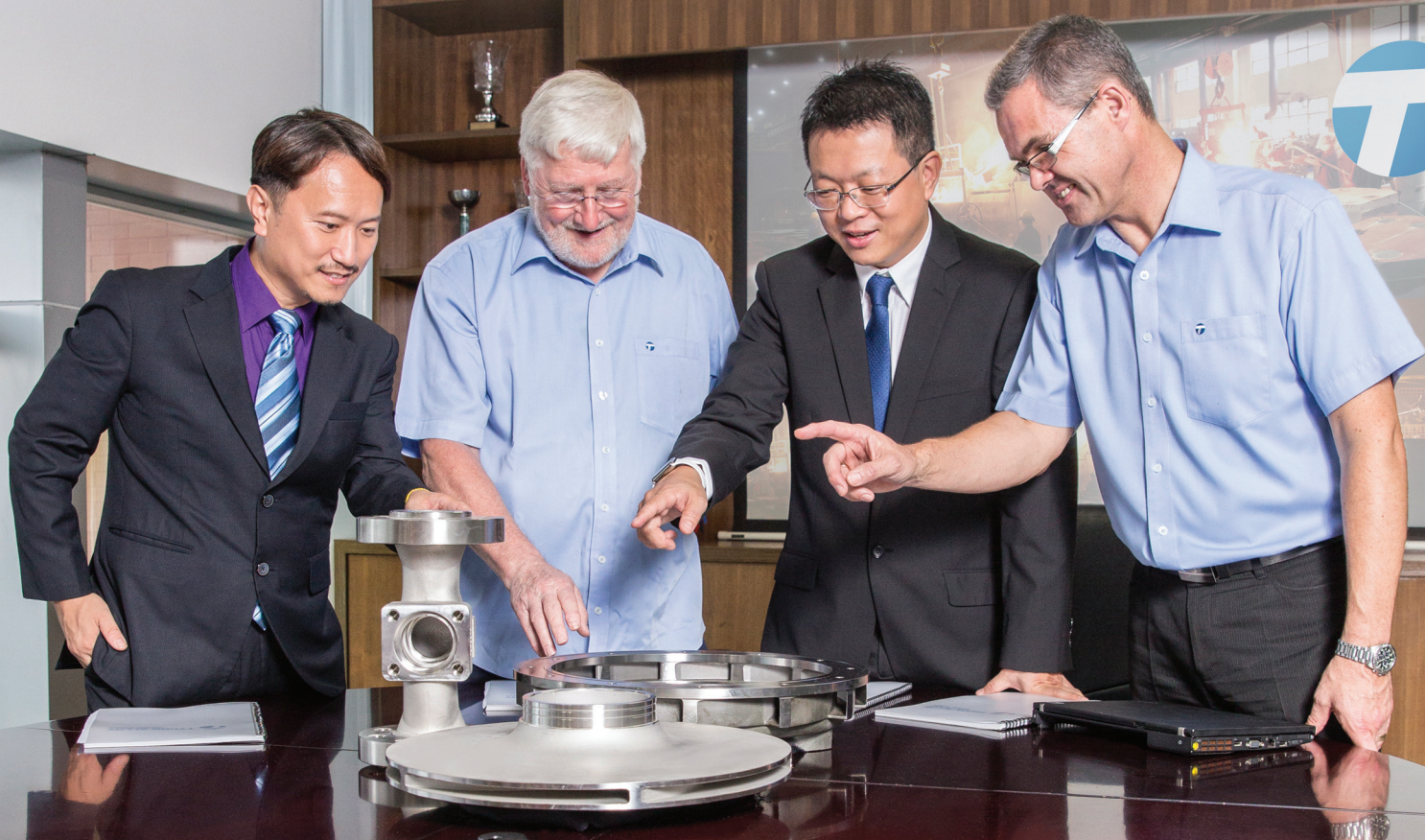
The global magazine for pump users and suppliers

PUMP engineer

COVER REPORT:

Tycon Alloy celebrates
20 years of casting
engineering solutions

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Tycon Alloy celebrates 20 years



From left to right: Anthony Chan, David Millward, Brian Palmer, Michael Lo, and Ryan Cole.

Tycon Alloy Industries (Hong Kong) Co., Ltd. is celebrating their 20th anniversary. For two decades, Tycon has provided stainless steel and special alloy casting engineering solutions. Pump Engineer interviewed Tycon about their success in learning to adapt and grow in an ever-changing industry.

By Sarah Schroer & Yuzhong Shen

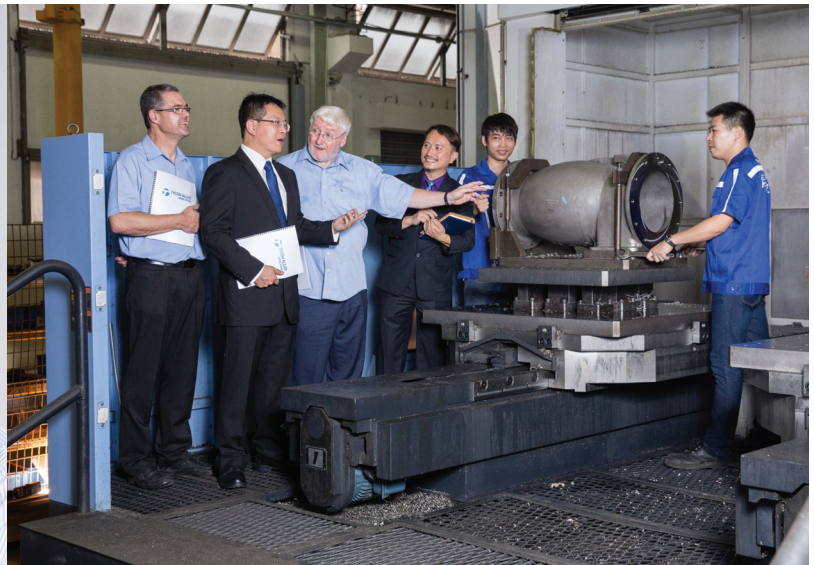
Tycon Alloy has changed the face of Hong Kong-based engineering with their high-valued and high-quality products. Tycon was first established in 1995 and has since grown into a 1,200 employee company, with a production facility of 35,500 square meters. Their current plant, located in Shenzhen, China, has a 700-tonne capacity per month, including sand casting and investment casting. Tycon has plans to move to a new plant called the Zhongshan Plant in the near future.

Along with the move to the new plant, the facility will see several upgrades taking place, including an increase in automatic equipment and sand casting machinery. They also have plans to invest in casting technology in order to do automatic shell-making. Head of Operations, Michael Lo, discusses Tycon's desire to also introduce

semi-automation in their facilities. "We foresee labour costs doubling in the next five to ten years," adds Lo, "For equipment we are buying now, we must consider future costs, starting from the basics."

Lo adds in how it is of utmost importance to Tycon to facilitate an increased optimization of their resources. "We are no longer just an OEM company," says Lo. "Instead, we have the strategic business units to align other resources to better serve our customers. It's not about the quantity, but the quality. In the past five years, we have sent our staff to learn abroad and then adapted this into our technology and processing for casting in order to increase our proficiency and our capabilities in this area. How to facilitate the better optimization of the resources is our prime objective."

of casting engineering solutions



Customized solutions for unique product ranges

“Approximately 50% of our casting products are valves, while pumps account for about 30-35% of the production,” shares Lo. “These valves and pumps are used in the chemical industry, petrochemical, or oil & gas – especially for the natural gas.”

In addition to pumps and valves, Tycon also offers product solutions for filters, mechanical seals, and other equipment components. Aside from the natural gas industry, Tycon is also active in the chemical, offshore, power, food & pharmaceutical, ship building, and instrumentation industries. “A lot of oil and gas today is from offshore,” expands Lo. “Companies are pumping the oil from the ground and from the seabed while the gas is coming out. Today, they have the techniques to collect all the gas. It needs to be pressurized so it becomes liquid and then can be transferred by ship from offshore to onshore. This is why all ships have to be built for LNG and these applications use stainless steel casting pieces by Tycon.”

A pledge to ensure the highest product quality

Lo explains that they aim to be not only a producer, but also a strategic partner with their clients in order to make high-quality products, as opposed to only focusing on low prices. They have a stringent quality control process. “Most of the industry knows Tycon’s name,” says Lo. “With Tycon, the integrated procurement risk is low which makes it worth the investment, but our customers agree they get a very good product value because of the time saved when it comes to checking incoming materials. Tycon takes pride in being able to supply top quality products to our customers who are themselves market leaders in their own fields. Customers can take Tycon’s sophisticated casting products and install them on their production immediately.”

Tycon’s internal management runs a continuous improvement program where they are always working on ways in which Tycon can improve their processes in order to save their customers money while maintaining a high-quality standard. “Tycon is on par with any European foundry that I have worked in, if not better,” shares Consultant, Brian Palmer. “We are in a position where we can compete on a level playing field with Europe, America, and the rest of the world.”

Palmer began working in the sand foundry on quality concerns to improve the process controls, to improve the quality of the finished product, to look at new ways of manufacturing including new materials and new developments in process techniques, and also to revise all the existing techniques. “Many people have a bias towards Chinese foundries – which was my perception too initially – that it is sub-standard,” says Palmer. “However, that is not the case with Tycon.”





Wide range of casting applications

Major applications of casting include the following related industries:

- ➔ Chemical
- ➔ Liquefied Natural Gas (LNG)
- ➔ Offshore, Oil & Petroleum
- ➔ Power Plants
- ➔ Food & Pharmaceutical
- ➔ Ship Building
- ➔ Instrumentation

Applications of castings also include the following product ranges and solutions:

- ➔ Valves
- ➔ Pumps
- ➔ Filters
- ➔ Mechanical Seals
- ➔ Equipment Components

Tycon's standards are international standards and must meet the demands of a clients that are both high-caliber and global."

Tycon has been accredited international standards and full third party certification, including ISO9001:2008, TÜV PED97/23/EC, and Marine Society Approvals: LRS, GL, DNV, BV, ABS, CCS, NK, and KR. Palmer shares that Tycon is currently striving for the NORSOK control on the off-shore projects. "It is a procedural thing to demonstrate that you have control over the business and you can maintain the standards that they are imposing on us. Now, ISO are restructuring their requirements which will be exactly the same as the NORSOK standard. In the future, all foundries that are supplying off-shore projects will essentially be using a NORSOK standard."

Utilizing the latest technologies

"We are aiming to have a stronger background on the technical side in order to support our customers and to provide them with all-around solutions to their design and casting engineering challenges," explains Anthony Chan, Marketing Manager. Tycon's customers include both equipment manufacturers and pump manufacturers. Some of Tycon's big-name customers include Sulzer, ITT, and Wärtsilä.

"When we develop a project we have a team of engineers prepare the drawings, discuss with customers, and involve them in the design of the new pump because the customers know how they want the pump to function," shares Chan. "We help them with the manufacturing. We consider ourselves to be a casting engineering solution that provides much more than just casting alone."

Castings technologies

David Millward has worked in investment castings in the UK for over 30 years. He was begun working at Tycon so he could look at their processes and practices in order to make improvements. "A major part of my job here is to look at the future of Tycon, including putting in more automation and putting in more environmentally friendly equipment because China and rest of the world has to look at the environmental emissions," says Millward, who is a Consultant for Tycon. "We are looking at more efficient equipment that will give us a better product. We'll always need labour, we'll always need that intervention of people, but we don't always necessarily need so many pairs of hands. We are looking to have a foundry that will be producing for the 21st century."

Magma software for accurate casting simulations

Tycon is pioneering the industry with their state-of-the-art equipment and use of Magma, a German software that can precisely simulate the casting procedure. "When the engineer finishes the design, they provide

us with a 3D model that we can put into the software to identify what locations might have problems with shrinkage or other issues,” says Lo.

Advanced technology and software allows Tycon to reduce development times significantly. “When you are doing a 1000-kilogram product, you cannot just cut it and find the problem,” says Lo. “We want to know what will happen when designing a gating system before we cast the material. This is especially cost-effective when creating large-sized castings.”

Ceramic core technologies

Tycon Alloy uses a technique they have developed over the years called Ceramic Core. The technique has been used in production for several years now, but over the years they have been able to improve it. “Pump manufacturing has more requirements for this ceramic core because sometimes the impellers for high performance pumps need a very small gap on the impeller, so that ceramic core can help us to do some complicated items,” explains Lo. “We will communicate with the supplier because they have a different solution for the ceramic core. In China, Tycon is the first company that is sending employees overseas to learn and buy the materials for this technique.”

Plans for future growth

While the European market makes up about 50% of their business, Tycon has plans in the upcoming few years to increase their American customer base, which encompasses about 25% of their business. “We are expanding our workforce for the US market at the moment,” explains Lo, “but we also see the Chinese market as another growth area. More and more companies, not only the overseas companies, are building factories in China. Also, some local domestic companies are upgrading their products to meet a higher standard in order to compete with overseas companies.”

Tycon is an international company. Their management team comes from Hong Kong. Tycon’s consultants are from the UK and help on the technical side with new products and design of new plants. This gives Tycon a peek into what other countries are doing and gives direction on how Tycon can upgrade themselves.

“Over the next five years, Tycon is committed to capitalizing on our sustainable competitiveness and lean manufacturing via foundry removal and resources re-engineering,” says Lo, “and also to keep our sales targets above or at least pertaining to the industry growth. To do this, Tycon has to put more value-added products into our production, including engineering and machining solutions for our customers. We emphasize the need to provide integrated and highly-valued solutions to our customers through our well-trained professionals. If we finish the pilot order, then the customer will

continue with us. If we don’t have new products coming in, we cannot make growth, so that’s why we emphasize how quick we can make samples and deliver them to our customers.”



TOTAL AREA - 100,000 m²
Gross Floor Area (GFA) – 85,000 m²
Office GFA – 6,700 m²
Foundry GFA – 75,000 m²

Tycon has plans to build a new 100,000 m² foundry in Zhongshan, China.

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