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Celebrating 50 years of maritime success

Shipmanagement companies on the rise

Shipyards build market position



“Singapore has made enormous progress since I first came here in 1971”

Olav Eek Thorstensen, Thome Group chairman, see page 19



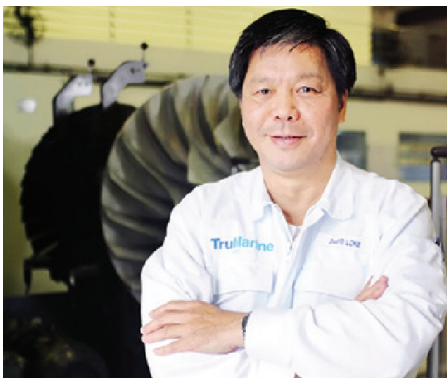
A Singapore-based success story

Turbocharger service specialist Tru-Marine has developed from modest origins in Singapore to become a world-leading player in its field

David Loke, group managing director at turbocharger specialist Tru-Marine, is a Singaporean who has lived in Singapore since before independence. Over many years he has built up Tru-Marine as a formidable, market-leading company in Singapore. He has been in his current position with the group since 1992 and is responsible for Tru-Marine's leading position providing turbocharger repairs and servicing for most of the leading original equipment manufacturers (OEMs).

His career in the maritime industry started after leaving school when he served in the Singapore Navy. He then joined manufacturing company Watt & Akkermans in precision product manufacturing. He started Tru-Marine in 1977, initially as a general shiprepair company. Wanting to specialise in order to be more competitive, he changed the focus of the business in 1985 to concentrate on turbocharger repair and servicing, which proved to be a far-sighted decision.

Mr Loke's more than 40 years of technical knowledge and business experience has served to push Tru-Marine to the leading position it now occupies, not just in Singapore but internationally. He obtained a Master of Business Administration (MBA) degree at the age of 49, demonstrating his continued commitment to business learning and development.



David Loke started Tru-Marine as a shiprepair company in 1977

Mr Loke told *Singapore Solutions*: "From the perspective of a home-grown enterprise, we have seen the raising of national delivery standards for Singapore to become the leading global hub port it is today. This has been enabled by well thought infrastructure and government assistance programmes in supplier development. The industry has been transformed from a low cost to a value provider and the push for internationalisation of local businesses like Tru-Marine to become world-class players."

"Tru-Marine is a home-grown company that specialises in the maintenance, repair, overhaul and supply of turbochargers in marine, offshore, power plant and locomotive applications. A global market leader for over 37 years, we have built a strong reputation for our extensive technical expertise, offering full turbocharger service coverage from scheduled overhauls to in-situ emergency repairs, representing the majority of turbocharger makers as their authorised and co-operative repair shop."

From its origins as a local Singapore company, Tru-Marine has expanded into an international player. It now has seven overseas service centres, in addition to its main base in Singapore. It has a total workforce of about 200, making it the largest after-market turbocharger servicing and repair company.

In recognition of his achievements Mr Loke has received numerous business awards. Mr Loke was named Marine Engineering Entrepreneur of the Year 2007 Singapore by Ernst & Young, and Entrepreneur of the Year 2008 by the Association of Small and Medium Enterprises in Singapore.

Other awards endorsing the company's continual improvement include the Singapore Quality Class Awards in 2002 and 2005 and Enterprise 50 Awards in 2002, 2005, 2006, 2008 and 2009. Also in 2009 Mr Loke led the company to be recognised by the Singapore Quality Award (SQA), which is conferred on organisations that demonstrate the highest standards of business excellence. Mr Loke commented: "Tru-Marine is well known for our enduring culture of continuous improvement, which we embrace as one of our fundamental strengths."

With the SQA, Tru-Marine is the first privately owned, small to medium-sized enterprise (SME) as well as the first in the

shipbuilding and repair sector, to be on par with other world-class organisations.

"The company leads in technological innovation by creating intellectual capital in turbocharger reconditioning. Since they were started in 1991, our research and development efforts have been maintained both in house and through collaboration with various research agencies and industry partners," Mr Loke said.

"We like to think of ourselves as the global marine SME. Developing capabilities through innovative technology is one of Tru-Marine's pillars of growth as well as a key enabler for a SME like us to move up the value chain and play our role within Singapore's proposed complete maritime cluster.

"The company has built an enduring corporate culture of continuous innovation that encompasses business as well as product and service innovation. This has allowed us to improve and build new capabilities, in anticipation of the increasing sophistication in turbocharger design. Tru-Marine's research and development efforts began back in 1991, when it broke new ground as the first company to develop the tungsten inert gas repair technique for turbine blades. Since then, we have been known for reinventing turbocharger repair techniques to become today's industry standards. We will continue to extend our product and service lines with proprietary technologies.

"Remanufacturing was announced as Singapore's strategic progression towards sustainable technologies in 2012, but we have been an early adopter since 2009."

Such is Tru-Marine's success that it has been recognised at the highest level in Singapore.

Tru-Marine was cited as a success story by Singapore prime minister Lee Hsien Loong during his address at the Singapore Manufacturing Federation 80th Anniversary Dinner.

In 2012, remanufacturing work at Tru-Marine was showcased to representatives from several Asia-Pacific Economic Cooperation (APEC) member economies. A hosted tour of Tru-Marine's Singapore workshop was part of a meeting of APEC's market access group where industry and government experts from all 21 APEC economies were given an insight on how remanufactured goods are returned from end-of-life products to same-as-new specifications. **ss**

Shipyard on this groundbreaking conversion of Golar's LNG carrier into an FLNGV through the supply of our Bergen B33:40V20AG engines. The contract awarded by Keppel is recognition of the innovativeness and cost-efficiency of our engines and demonstrates the faith that the market has in our LNG engines which are perfectly suited to FLNG vessels where the LNG is readily available to fuel the engines."

The contract with Keppel Shipyard includes an option for an additional two engines for a second Golar LNG carrier *Gimi*. The engines are scheduled for delivery next year and the conversion of *Hilli* is expected to be completed in the first quarter of 2017.

In another project Rolls-Royce has entered a partnership with Singapore-based offshore marine logistics company Chellsea, which has ordered eight Rolls-Royce UT 771 WP vessels. This innovative design reduces fuel consumption and increases safety. The vessels are powered by Rolls-Royce MTU gensets – an example of how its acquisition of the German engine supplier is enabling it to offer more comprehensive equipment packages. Rolls-Royce's UT OSV design recently celebrated 40 years of development and evolution.



Richard Bowcutt (Rolls-Royce Asia Pacific): We are excited to collaborate with Keppel on this groundbreaking conversion

Rustibus provides manhole protection

Apart from sophisticated vessel designs and high level equipment supply and servicing, Singapore is also home for other more mundane pieces of equipment, but no less crucial for safe maritime operations.

An example is the Safe Edge manhole protection cover of supplier Rustibus. According to the company Safe Edge offers a



Safe Edge provides a safer environment for crew working on deck

simple solution to a problem where the marine industry otherwise uses more laborious, less secure and more costly methods. Rustibus said that at present there is still no standardised method that secures the hazards around open manholes. It is currently left to interpretation by individual companies.

A company spokesman said: "Safe Edge is a manhole protection cover that eventually will become available to fit most types of manholes on marine and offshore installations. The first versions are already in the market, and a number of shipping companies have already invested in this cost-effective insurance against crew injuries caused by overlooked, unprotected or improperly protected open manholes on deck."

Prevailing practices include a number of creative solutions ranging from no protection to welding in place some rods surrounded by tape or ropes in an attempt to offer some safety. Safe Edge is designed to prevent falls and other injuries associated with open manholes onboard vessels and offshore installations.

When in use, Safe Edge clearly indicates the presence of a potential hazard area, and therefore creates a safer environment for the crew on deck. It is specifically designed to allow ventilation and utilities to remain accessible while still covering the hole and protecting the crew. A highly visible fluorescent orange base creates a barrier that prevents loose objects being knocked down as well as crew falling into the open manholes. The lid is designed to carry a maximum load of 450 lbs (225kg) and is also highly visible with reflective warning colours. It is easy and quick to install compared to current methods. It weighs only 18 lbs (9kg), which is below health and safety rules

requirements, and it is therefore a risk-free product to handle and use.

The current Safe Edge is designed to fit the most common model of international standard manhole (NS6261/ISO 5894). Any vessel no matter what size, form, or geographical area, can fit this product as long as it has manholes that conform to the standard. Rustibus plans to increase the range of sizes available.

According to Rustibus: "Safe Edge as a concept reinforces the safety mindset and culture and permeates from and within the Rustibus organisation. It reflects the commitment to safety at all levels."

Tru-Marine boosts turbocharger solutions

Tru-Marine is a longstanding specialist in providing servicing and repair services for the increasingly important turbocharger equipment on board vessels in Singapore.

Group managing director David Loke said to *Singapore Solutions*: "Tru-Marine is a home-grown company that specialises in the maintenance, repair, overhaul and supply of turbochargers in marine, offshore, power plant and locomotive applications. A global market leader for over 37 years, we have built a strong reputation for our extensive technical expertise, offering full turbocharger service coverage from scheduled overhauls to in-situ emergency repairs.

"We represent the majority of turbocharger makers as their authorised repair shop, including Mitsubishi Heavy Industries, Mitsui Engineering & Shipbuilding, Kawasaki Heavy Industries, KBB Kompressorenbau Bannewitz, and Napier Turbochargers. Through ongoing advances of relevant, high quality reclamation

alternatives, we have been able to revolutionise commonplace repair methods to deliver better value by optimising the performance and lifespan of useful components."

The company has progressed beyond local waters to serve from seven full-facility service stations. In addition to its headquarters in Singapore it has overseas bases in China (Shanghai, Tianjin and Guangzhou), the United Arab Emirates (Sharjah), The Netherlands (Rotterdam) and the US (Houston).

"The company leads in technological innovation by creating intellectual capital in turbocharger reconditioning. Since it started in 1991, our research and development efforts have since been maintained both in house as well as through collaboration with various research agencies and industry partners.

"We will continue to establish an expanding network of service stations that offer the same capabilities and delivery standards as our home base in Singapore. We plan for a service station at important ports of call. We like to coin ourselves as the 'global marine SME (small-and-medium-enterprise)'."

Mr Loke said that the business of turbocharger maintenance and repair is labour and knowledge intensive. "We will continue to extend our product and service lines with proprietary technologies; bringing about 'creative destruction' to phase out the rest of the market.

"Tru-Marine is the first company to have developed laser-aided additive manufacturing technology for the repair of new-generation

turbochargers made in super alloys. This technology revolutionises the treatment of damaged components that were previously condemned and discarded due to limitations of existing repair methods. We are now able to restore those condemned components to become as good as new, extending their useful life and achieving substantial repair quality and productivity gains."

Tru-Marine Group has a mobile team of 200 engineers and technicians, believed to be the world's largest pool of specialists by an independent turbocharger repairer. "We represent the majority of the turbocharger makers. By virtue of our authorisation, our service engineers receive regular training on the latest turbocharger designs and instructions. Every engineer is a fully qualified turbocharger expert, with over 10 years of experience in Tru-Marine.

"We have a strong performance-based culture. Our colleagues have a good understanding of the company's strategic direction and their own roles and responsibilities in helping to achieve those goals," Mr Loke said.

New rope-splicing facility

Another example of basic seafaring needs being met by the development of the latest technology and service provision was demonstrated last year when Fendercare Marine Products (Asia Pacific) launched a new rope-splicing facility in Singapore. Fendercare Marine is owned by UK marine services company James Fisher & Sons.

The service provides the splicing of polypropylene (PP), nylon and a mixture for ropes of up to 12 strands. The type of rope ends that are available include covered soft eye, thimble eye and thimble and master link. Fendercare said that it will also consider any special customer requirements.

Rohan Pande, Fendercare Marine's business development manager, said: "Fendercare Marine Asia Pacific has been long established as a leading stockist of high tenacity PP, mixture, nylon and UHMWPE (ultra-high molecular weight polyethylene) rope products for the mooring, towing, offshore and oil and gas industries. We import and sell approximately 3,000 coils of ropes every year from India, Korea and Germany. By adding a rope-splicing facility, we can offer a fully comprehensive rope service to our existing and new customers."

Fendercare Marine Products (Asia Pacific) was established in Singapore in 2000. In addition to ropes it also supplies Yokohama fenders and oil-transfer hoses, buoyancy and deck and quayside mooring equipment.

The company has completed more than

500 ship-to-ship (STS) transfer operations using its equipment since 2007. During that time its range of locations has also increased. The company operates in six designated STS locations in the region. It has also been involved in emergency operations to assist in lightering cargo from potentially dangerous vessels and situations. It maintains a large stock of equipment and a pool of highly experienced local mooring masters.

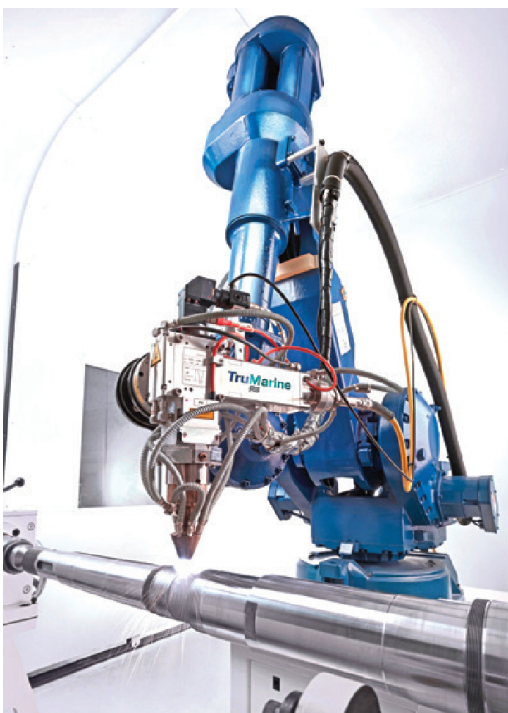
Terasaki builds on electrical success

Terasaki Electric Co has established itself as a leading supplier of automation systems for both marine and shore-based applications. It is particularly active in the newbuild market including offshore support vessels (OSVs). Among its products are electric power distribution systems, including switchboards and other equipment, and cargo control systems.

A recent project is to supply systems for a platform supply vessel (PSV) built to Focal Marine & Offshore's 506 design. This is a 76m long, 3,500 dwt capacity vessel that will be built in China and chartered to operate offshore Brazil. Terasaki is supplying its Mega-Guard cargo control and monitoring system, which is also used extensively on tankers. The system provides operator workstations giving an overview of cargo and ballast systems. It includes radar level sensors and transmitters and temperature sensors. On the PSV the equipment will be used to monitor fuel tanks, clean and dirty oil, water, brine and methanol.

The vessel also has a dedicated dynamic positioning (DP) system, Mega-Guard DP, designed for the offshore support industry and other marine applications. This includes a console and control panel with manual control joystick, as well as an automatic position-keeping facility. It meets DP1, DP2 and DP3 standards and features a simulation trainer mode that can be used when the thrusters are in individual operation. It can be used to train and familiarise operators with the system in an operational environment.

Terasaki Electric Co (FE) was set up in Singapore in 1973 as a joint venture with Terasaki in Japan and has become a major regional supplier of electrical switchboards and control systems. It has steadily expanded. In 2005 it established a new automation division in Singapore to provide greater servicing and repair capability for automation and instrumentation equipment. Its most recent expansion saw a new factory being opened in 2012 occupying 75,000m². Terasaki Group has a global presence with a wide network of service centres to support its products. **ss**



Tru-Marine developed laser-aided manufacturing technology