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Melbourne-invented technology helping Port Hedland wins international safety award

Melbourne firm OMC International's innovative maritime technology has won a prestigious international safety award, Executive Director Dr Terry O'Brien AM announced today.

Dr O'Brien, who received the 2015 IBJ 'Safety in Bulk Handling (Marine)' trophy on behalf of his staff on Monday night at a glittering awards ceremony dinner in Antwerp, says this accolade further cements OMC's reputation as a world-leader in real-time Under Keel Clearance (UKC) management technology.

"I accept this Safety award as recognition of the expertise of our more than 45 maritime and software engineers who have been further developing the exciting potential of DUKC[®] e-Navigation technology, which enjoys an unblemished 22-year safety record," Dr O'Brien said. "Our latest web-based product suite DUKC[®] Series 5 also offers optional capabilities such as In-transit monitoring integrated into pilot PPU's and VTS systems and real-time UKC chart overlays, as well as port capacity modelling incorporating the DUKC[®] system. "

CEO Peter O'Brien, who manages OMC's day-to-day operations from the family-owned company's Melbourne headquarters, said the latest DUKC[®] Series 5 with its additional dynamic port capacity model (DPCM[®]) was developed to enable the identification of additional capacity at Port Hedland.

"We have been working very successfully together with Pilbara Ports Authority (PPA) and just last Friday (13 November 2015), the WA Transport Minister Dean Nalder announced that this new modelling had pinpointed opportunities to increase the port's forecast capacity from 495 million tonnes a year to 577 million tonnes," Mr O'Brien said. "As Minister Nalder announced, the modelling also integrated recent operational changes implemented by PPA which has resulted in increased sailing drafts, the shipper's move to larger and more draft efficient vessels, and the port's ability to sail more ships on a tide."

The DPCM[®] models port capacity through Discrete Event Simulation (DES) and is the first time an operational DUKC[®] system has been incorporated directly into port capacity modelling. DPCM[®] simulations are used to evaluate the interactions and operations of a port between the fenderline and the sea including inbound and outbound vessels and tug and pilot requirements in order to maximise the throughput and channel capacity. The modelling includes consideration of planned and predicted fleet evolutions, port operational procedures and restrictions and port infrastructure upgrades. Environmental conditions are integrated into the model using the DUKC[®] to ensure that determined capacity will accurately replicate operational practice, including the draft and tidal window benefits DUKC[®] provides.

Mr O'Brien said the Port Hedland Series 5 system together with high spot dredging and the Tidal Model Project for which PPA recently was awarded the prestigious Premiers Award has resulted in a significant increase in vessel sailing drafts and tidal windows. This has allowed the PPA to significantly increase its export capacity, well demonstrated on 28 February 2015 where eight cape-size bulk carriers sailed out with a record tonnage of 1,511,977 tonnes.

The successful roll-out of DUKC[®] Series 5 continues, with Rio Tinto signing off in October this year for the Series 5 systems to be installed at the ports of Dampier and Cape Lambert. DUKC[®] Series 5 has also been installed in Torres Strait (AMSA, 2011), Port Hedland (2013), Fremantle (2014), Montreal-St Lawrence River (2014), and this year in Napier, Newcastle, Arrium Spencer Gulf and Geelong (Victorian Regional Channels Authority).

Mr O'Brien said OMC's DUKC[®] technology had also played a vital safety role in the deepest draft vessel visit to Melbourne this year. On April 5, the Exxon chartered Nordic Breeze Suezmax tanker vessel (274m long and 48m beam) with a draft of 14.5m safely passed through Port Phillip Heads and docked at Gelibrand berth under DUKC[®] advice.

The tanker, piloted by Port Phillip Sea Pilots (PPSP), sailed without incident following months of rigorous planning between OMC, the Port of Melbourne Corporation (PoMC) and the PPSP. This included a visit by the three parties in May last year to the Australian Maritime College (AMC) in Launceston to perform tanker simulations.

OMC's other innovative and award-winning safety risk mitigation tools include OMC iHeave[®], which is a lightweight ship motion measurement instrument designed specifically for use by pilots to allow them to gather hard data on ship motions under extreme conditions, and DUKC[®] Chart Overlay, which shows real-time safe and unsafe transit areas ("go" or "no go" areas) on their laptops within a pilot's electronic charting package and is a world-first because it gives pilots dynamic predictive advice about "go" and "no go" sailing areas before sailing and on the fly.

More than 30 years of mooring analysis and design by OMC's Founder and DUKC[®] innovator Dr Terry O'Brien has led to the development of OMC's predictive and real-time Berth Warning System (BWS), which increases berth operating safety.

BWS is a practical tool for ensuring the safe mooring of ships. It reduces the probability of a line breakage resulting from excessive motions of the moored ship. By scientifically predicting the loads placed by the ship on the mooring lines and fenders, and forecasting wind and waves out to 48 hours, the BWS provides early warning of a possible incident and helps support terminal operators to make decisions about the safe operation of berthed ships. It improves such decisions as to whether to remove a berthed ship, delay berthing, increase loading rates or to simply operate as scheduled.

"Looking ahead, OMC will continue directing a significant percentage of our profits into R&D to allow our team of experts to further extend the potential of our DUKC[®] technology to improve port safety and efficiency around the world," Mr O'Brien said. "We intend to remain the industry leader in real-time UKC management as we forge ahead into new markets and develop more collaborative industry partnerships, with safety always our number one priority."

* In the Queen's Birthday Honours List in June 2015, OMC International Executive Director Dr Terry O'Brien was appointed a Member (AM) of the Order of Australia for "significant service to maritime engineering, to the development of innovative marine navigation equipment and to education".

In November 2014, Dr O'Brien was inducted into the Lloyd's List Australian Maritime Hall of Fame for having a "global impact" with the creation of his world-leading DUKC[®] navigation technology.

Media inquiries: Louise Maher +61 3 9412 6500 <http://omcinternational.com/media-centre/>