SPECIAL REPORT

Maritime Engineering and Salvage

DUKC process evolving with technology

David Sexton

CHANGE is a constant in the world of maritime engineering, a field of which OMC International has been at the forefront for the past three decades.

OMC was established by Dr Terry O'Brien AM back in 1987.

It was Dr O'Brien who pioneered the Dynamic Under Keel Clearance (DUKC) system, a technology form that has led to great productivity and safety improvements at ports.

Dr O'Brien is still very much involved with the business, as executive director, and works closely with his son and chief executive officer Peter O'Brien who runs the day-to-day operations of the business.

During a recent interview, Peter O'Brien spoke with Lloyd's List Australia about recent engineering trends and noted the trend towards web-based technology.

"Everything these days is becoming web-enabled and indeed web-enabling the DUKC has been a big step – it certainly makes (the technology) much more accessible and flexible," Mr O'Brien explains.

"But a key driver for us is expanding the reach of the DUKC through the logistics chain."

The trend towards internet application of DUKC was changing the way it was applied, from long-term planning through to In-Transit monitoring.

"Traditionally DUKC had considered only the short term planning up to the point of sailing and then there was the sense the 'job is done' from a DUKC perspective. The pilots took a bit of paper summarising the DUKC result and sailed and that was that," Mr O'Brien explained.

"But as technology and computer speed have advanced, we could see the opportunities to take the technology much further across the logistics chain."

OMC International CEO Peter O'Brien. Photo: OMC International.

He talked of DUKC being the operational rule or a 'green light' at the port in terms of when is it safe to transit, and therefore a focus has been providing users with DUKC planning tools to maximise performance around the operational rule.

"Part of it for us has been developing platforms to be able to integrate further into the supply chain which ultimately provides greater productivity," he said.

E-navigation

The trends towards electronic navigation (e nav) is one that Mr O'Brien sees as having loomed for some time.

"It is about getting relevant information from ship to shore and back in a way that is meaningful and adds value to the safety and efficiency of a waterway and its users," he notes.

"So a lot of innovation is required in this area which is good because this is an area that has been talked about for the last 10 years or so. I think there is now this general acceptance that it is here to stay and the question is, 'how can we best use it?'

"It is not necessarily about replacing people's jobs but adding value to what they are doing."

Mr O'Brien notes there has been some resistance to e-navigation and that "it is a traditional industry we're in and perhaps there was some fear of the objectives of e-nav".

"But I think there is that sort of acceptance, especially as younger generations coming through, of the value of technology and e-navigation.

"From our side, we've always been very clear about what we do which is to integrate and assimilate as much data as we can.

"Then present information as clear as we can to the users to help their jobs and help them in their roles."

E navigation is reportedly starting to take off overseas with several e-navigation projects.

"For us, we feel we have been at the forefront of e-navigation with our own applied applications operating now for some time but we also want to ensure we stay at the forefront of that rapidly evolving area.

"We always try and look ahead and think about where things are going. We've tried to develop in a way that would fit in with where we think the industry, technology and electronic navigation is going.

"We've invested a lot of R&D into that area which I think hopefully should put us in good stead."

Mining boom changes

Lower prices for key commodities like iron ore, coal and oil are clearly not to everyone's liking.

But for an engineering business such as OMC there is a clear silver lining.

"From our perspective we've actually been busier than ever," Mr O'Brien explains.

"We're very operationally-focused and I think what's happened with the mining boom coming off is that a lot of capital development projects and expansion projects have dried up.

"So what companies have focussed on is to be more productive and smarter and even put out more volume than ever to try and offset the falling prices - volumes going through the ports have even increased or at least not necessarily decreased."

"I guess Port Hedland is a classic case where there was, back in the day, plans for a whole $20bn outer harbour expansion."

But with changing economic circumstances, it was decided to focus instead on getting the best out of the existing assets rather than building new ones, and the success of this approach was recently announced by WA Minister Nalder in November 2015, the Pilbara Port Authority has been able to announce a significant increase in the port capacity

"That fits in nicely with what we do because the DUKC is all about smart use to maximise the capacity of your infrastructure.

So even as consultancy work associated with new project developments might have declined, demand has come in other areas.

"We really need to focus people's minds on maximising the benefits of every dollar they spend and ensuring they spend it as smartly as they can."

DUKC and Geelong

Lloyd's List Australia has taken some pleasure of late in reporting the arrival of record draft tankers and bulkers at the port of Geelong.

This was essentially due to the application of DUKC in the waters of Corio Bay.

Mr O'Brien noted that authorities were keen to maximise their potential.

"It's no secret that Geelong and as a result the port have suffered recently with various major industries closing or set to close," he said.

"They've taken quite a few hits but Viva had come in and replaced Shell with a view to taking a look at whether a long term project is sustainable.

"The port was quite focused on working with Viva to ensure their business case would stack up."

He said there was a focus on bringing in larger and deeper ships to justify the long term sustainability of their investment

"So DUKC has certainly played a big part in helping them get the type of load they need to make the business case stack up and they seem to be very satisfied so far.

"I think that has been a real success story for the port and for Viva and I think as a result of the system going in, the woodchips and the grain ships are now also able to get in bigger and deeper ships.

"With times as tough as they are, greater economies of scale with deeper ships for little extra investment, that's turning into a success for other port users as well and all around it has been a very successful project for the port and its stakeholders."

Ichthys onshore processing facilities one step closer to completion

David Sexton

The INPEX-led Ichthys liquefied natural gas project recently reached an important milestone with the arrival of the final three modules necessary to finish building the project's onshore processing facilities in Darwin.

The modules are described as large assemblies of structural, piping and mechanical equipment and are being connected with other modules to finish the two LNG on-site processing trains.

These trains are to liquefy gas that has been transported to Bladin Point, Darwin via an 890km gas export pipeline from the Ichthys Field off the coast of West Australia.

Ichthys Project managing director Louis Bon said the safe arrival of the last modules was a significant milestone in the development of a "complex and challenging" project.

"In total, 230 modules have arrived from the project's four fabrication yards in Thailand, China and the Philippines. The team has done an outstanding job in shipping them to Darwin and safely installing them onsite," he said.

"This is particularly impressive, given some modules weighed in excess of 5500 tonnes and measured more than 90metres long.

"Mastering the design and fabrication of the modules in huge yards overseas and then shipping them to site is critical for the efficient and effective delivery of such a large and complex project.

"Overall, the project's onshore facilities were designed so that some elements are modularised and others are stick-built onsite in Darwin," Mr Bon said.

For the past two years, pre-fabricated modules are said to have have regularly sailed through Darwin Harbour on the way to the project's Bladin Point module offloading facility.

The module offloading facility (MOF) enables the safe delivery of large modules and oversized equipment, too large to be transported to site by road.

Self-propelled modular transporters with more than 400 axle lines were used to move the modules to their final location on the Bladin Point site.

Mr Bon said the arrival of the last modules signified the Project had entered the final phase of construction and the focus would now move to testing, commissioning and start-up.

"The significance of this milestone cannot be over-stated—the modules are key components of the Project's processing facilities, which will eventually produce up to 8.9 million tonnes of LNG and 1.6 million tonnes of LPG per annum."

"The Ichthys LNG Project will create opportunities and deliver significant long-term benefits for Australia during its forty years of operations."

INPEX Corporation is Japan's largest exploration and production (E&P) company, comparable with other mid-tier international oil and gas E&P companies.

INPEX is currently involved in more than 70 projects across more than 20 nations, including two large-scale LNG Projects, the Ichthys LNG Project in Australia and the Abadi LNG Project in Indonesia, as operator.

The Ichthys LNG Project is a project led by INPEX and the Australian subsidiaries of CPC corporation Taiwan, Tokyo Gas, Osaka Gas, Kansai Electric, JERA and Toho Gas.

The project involves liquefying natural gas lifted from the Ichthys Gas-condensate field offshore Western Australia at an onshore gas liquefaction plant constructed in Darwin, and producing and shipping about 8.9m tonnes of LNG and about 1.6m tonnes of LPG a year, along with about 100,000 barrels of condensate per day at peak.