

*Setting industry standards in UKC management*

### OMC International

OMC International, which is celebrating its 30th anniversary, is an Australian maritime engineering company that is recognized as a world leader in real-time Under-Keel Clearance Management (UKCM). Its proven DUKC® e-Nav technology is regarded as the industry standard for safe and efficient real-time management of UKC.

OMC's customized DUKC® systems are operational in some of the largest bulk, container and multi-cargo ports in the world and in some of the world's most important waterways, including Torres Strait and Canada's St. Lawrence River from Montreal to Quebec City.

While always ensuring safety, there are considerable economic benefits as DUKC® can enable large ships to sail deeper than permitted by traditional, and necessarily conservative, static UKC rules; ships can load more cargo in favourable swell and tide conditions, and can also sail with wider tidal windows, which allows increased terminal productivity. The DUKC® system is always safer than historic static UKC rules because OMC's real-time technology considers all the dynamic variables – as well as ship size – in the UKC decision making process.

The results of the DUKC® system can be promulgated to ship pilots' as a chart overlay, in real-time, allowing visual assessment and transit monitoring to ensure a safe transit. This cutting-edge technology is recognized as one of the only operational e-Navigation solutions; it is being continually developed, incorporating AIS messaging, to meet the future needs of ship handlers with the implementation of the new S102 standards for ECDIS.

#### **Unmatched Safety Record**

The implementation of UKC technology demands the highest quality assurance framework to manage environmental data, port and ship modelling, bathymetry and metocean forecasting. OMC's DUKC® offers a reliable and comprehensive solution for maintaining a safe UKC while sailing through depth restricted channels, and the results are fully validated by its unique track record of more than 160,000 safe sailings without a touch bottom incident.

This technology has contributed significantly to the safety and efficiency of shipping bulk and container cargo; it has generated billions of additional revenue for users who adopt it. No other maritime organization offers such a specific focus on the vertical dimension of UKC management and no other system is operational in 22 ports and waterways around the world. Many ports and safety authorities are recognizing the safety advantages of installing customized DUKC® systems as a risk management tool because grounding hazards are effectively mitigated.

In 2004, Marsden Point near Whangarei, New Zealand, became the first port to install

DUKC® purely on safety grounds. This followed the groundings of two post-Panamax tankers in 2003, within three months of each other, in the approach channel leading to New Zealand's only oil refinery. Before these groundings, Marsden Point had been operating under a static UKC rule without incident for 30 years. It was later shown that a DUKC® system would have advised that these sailings should not be undertaken due to inadequate UKC. By contrast, static rules may not always predict circumstances when a grounding could occur in a port's approach channel and operators presume, sometimes incorrectly, that their existing practices are safe because no incidents have previously occurred.

### **DUKC® for Optimal Dredging Design**

In addition, DUKC® has the potential to offer often significant economic and environmental benefits as it can be used as a conjunctive dredging design tool; channels can be designed to be more effective, and minimize channel dredging quantities and the associated environmental effects. Utilizing the DUKC® system increases port capacity with less capital dredging because OMC's software can be used to create the optimal channel depth profile which matches the UKC requirements throughout the transit so that the amount of material dredged is matched to the depths required for the ships transiting. In the Port of Taranaki, New Zealand, OMC reduced the port's planned dredging costs by approximately 50% through the introduction of DUKC®.

### **OMC iHeave®**

Port authorities are also seeking better data on ship motions and this has led to the design of OMC's iHeave® which measures ship motions in extreme weather conditions. Originally developed by OMC for the challenging

Columbia River Bar, ports worldwide, such as Brisbane, Melbourne, Geraldton, Portland, San Francisco and Halifax, have used OMC iHeave® for highly accurate recordings of real-time ship motions in large swells. These results are allowing ports to assess if their existing rules are adequate, especially as ship sizes continue to grow.

### **Leading Role in UKCM Information Exchange**

In recognition of its unparalleled experience, OMC participates as an Expert Contributor to new e-Navigation developments in UKC management information exchange services. OMC is providing its technology to assist the current IHO S-100 UKCM Project Team (UKCMPT) to develop IHO S-129 based product specifications for UKCM information, which will enable users to receive, and display, UKCM services (IHO, 2015).

OMC was the only Australian representative to participate in international Working Groups for the "Harbour Approach Channels Design guidelines" (PIANC report 121, 2014) and "Use of HydroMeteo Information for Port Access and Operation" (PIANC report 117, 2012). OMC is an industrial member of IALA and participates in the work of its Vessel Traffic Services and e-Navigation committees.

OMC's DUKC® e-Nav technology continues to garner worldwide acclaim and won the 2015 International Bulk Journal Safety in Bulk Handling (Marine) Award.

Thirty years on from first developing DUKC® technology, OMC continues to innovate, lead the world, and set standards for the industry in the increasingly important area of UKC management.

**For more information**  
<http://omcinternational.com>

