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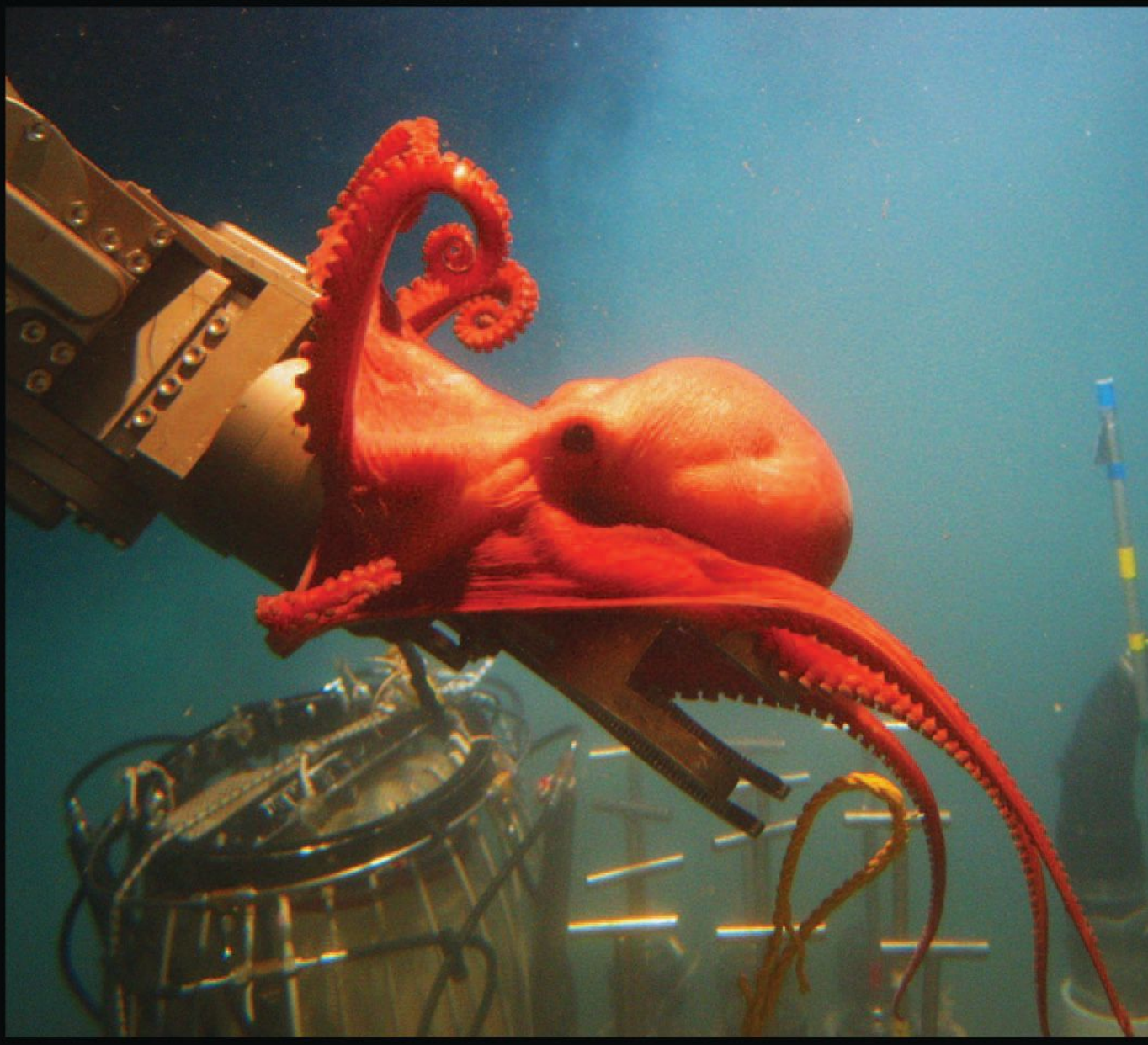

Wärtsilä Ballast Water Management Systems Allow Japanese Bulk Carriers to Comply with Convention

Six new bulk carriers, being built at the Namura and Onomichi shipyards in Japan, are to be fitted with 12 Wärtsilä Aquarius UV ballast water management systems (BWMS). The Wärtsilä systems will enable the vessels to comply with anticipated International Maritime Organization (IMO) regulations. The contracts were signed in October 2014.

Japan has recently ratified the IMO's Ballast Water Management Convention, and these orders are the first for Aquarius UV systems for newbuild vessels from a Japanese shipyard. Deliveries from Wärtsilä will commence at the end of 2014 and will be completed by mid 2016.

The IMO ratification requires support from 35% of the world's merchant shipping tonnage. J apan and Turkey recently ratified the ballast water convention, meaning that contracting countries now represent 32.54%, just 2.5% short of the necessary tonnage. Ratification is, therefore, expected within the near future. When ratified, the IMO's Ballast Water Management Convention will require the owners of up to 40,000 vessels worldwide to install a BWMS.

The US Coast Guard has already implemented legislation requiring compliance with the regulations covering discharges from ships when sailing in US coastal waters. The intention of the legislation is to address the issue of invasive aquatic species being carried in the ballast water of ships and then discharged to the sea where they could possibly harm local species.

The Wärtsilä Aquarius UV BWMS is a modular system utilizing a two stage approach involving filtration and medium pressure UV disinfection technology. The system meets the IMO D2 discharge standard, and has been awarded classification society type approval. For more information, visit www.wartsila.com/en/ballast-water-management-system.

Scottish Government Funds Innovative Tidal Turbine

Renewable Devices Marine Ltd has secured a private funding package, as well as securing £100,000 worth of innovation funding form the Scottish Government, toward the development of the Capricorn Marine Turbine.

The Capricorn Marine Turbine generates electricity from the high efficiency extraction of energy from tidal marine flows. The current variant - Capricorn 125 - generates 1.25 MW of clean energy. The turbine has a horizontal axis, contra-rotating, twin rotor architecture. Each rotor has three blades, designed to be bi-directional in operation, thus negating the need for a yaw mechanism.

Studies have shown that noise at certain low frequency ranges has a negative impact on the navigational abilities marine mammals. Studies have concluded that a single tidal flow turbine operates below these frequencies, however the acoustic emissions from arrays of tidal stream turbines will enter into the spectrum known to interfere with the marine mammal navigation. In 2012, SRM Projects Ltd was forced to withdraw its license application for a turbine array in British Columbia due to the acoustic risk to marine mammals. A turbine that can be deployed in sensitive areas will expand the global tidal stream resource benefiting the tidal stream industry. The benefits to the Scottish and UK economy will be substantial.

The Bk97 buoyancy system allows the Capricorn Turbine to be towed to site as a barge and then sunk and lifted using small and medium sized vessels. This reduces the cost of maintenance and eliminates the risks associated with lifting at sea. At full buoyancy the turbine floats, and can be serviced at the deployment site, or towed to dock for replacement. For more information, visit www.capricornmarine.com.