

Stern Tube Conversions Reduce Pollution Risk



Peter R Cresswell converted from oil lubricated propeller shaft bearings to a complete seawater lubricated COMPAC bearing system in 2010

The conversion from sealed oil lubricated bearings to open water lubricated bearings on the bulk carrier *Peter R Cresswell* demonstrates the way owners of existing ships are solving oil pollution leakage issues.

A growing number of owners of existing ships are coming to realize that the environmental and maintenance benefits offered by switching to water lubricated stern tube bearings are as important to existing ship owners as they are to these building new vessels.

In 2011, new US Environmental Protection Agency National Pollutant Discharge Elimination System (NPDES) rules specifically targeted oil lubrication discharges from stern tubes. The new requirements carry extensive civil and criminal penalties for violations, including the threat of jail. In Europe, meanwhile, the 2007 European Union Maritime Policy specifies the elimination of all vessel discharges into the marine environment by 2020.

Leakage from an oil lubricated stern tube does not necessarily mean negligence. Currently, the majority of commercial ocean-going ships operate with a propulsion system using a propeller shaft supported by oil lubricated metal bearings with oil contained in the stern tube by forward and aft shaft seals. According to

seal manufacturers, the seal must leak (aft-into the sea or forward-into the ship's bilge) at the shaft/seal interface to function properly. Simple fishing nets or rope caught on a ship's rotating shaft can damage the aft seal, allowing stern tube oil to flow out into the sea. According to seal repairers, this occurs on a frequent basis.

While Deepwater Horizon may be dominating the environmental landscape, it might be worth considering that a typical ocean-going ship's stern tubes contains 1500L (396 US gal.) of oil. Even a conservative stern tube leakage rate of 6L (1.6 US gal.)/day as set by Lloyds Register Class Society Seal Type Approvals from a world fleet of around 45,000 vessels could add up to 'normal' operational stern tube oil pollution of over 80 million litres (20 million US gal.) annually.

Oil and water

One of the owners most recently persuaded of the benefits of water lubricated bearings include Algoma Central Corp. During the recent St. Lawrence Seaway freeze, Algoma took the opportunity to convert stern tube bearings on board the bulk carrier *Peter R Cresswell* to the COMPAC water lubricated system delivered by Thordon Bearings Inc. The conversion included a Water