

**Title: An Environmentally Preferable Lubricant for Tunnel and Azimuth Thrusters**

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***Abstract***

Ocean-going vessels use oil lubrication in the tunnel thrusters. Offshore vessels also use oil lubrication in the azimuth thrusters. Oil leakage from the thrusters is a serious environmental issue in these vessels. In this paper, a water-soluble, environmentally preferable lubricant newly developed for such thrusters is outlined. Properties required for a thruster lubricant and a suitable base fluid are discussed. Environmental compatibility (biodegradability, low toxicity and no sheen or sludge formation), viscosity, lubricity, oxidation stability, rust prevention and seal compatibility of the new lubricant are described. These properties show that for tunnel and azimuth thrusters the new lubricant can improve not only their environmental compatibility but also their seawater tolerance. Field experience of the thruster lubricant is also presented.

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