

Environmentally acceptable lubricants for maritime applications

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Oil leakages from ships to sea waters represents an actual environmental problem. One of the sources of oil leaks is the stern tube bearing system. The leak from stern tube bearing is estimated by various authors to be about 3 liters/day in average. They also report that the total annual operational oil leaks from of stern tube systems is estimated to be in range from 130 – 244 milion litres per a year. To lower the environmental impact the use of Environmentally Acceptable Lubricants (EALs) became mandatory since 2013 (VGP, EPA). However, the transition from mineral oils to EALs was accompanied by several stern tube failures which were related to different properties of EALs compared to mineral oils. Due several technical difficulties and seal incompatibilities, the use of mineral oils still prevails nowadays. Current EALs available on the market have some disadvantages compared to mineral oils such as lower oxidation stability, hydrolytic stability and higher price. In this contribution several routes for production of EALs based on synthetic esters, polyalphaolefins, polyethylene glycols and blown rapeseed oil will be shown and discussed. Also, different properties such as rheological behavior, viscosity index, hydrolytic stability and other relevant parameters will be shown and compared.

Acknowledgement

This work has been done in the frame of the project: “Novel Routes for cost effective Environmentally Acceptable Lubricants” no. TO01000250 supported by Norway and Technology Agency of the Czech Republic.