

*The Hong Kong Polytechnic University  
Department of Logistics and Maritime Studies  
Research Seminar*

## **Indirect Ship Hull Condition Monitoring Using Speed and Fuel Consumption Analysis**

by

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**Venue: R507, Shirley Chan Building**

**The Hong Kong Polytechnic University**

**(Conducted in English)**

### **Abstract:**

Deteriorating hull condition due to marine growth and a general increase in roughness with aging contributes to a substantial increase in the water resistance and fuel consumption of an oceangoing vessel. Accordingly, the monitoring of fuel consumption allows for continuous indirect monitoring of the hull condition if other variables affecting fuel consumption are properly controlled for. In this paper, we present a methodology for benchmarking hull condition for a fleet of oil tankers based on data on the vessels', fuel consumption, speed, weather conditions and loading condition. Our methodology is based on multivariate regressions using fixed effects models. We find that incremental fuel consumption due to deteriorating hull condition is vessel specific and dependent on both time and maintenance regime. Our analysis is important background for the optimization of hull cleaning intervals.

### **Bio:**

Roar Ådland joined the Norwegian School of Economics as a professor in 2012. He is the holder of the Bergen Shipowners' Association Chair in shipping economics at the Center for Shipping and Logistics. Professor Ådland received his Ph.D. in Ocean Systems Management from the Massachusetts Institute of Technology (MIT) in 2003. He also holds a Master of Science degree in marine technology from NTNU, an M.Phil. in Business Economics from NHH and a Master of Science in Ocean Systems Management from MIT. Before becoming an academic, Roar Adland had a career in the shipping industry, first as an analyst with Clarkson Research Ltd. in London and since 2006 as a trader and portfolio manager of freight derivatives (FFAs) at Clarkson Fund Management Ltd., a shipping-focused hedge fund. Roar Adland's research focuses on freight derivative pricing and trading, maritime big data, vessel valuation, shipping risk management and bulk freight market modeling.

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**All are welcome!**