CENTER FOR MATERIALS PROCESSING AND TRIBOLOGY SEMINAR

Effect of fatigue on tribocorrosion of passive materials used in offshore drilling applications

Nuria Espallargas, Associate Professor
Department of Engineering Design and Materials
Norwegian University of Science and Technology (NTNU)
Trondheim, Norway

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Abstract Many critical tribo-components operating in harsh marine offshore environments experience extremely short service life. This is often in contrast to their documented corrosion, wear and fatigue resistance alone, based on standardized test methods. Consequently, work on identifying these multi-degradation phenomena was started at NTNU in collaboration with industrial partners. This talk will discuss the synergy effects between corrosion, wear, sustained tensile loading and fatigue, in accelerating surface deterioration. Maintenance, repair and replacement of critical load bearing (offshore) tribo-components are usually demanding on resources and are (very) costly. Therefore the service life and performance of such components are relying on the understanding of these degradation mechanisms of the various passive metals and coatings used in these offshore applications. Test equipment/ methodologies and mathematical models for studying the degradation mechanisms have been developed at NTNU. These will also be reviewed along with selection of coatings and materials for operation in these harsh operating environments.

Biosketch Nuria Espallargas is an associate professor in Tribology and Tribocorrosion at the Department of Engineering Design and Materials, Norwegian University of Science and Technology (NTNU). Since 2007, she has led the Tribology Lab at NTNU. This lab was built in cooperation with SINTEF, which is the largest independent research centre in Scandinavia. Dr Espallargas's fields of research are: tribology, tribocorrosion, and surface technologies. Most of the research is applied to industrial processes with main focus on offshore drilling, oil & gas production, rock excavation, surface modification of rotating components used in wind turbines, and surface treatments for biomaterials.

For more information please contact S. Chandrasekar (chandy@purdue.edu)