EuroSciCon

Surname:	TORTOR
First name:	JOHNBULL TOM
E-mail:	johnbulltortor@gmail.com
Abstract Title:	**MATERIAL SOLUTIONS TO REDUCING WEAR AND EROSION IN OIL AND GAS INDUSTRY**
Author:	ENGR. TORTOR, J. Tom

[1] *Author Affiliation (Nigeria Maritime University, Okerenkoko, Nigeria)*

Erosion wear with regards to the oil and gas industry, is a damage mechanism wherein, surface of engineering materials are damaged and/or removed due to the frequent impingement by erodent particles flowing in and through production equipment, in mixture with the hydrocarbon fluids during production, transportation and processing operations. Solid particles impaction and liquid-droplets cavitations are the major malignant material surface damage snags in the erosion wear process, which results in failure of components such as choke valves, separator internals, pipelines and other production equipment(s) in the industry, that result in financial loss.

This study is concentrated on material solutions to reducing wear and erosion in the oil and gas industry. As oil and gas production moves into extreme harsh, hard to reach subsea environments, frequent equipment failure and maintenance is not a desirable venture. The need to use advance materials solutions in the design and manufacturing of critical components is and should be management's top priority. Damage to production equipment often comes with several environmental and economic issues.

This paper extensively discussed a holistic investigation of the fundamental influencing factors/parameters for the material surface erosion wear phenomenon prevalent in the oil and gas industry. The damage mechanism of two critical components, (choke valves and separator internals) were assessed and Stellite alloys are selected as the cost effective advanced erosion wear resistant material for these components design.

The chemical composition and microstructures including the physical and mechanical properties of the Stellite alloys are evaluated and a comprehensive engineering material surface treatment methods suitable for the materials is explained. A statistical analytic model prediction on the erosion wear rate of the selected alloys is also completed and compared with existing models, and a significant agreement is observed in the results.

Keywords:

- Alloys
- Erosion
- Material Solutions
- Oil and Gas Industry
- Wear

Professional Biography:

Engr. Tortor J. Tom, BEng, MSc, (PhD in View)
Lecturer,
Nigeria Maritime University, Okerenkoko, Nigeria
Faculty of Engineering,
Department of Petroleum and Gas Engineering.
(+234)8063297518; (+234)8050330732
johnbulltortor@gmail.com



Engr. Tortor J. Tom completed his BEng. Degree from Niger Delta University, Nigeria and proceeded to the UK for his MSc at Coventry University, UK. He is currently a Lecturer in the Petroleum and Gas Engineering Department at Nigeria Maritime University, Okerenkoko, Nigeria and a Consultant to NECONDE/IMPAC Ltd, an indigenous Oil and Gas Engineering Company, Operator of OML 42, Jones Creek, a Nigeria prolific oil field formerly operated by Shell Petroleum Development Company (SPDC). His research interests are in the areas of Petroleum Production Operations, Reservoir Engineering, Renewable Energy, Advanced Engineering Materials Production, Flow-measurement and Offshore Technology. He is widely experienced in oil and gas production operations and has worked in that role in the oil and gas industry over the years. He has published more than 20 papers and articles in journals of international repute and currently undertaking a PhD research in hydrocarbon capturing in the oil and gas engineering industry.