



North of England Evening Meeting

The Design & Analysis Challenges for Advanced Service Valves

Wednesday 18th January 2017

Newcastle University (Armstrong Building, Room ARMB1.49, Newcastle upon Tyne, NE1 7RU)

Registration 18:00, Talks 18:30, Refreshments 20:00

Advanced Engineering Analysis as a Valve Design Verification Tool

Lee Brimer, Senior Engineer, PDL Solutions (Europe) Ltd

Finite element analysis (FEA) can be an invaluable tool in modelling the behaviour of complex designs early in the design process, in order to provide confidence on design performance and to highlight areas where improvements can be made. This presentation will focus on an order BEL Valves secured to supply a 12" split gate valve for the Sakhalin Island development. As part of the verification requirements for this valve, particular focus had been applied to the functionality of the valve design under large external loads, this was due to previous issues observed by the operator. The valve design was assessed using FEA in order to highlight any potential issues and ensure the critical sealing functionality under the worst case external loading. This presentation will give an overview of using FEA to validate valve design and how PDL used a complex assembly model with non-linear contact to assess the functionality of the 12" split gate valve for the Sakhalin Island development.

Design Challenges and Verification of Valves to Keep Pace with Oil Field Development Rate

Malcolm Hay, Project Engineer, BEL Valves Ltd

As oil fields develop, operating conditions can change unexpectedly. Certain forces may act in an unexpected way and have a detrimental effect on the product. In the event a failure occurs, actions have to be taken to ensure supply meets demand and safety procedures are followed. Customers may need to replace equipment with a more robust solution. Malcolm's presentation will discuss how this inevitably leads to design challenges for valve manufacturers', including more stringent testing and initial design verification in the form of FEA (finite element analysis).

Expected Challenges and Design Verification of HP/HT Valves Developed for Subsea Service

James Brierley, Graduate Project Engineer, BEL Valves Ltd

Global depletion of oil resources has led to oil field discoveries that require engineering for more onerous conditions. One of these conditions presented is HP/HT (High Pressure / High Temperature). BEL Valves have been at the forefront of HP/HT valve development for some of the biggest projects in the subsea engineering sector. This presentation will cover how the planning for these conditions requires extensive design verification; utilising FEA (finite element analysis), CFD (computational fluid dynamics) and applying the latest and most rigorous testing regime to mitigate risk of failure as far as is reasonably practicable.

Sponsored by PDL Solutions (Europe) Ltd and BEL Valves Ltd