Solutions Developed to Meet Very Stringent Requirements for an Offshore Application of a Reciprocating Compressor System

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Abstract:

During the lifetime of an existing gas well, located in the D15FA/FB field in the North Sea, the pressure has dropped and consequently production is reduced.
A depletion compressor must be added therefore to this existing platform to increase the production. This sounds easy but has been very challenging due to physical and other restrictions.
For this platform it appeared that a reciprocating compressor was the best choice based on its flexibility with respect to the specified operating conditions, available power, and efficiency.
However, a reciprocating compressor generates additional vibrations and noise in the living quarters, which are located close to the compressor system.
The specified requirements, to meet the allowable noise and vibration limits in the living quarters could, in this specific case, not be met with straightforward solutions.
This presentation will explain the background that has led to the very stringent requirements and the efforts taken in compressor, skid, motor, piping and deck design to meet the specified requirements.
Special attention will be given to the measures taken to reduce the excitations acting on the platform, and the mechanical and acoustical analysis that have led to the final design of this reciprocating compressor system.
The solutions that have been developed can be regarded as non-standard and have resulted in new directions in solving very demanding system requirements.