



## Abstract

### Session 32: Pulsation & Vibrations I

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#### Title

**32-1: Piggyback riding on the FPSO Dumbarton and the power of acoustics**

#### Summary

Originally built by Kerr-McGee and formally known as *Global Producer III*, Maersk Oil's FPSO in the Dumbarton field is used in a redevelopment project of the Palaeocene oilfield in the UK North Sea.

In the past, the installed three high speed (890 RPM) three stage Dresser Rand reciprocating compressors with 6 cylinders experienced high frequent pulsation and vibration problems causing even the cylinders to 'oval-ize' over the course of time.

PEB Engineers & Constructors together with Aker Kvaerner Offshore Partners – Aberdeen modified / redeveloped the compressors to suit the Dumbarton Field requirements. TNO Science & Industry has performed an extensive dampercheck and pulsation analysis with a focus on the high frequent dynamics in order to optimize the acoustical behaviour of the system and thus reducing the cylinder vibrations.

This paper shows how conventional analysis methods are used to come up with a simple yet innovative solution for high frequent pulsation problems involving piggybacks and well designed damper internals.

Now, for over a year the system is running smoothly from a pulsation and vibration point of view.