

# CASE STUDY



## Case #00009

### Endura® V91J extends ED cycles and improves safety for high pressure compressors

#### The Problem

Two 4-cylinder and four 6-cylinder HOS reciprocating compressors located on three floating platforms were experiencing repeated problems with failure of OE sourced seals due to gas leaks.

The compressors operating at 150°C, at a pressure of 200 bar with a decompression to 12 bar in 1 minute would fail after just 10 cycles. The gas leaks resulted in the compressors having to be stopped, so causing explosive decompression on the valve head seals (from 3,000 revs to stop in 6 seconds). Each gas leak was reported to the HSE and due to safety concerns any future incidents would result in closure of these rigs. To avoid this, a solution was required that could achieve at least 30 cycles.

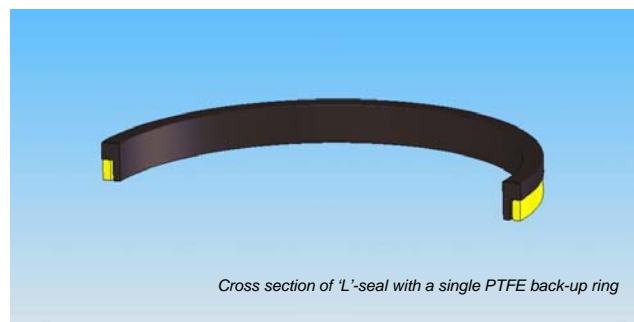
#### The Material

Endura® V91J is an extremely versatile high performance 90 °IRHD hardness fluoroelastomer (FKM). This material provides outstanding mechanical strength and high pressure performance.

The excellent explosive decompression resistance of this material has been proven in external testing to **TOTAL** specification GS PVV 142 03/01. Endura® V91J has also produced excellent results during sour gas (H<sub>2</sub>S) testing to **NACE** TM0187 standard.

#### The Solution

Endura® V91J O-ring seals with PTFE back-up rings manufactured by PPE were fitted to provide high levels of resistance to explosive decompression. During six months in the field the compressors have operated without a single leak occurring for 30+ cycles consistently. On removing the Endura® seals after use they were found to be completely intact, showing little sign of explosive decompression.



Further seal geometry development by PPE provided an L-seal with a single PTFE back-up ring which provided even better results. The client was so impressed they ordered a complete refit of compressors on a number of rigs, which resulted in increased efficiency and improved safety.

#### The Outcome

A spokesman from the compressor company said *"the standard offering for ED conditions in compressors was Aflas as it is naturally impervious to gas and offered good ED resistance. However, Aflas is not suitable in cold temperatures as it is difficult to fit into the grooves which often resulted in gas leaks. We have been trying for years to sort this problem out, Endura® V91J offers improvements in all areas"*.

*"The superior properties and ED resistance of Endura® elastomers are key to the success seen in this application, characteristics that are unrivalled in the oilfield sealing industry"*. The HSE were so impressed by the dramatic improvement, they issued information to all North Sea platforms citing the case as an opportunity for improvement.