



New high pressure seals launched by John Crane

Over the last 2 years John Crane has invested over £5 million and built a dedicated team of experts to deliver the next generation of sealing products for the Turbomachinery industry.

The first of these new products is a new high pressure variant of the Type 28EXP. This seal features a silicon carbide running face which is specially designed for today's high pressure applications.

Re-injection compressor trains, with their seemingly ever increasing pressure requirements, are expected to play vitally important role in improving oil extraction yields and enabling companies to exploit sour gas sites both safely and efficiently. The emerging carbon sequestration market is also expected to generate increasing demands on the seals. This new development ensures that John Crane seals will play a key role in both of these emerging areas of the Oil and Gas industry

John Crane have nearly 200 high pressure seals operating in the field and this new version of the HP seal will enable operation way beyond existing limits.



A great result

The new 'hard' face uses a solid Silicon Carbide material which is then coated with a Diamond Like Coating (DLC). The Silicon carbide material provides a high modulus, limiting pressure deflection whilst the coating minimises friction, and maximises wear performance. Having developed the new face material using John Crane's advanced modelling techniques, the seals were subjected to a rigorous testing program covering all areas of the operating envelope.

The 2 year development program was followed by a six-month validation process which was developed in close collaboration with GEO &G in Italy. The objective of the program was to review every aspect of the design / development / test and evaluation process to understand the capability of the seal and ensure there were no surprises. To ensure impartiality and credibility the entire validation process was independently monitored and approved by ODS, the Lloyds Turbomachinery consultants based in Denmark.

The validation process comprised a total of 30 deliverables covering all aspects of seal design and operation, as well as looking at the extremes of the seal operating environment. The intensive testing program covered the equivalent of six years' slow roll, in addition, a mirror testing programme replicated the start-up and run-down speed/time plots of a typical turbo compressor set covering more than 200 cycles. Finally the week long 'Factory Acceptance Test' covered operation within the complete operating pressure envelope from low pressures through to the maximum pressure of 425bar. Despite this particularly intensive testing program, no degradation of the seal running faces was detected.

Claus Myllerup, Managing Director of ODS, commented: "The validation process for the new seals has been extremely thorough. It is unusual for ODS to be involved in a program like this from such an early stage, but it enabled us to provide valuable third party verification of the work as it progressed."

GE gave their final approval to the High Pressure seal variant by signing off the development program April 2007.



CLAUS MYLLERUP

Investing in innovation

Development of the new seals has seen John Crane make a significant investment in both people and facilities, which are expected to play a key role in future product development.

Not only has it spent £3 million on new test facilities in the UK and USA, it has also invested a further £1 million in a large diameter machining facility. The company has also recruited a total of 16 new Development Engineers who are dedicated to providing such new developments to the industry. This powerful team, range from graduates with specialist expertise in areas such as Computational Fluid Dynamics, to highly experienced industry experts such as Christian Kirchner.

Christian explains: "I joined John Crane because of its reputation as a technology leader and its clear, long-term commitment to developing new and innovative products and so far my experience here has far exceeded my expectations. I have been very impressed by the level of passion for product development and it has been very refreshing to see this passion backed by such a high level of investment in people and facilities."



CHRISTIAN KIRCHNER

A bright future

John Crane's Turbomachinery Division recently received the Queen's Award for Enterprise, which praised the company's success in International Trade, expanding its business beyond the general levels of market growth, and its efforts in developing and marketing advanced technologies.

Ian Goldswain, Business Development Director, Turbomachinery Solutions, comments: "Both this award and our ongoing investment in new technologies and people are testament to our long-term commitment to innovation and continuous product development – this, and working in close partnership with our customers, is what sets John Crane apart."



IAN GOLDSWAIN