

Optimized rotary shaft seal systems for screw compressors to meet growing requirements

Challenge	The backup ring of a sealing system for screw compressors failed after a very short time. The failure led to a massive oil leakage at the compressor. The cause was a provoked failure of the primary seal and a non-functioning oil return system. Thereby the system pressure built up on the backup seal, for which, however, it is not designed.
Solution	ElringKlinger quickly identified the problem and provided the backup seal with a supporting extension so that safe operation is maintained even in the event of a defect in the primary seal under unchanged application conditions.
Result/Conclusion	The improved secondary seal has proven its worth in numerous test bench runs and is being successfully mass-produced by ElringKlinger worldwide.

The requirements for modules and assemblies in screw compressors are constantly increasing. What the individual components must achieve is increasingly influenced by the ambient conditions. Ever higher performance requirements and improper handling additionally increase the risk of failure.

A manufacturer approached ElringKlinger with a problem in the area of shaft sealing in order to obtain a sustainably efficient solution. The actual causes though were only uncovered by internal test bench trials.

The challenge was to design a sealing system consisting of two rotary shaft seals in such a way that, in the event of a failure of the primary seal as well as a simultaneous failure of the oil return system, the backup ring would continue to seal despite the maximum pressure load. Following a detailed description and clarification of the requirements, ElringKlinger was able to design an appropriate solution.

The system was ultimately fitted with rotary shaft seals which, thanks to specially adapted material properties, permit long service lives even with dry running/lack of lubrication. Furthermore, the backup ring was optimized into a high-pressure special type.

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