

CPI EMISSIONGUARD™ TR² Critical Non-Lube High Wear Rate Application



The compressed gas in this supercritical CO₂ application (80/100 bar, 1,160/1,450 PSI) is used as a bio solvent to kill bacteria in the food industry.

The Challenge

The customer wanted to improve lifetime in this application's particularly demanding conditions. The supercritical CO₂ is a bio solvent, so within the compressor this acts as a cleaning agent, removing the transfer film from the piston rod surface, where it is essential to create the transfer film in dry running conditions, in order to achieve the optimum running life and sealing performance.

Consequently the wear rate is very high, leakage rate is severe and the MTBF is very short: 500 to 1,500 hours maximum.

The Solution

With CPI's EMISSIONGUARD™ TR² ring's low frictional heat generation and extended wear allowance in material, a running life of 4,500 hours has been achieved with a leak rate of 2Nm³h (1.78 cfm).

Original MTBF was 500 hours extended to 1500 hours, but with a very high leakage of >20Nm³h (11.77 cfm)

The customer is very happy with the performance to date and now hopes to achieve 6,000 hours running life, which seems to be achievable based on the inspection made.



**CPI EMISSIONGUARD™
TR² rings increased
running life to 4500 hours
and counting, with a leak
rate reduced to 2Nm³h**



CPI EMISSIONGUARD™ TR² in CPI material after 4,500 hours running life



Non-CPI rings after 1,500 hours running life