PERFORMANCE STUDIES

Field Reports from Cook Compression

Redesign Extends Run Time for Hydrogen Chloride Compressor

SCENARIO

A plant in France was struggling with rapid ring and packing wear on a hydrogen chloride compressor. The HCl compressor is a Burckhardt three-stage, tandem-piston, nonlube vertical unit with discharge pressure of 30 bar (436 psi). Leakage across the piston rings and rapid ring wear were causing a reduction in the throughput of the machine. The customer had to replace rings and packing every 3 to 6 months.

SOLUTION

Cook Compression was challenged to make design improvements that would increase the life of the ring and packing components, thereby improving the efficiency of the machine.

Cook Compression performed a thorough design review, recommending modifications to the piston and rider ring styles on all three stages of the tandem piston. Cook Compression also redesigned the pressure packing to include BTRR solid ring styles and changed all sealing ring materials to high-performance Cook TruTech™ 3330.

RESULTS

Since implementing the Cook Compression improvements, the compressor has continued to run without problems for over a year. Previously, gas flow from the machine would drop after only a few weeks following installation of new rings and packing. After the Cook Compression redesign, there was no reduction in flow rates.

The Cook solution also dramatically reduced the consumption of nitrogen gas used to purge the distance piece between the main packing and intermediate packing. Due to the poor performance of the previous packing design, nitrogen pressure had been set to 2 to 3 bar (29 to 44 psi). Now, nitrogen pressure has been reduced to 0.5 bar (7 psi), with no adverse effects on packing case performance.

Because of this success, the customer has chosen Cook Compression to provide replacement rings, packing, new valves and valve reconditioning services for two other machines.

Three-stage, tandem piston

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