

Hydrogen Compressor Conversion to Non-Lubricated in Food Processing



The Challenge

The customer compresses hydrogen gas for use in food processing. It was necessary to convert the 2 stage 3,190 psi (220 bar) vertical tandem hydrogen compressor from lubricated to non-lubricated service to eliminate oil from the gas to prevent any possibility of contamination of the food process. The compressor was originally supplied with cast iron rings.

High pressure hydrogen is a very demanding application to obtain long ring life. Combining this with the need to convert from lubricated to non-lubricated duty presented an extremely challenging upgrade.

The Solution

CPI, part of the Howden group, was awarded the project of converting the compressor, where CPI Special Polymer Alloy material grade CPI 192 was proposed for the piston, rider and packing rings. As part of a further upgrade, CPI re-designed the 2nd stage piston and liner, allowing for an increased quantity of piston rings to be incorporated.

Following the conversion and further upgrade, the compressor provides a service life of approximately 12,000 hours between scheduled stoppages for wearing part renewal and is considered a complete success by the customer. The project was awarded the "Best Product Supply Improvement" within their company.

