

Breathing new life into a CO₂ compressor

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Routine maintenance often highlights items that need repairs, but discovering a major high-pressure asset is severely corroded has the potential to significantly impact operations. One crop nutrition company in Germany identified just such a problem and needed a new compressor cylinder to be installed at the next scheduled shutdown, just six months away. The solution offered by Burckhardt Compression not only met the required timeline, it also addressed several other related issues at the same time.

Prevention is always better than cure; avoiding unplanned downtime through proactive maintenance is key to extending reliability and minimizing costs. At the same time, recognizing the need for expert intervention and appreciating that it doesn't necessarily come from the original equipment manufacturer (OEM), can support a faster resolution.

Searching for a solution

The routine maintenance inspection of a CO₂ compressor and its 2'410 kW (3'230 hp) motor revealed that the cylinder was heavily corroded. Looking at the history of the machine, the cylinder support had broken repeatedly, causing unscheduled shutdowns. The plant's maintenance team wanted to achieve a reliable and sustainable solution that would ensure the long-term reliability of the compressor.

The first major challenge was finding the expertise required to resolve the problem, which can be difficult for ageing assets that are no longer supported by the OEM. In

this case, Burckhardt Compression, which has a global presence and decades of expertise in compressor engineering, was the first port of call.

From the outset, the best solution appeared to be the manufacture of a new cylinder using reverse engineering techniques. This would enable several issues to be resolved at the same time. The new cylinder could be produced using forged steel, rather than cast steel and more robust cylinder supports could be incorporated to improve reliability.

Delivering multiple benefits

A field service engineer was quickly arranged to visit the site and take the necessary dimensional measurements. Due to operational restrictions, this task had to be completed within one day. The objective was to record all the data required to manufacture a new cylinder that would be a direct replacement as well as achieving improved performance.

Burckhardt Compression's engineering skills and manufacturing facilities ensured that the replacement cylinder offered the best possible solution. The opportunity to improve on the original design enabled the new cylinder to be optimized for better cooling as well as easier cleaning.

As a result of Burckhardt Compression's innovative solution, the refurbished compressor has received a new lease of life. Reliability is greatly improved, and the cylinder support has retained its integrity; all of which was achieved within a tight timeframe and in budget.

Matthias Reese, Project Management & Engineering at Burckhardt Compression concluded: "The solution we offered was exactly what the customer was looking for.

With our systematic approach, our compressor experts not only looked at the obvious issue but wanted to find a holistic solution to improve the reliability and support the customer's sustainability goals. The compressor has been running without issues for almost two years now and we have received another order for the exact same solution for another compressor.”

Image captions:



Image 1: The original compressor suffered from reliability issues.



Image 2: Machining the new cylinder from a single forging.

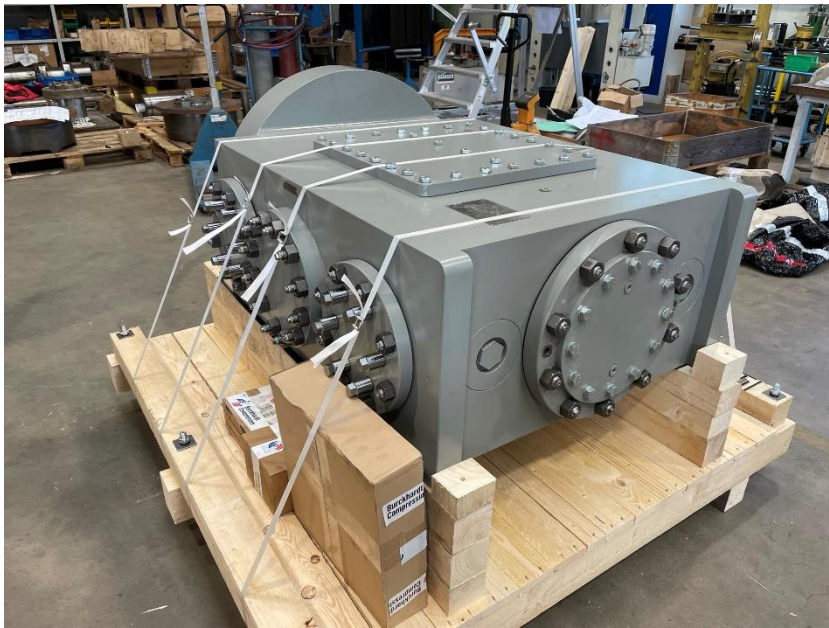


Image 3: The new cylinder, assembled and ready for installation

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About Burckhardt Compression

Burckhardt Compression is the worldwide market leader for reciprocating compressor systems and the only manufacturer and service provider that covers a full range of reciprocating compressor technologies and services. Its customized compressor systems are used in the gas gathering and processing, gas transport and storage, refinery, chemical, petrochemical as well as in the industrial gas and hydrogen mobility and energy sectors. Burckhardt Compression's leading technology, broad portfolio of compressor components and the full range of services help customers around the world to find the optimized solution for their reciprocating compressor systems. Since 1844, its highly skilled workforce has crafted superior solutions and set the benchmark in the gas compression industry.

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For further information please visit www.burckhardtcompression.com

Press contact:**Burckhardt Compression**

Claudia Pröger

Global Marketing Manager

+41 52 261 50 70

claudia.proeger@burckhardtcompression.com

PR agency:**DMA Europa****Anne-Marie Howe**

Progress House, Great Western Avenue, Worcester,
WR5 1AQ, UK

Tel.: +44 (0) 1905 917477

anne-marie.howe@markettechgroup.com

news.dmaeuropa.com