Hydrogen trailer filling compressors - 24 years of proven reliability - and still going strong

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Maintaining reliability in any aspect of the hydrogen energy cycle is challenging, but achieving it over nearly 25 years is a remarkable achievement. Burckhardt Compression has sustained an enduring relationship with Infraserv Höchst in Germany since the delivery of two hydrogen compressors for a trailer filling station. Since then, the compressors have delivered excellent availability and a mean time between overhauls (MTBO) of 8'000 - 9'000 hours.

Hydrogen filling points for tube trailers are a crucial link in the delivery of fuel to the end users. However, they also pose significant challenges in terms of reliability. By their nature, they require compressors that frequently start and stop, which traditionally can negatively impact reliability. In addition, any planned compressor downtime needs to coincide other equipment to minimize disruption.

Reliability built in

Looking back to 25 years ago, the task of delivering high-pressure hydrogen was fraught with difficulties – working with the smallest molecules on the planet and ensuring no leaks from a compressor operating at 230 barg was far from easy. Today, similar installations are specifying up to 550 barg and Burckhardt Compression has continued to innovate and develop reliable solutions for the industry.

Decades of experience and the development of proprietary materials have enabled Burckhardt Compression to deliver some of the most reliable equipment in the industry. For the two 2CS hydrogen compressors in this application, frequent

start/stop operations were expected as part of normal operation. This could have implications for the intervals between maintenance, but for a manufacturer with so much experience, this requirement could be easily accommodated.

From the outset, Infraserv Höchst had some challenging goals. The new trailer filling station also needed to have low operational costs and the compressors had to have maximum availability. The target of 8'000 – 9'000 hours was set to match the overhaul requirements of other equipment, but Burckhardt Compression was confident of delivering an MTBO of 12'000 hours if required.

Strong local support

Achieving this extended durability and efficiency is only possible through expert design capabilities and carefully selected materials. Burckhardt Compression has developed proprietary materials, such as the Persisto® rings, and Redura® sealing systems, which are key components for high-pressure, dry-running compressors that need to operate at the highest standards.

These mechanical solutions can be paired with digital condition monitoring, which is important in establishing operational data and enhancing performance and reliability. In this case, the facility uses many compressors for different gases across the site, including numerous Laby® compressors, all of which are supported by local technicians from Burckhardt Compression. The company's strong presence in Germany includes four locations that provide customers with expert support that is available 24/7, which helps to keep the total cost of ownership (TCO) to a minimum.

Another crucial aspect of this relationship has been communication, which is key to a successful partnership. A dedicated single point of contact was appointed by Burckhardt Compression to ensure an effective exchange of information, which enabled the efficient delivery of all aspects of managing the compressors. From initial commissioning and training to planned maintenance and troubleshooting, the whole process has been seamless.

Optimizing productivity for the future

Steffen Enghard, Betriebstechnik Mechanik, Infraserv Höchst commented: “Over the past few years, we’ve experienced an almost entirely trouble-free operation – with minimal unplanned maintenance and hardly any unexpected downtime. This has enabled us to ensure optimal productivity for our company. The continuous support from Burckhardt Compression has been invaluable, ensuring our equipment performs faultlessly. The hydrogen trailer filling process is a key element of our operations and availability is essential.”

The ability to provide expert support as well as class-leading solutions for improving reliability has been a key factor in sustaining the relationship between Infraserv Höchst and Burckhardt Compression. As the energy transition continues, and the global infrastructure for hydrogen becomes more established, so the global network of compressor experts and their ability to deliver support 24/7 will grow to ensure ongoing success.

Image captions:



Image 1: Infraserv Höchst is the operator of Industrieparks Höchst , a 460-hectare industrial park in Germany. © 2024 Infraserv GmbH & Co. Höchst KG



Image 2: Decades of experience and the development of proprietary materials have enabled Burckhardt Compression to deliver some of the most reliable equipment in the industry.

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About Burckhardt Compression

Burckhardt Compression delivers leading compression solutions that enable a sustainable energy future and support the long-term success of its customers. The Group's business is driven by three global megatrends: a growing global population, increasing demand for energy security, and the ongoing energy transition. With its highly engineered reciprocating compressor systems and services, Burckhardt Compression plays a vital role across applications such as hydrogen, gas infrastructure, chemical processing, and industrial gases.

Through its brands Burckhardt Compression, PROGNOST, SAMR Métal Rouge, Shenyang Yuanda Compressor, and Fornovo Gas, the Group offers a comprehensive portfolio of reciprocating compressor technologies, digital monitoring solutions, and lifecycle services.

Founded in 1844, Burckhardt Compression has continuously evolved alongside its markets, from early engineering innovations to today's advanced compressor solutions. Headquartered in Winterthur, Switzerland, the company operates globally with 35 subsidiaries, as well as three manufacturing and five assembly sites.

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