

## **Making the most of the industrial metaverse**

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**Modern industrial machinery is already benefitting from Industry 4.0 and digitalization with predictive maintenance solutions that can identify potential issues before they develop into unplanned downtime. The next step is providing live, expert technical support from a remote location using virtual and augmented reality, enabling local technicians to recreate their machinery virtually and receive step-by-step instructions for troubleshooting and maintenance operations.**

*Greg Griggs, Sales Engineer for Burckhardt Compression, looks at how the industrial metaverse is bringing a host of benefits to operators in challenging locations.*

Reciprocating compressors are working across the world in refineries, gas transfer stations and offshore installations, which makes many of them difficult to access. Rather than wait for days for support to arrive, mobile devices such as phones, tablets or virtual reality (VR) wearables will become commonplace. By scanning the local environment and recreating it in the cloud, it is possible for remote experts to assess the situation and provide live feedback and support.

The advent of the metaverse has enabled the secure exchange of huge amounts of data with greatly reduced costs. The technology has developed quickly and now it is possible to use virtual, augmented and mixed realities to deliver live expert support to technicians.

### **Improving communications**

Even in areas where the local networks have low bandwidth, this technology can still be useful. The use of sophisticated data compression techniques enables these important communication processes to reach almost any point on the globe.

There are many industrial sites that are difficult to access, even impossible at certain times of the year, and many of Burckhardt Compression's customers operate offshore or in hard-to-reach locations. This situation can be made more challenging with the zoning of certain areas due to the possible presence of explosive atmospheres. This severely limits the tools and equipment that can be operated in these settings, adding to the complexity of delivering maintenance support.

In the past, modern communications would have stretched to phone calls, faxes or more recently video calls, each of which has their own drawbacks. On-site support for operators in challenging locations is key to continued reliability but flying specialists in by helicopter is limited by available resources and budgets.

### **Minimizing downtime**

Delays in receiving technical support or long waits to resolve issues can have very significant consequences for a business. The advent of high-speed internet and virtual reality has led to a huge step forward in communications technology, which has the potential to drastically reduce unplanned downtime. Real-time support is the ideal solution to investigating a problem; technicians can be guided, step-by-step, with live feedback to address the findings as they appear.

It is now possible for subject matter experts (SMEs) to communicate more easily, to discuss technical issues in depth on a one-to-one basis with ability to overlay technical drawings and images to support the understanding of the subject.

The ability of two remote teams to simultaneously look at the same data, decide on the best course of action and implement changes to prevent a reoccurrence is a step-change in modern maintenance support. Data is crucial in understanding the

operating conditions of a machine and the increased analysis capabilities of modern algorithms can support predictive maintenance programs.

### **Instant data analysis**

Digitalization and Industry 4.0 have paved the way for massive improvements in diagnostics and communications. The ability to access large amounts of data and quickly analyze it also offers benefits for planned maintenance. For example, taking reciprocating compressors used on LNG transport vessels, there is a requirement for these ships to undergo dry-dock inspections every five years. Data analysis can be used to predict the expected service life of the equipment and highlight any components that may need attention in between planned overhauls.

As part of the Burckhardt Compression family, PROGNOST is a world leader in industrial equipment monitoring and these advances in communications technology have enabled its portfolio of solutions to be expanded. From a simple setup of a few temperature and vibration sensors connected to a PLC, to a complete sensor array providing data to a secure monitoring site that analyses the information round-the-clock for possible anomalies, PROGNOST is equally adept.

Now, wireless sensors are rapidly evolving, which means that a comprehensive data capture system can be installed without the need for experienced engineers on site. These systems, wired or not, can be used for cost-effective, short-term multi-channel data collection for root cause analysis as well as long-term process optimization for improved reliability and sustainability.

### **Proven security**

However, one of the major concerns of corporations, large and small, is the possibility of their data being compromised on the internet. Data security is the top priority of all providers of digital services and Burckhardt Compression holds the ISA/IEC 62443-4-1 certification for cyber security, which ensures the company's solutions provide robust protection against recognized cyber threats.

The increased use of technology in everyday maintenance is becoming more accepted, but that is no reason to become complacent. Data security is extremely important and equipment operators should always seek assurances and evidence that the proper security protocols are in place.

The continued development of the metaverse and the tools capable of exploiting its benefits will enable expert engineers and local technicians to be in the same virtual space, looking at the same machinery and data simultaneously. Offering step-by-step guidance with immediate feedback, this technology has the potential to significantly improve machine reliability, efficiency and sustainability.

**Image captions:**



**Image 1:** Local environments can be recreated to support faster diagnosis.



**Image 2:** On-site support can be delivered quickly and effectively via the metaverse.



**Image 3:** Augmented reality offers more effective communication and understanding.



**Image 4:** 3D modeling can be used to support on-site training.



**Image 5:** Subject Matter Experts can supply in-depth information and images.

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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](http://www.burckhardtcompression.com)

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