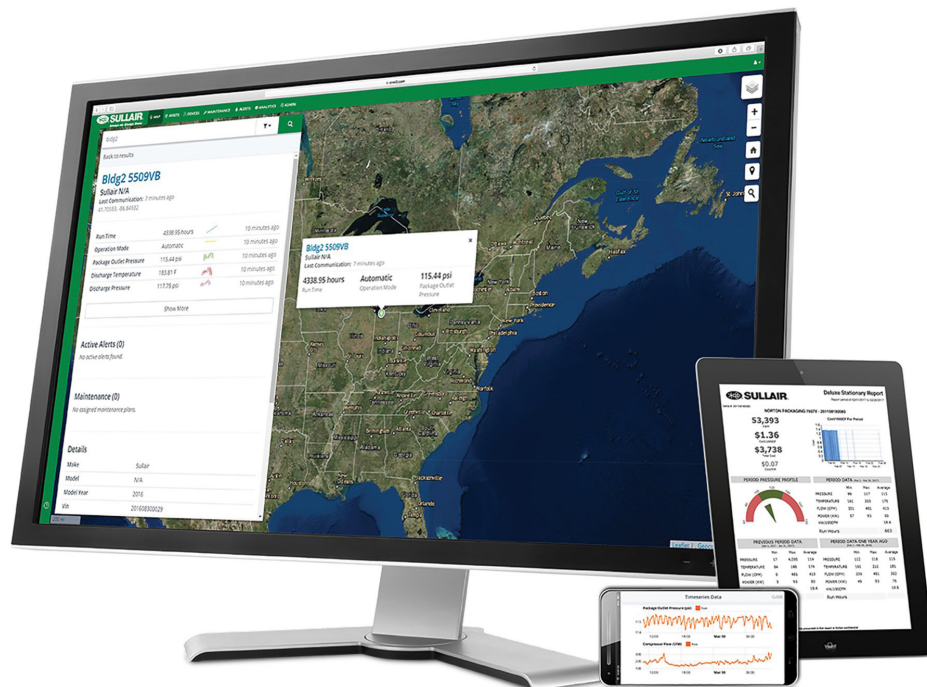




LEVERAGING AUTOMATION: THE FUTURE OF COMPRESSED AIR IS HERE

By Don Orban



Big data, cloud computing, Internet of Things (IoT), Industry 4.0 – the movement toward the interconnectivity of, well, everything is only beginning. What we have become accustomed to in our personal lives with our phones, watches, social media, and tablets has moved into our working lives. In business and manufacturing, IoT means connecting machinery to “edge devices” that collect and share data with any web-enabled device that can access the internet and has permission. This allows businesses to leverage technology to improve products and services or

streamline business processes. This includes assembly automation, process design, controls engineering, software integrations, remote monitoring, and more. With the advancements of automation and machine learning, the Industry 4.0 revolution provides companies with an opportunity to create a unified, real-time view of their business that can be used for making better strategic decisions at all levels. This movement is creating opportunities for efficiency and performance we have only begun to imagine.

And the timing couldn't be better. As budgets and workforces tighten and specialized expertise is exchanged for more generalized, jack-of-all-trades skill sets, the need for automation in manufacturing facilities and the enhanced insight that comes with it has never been greater. From the production floor up to the C-Suite, employees can now have actionable insights at their fingertips. Whether it is one system or the integration of the entire facility, the future is here, and IoT is changing how we build, design, and maintain our equipment and processes in astounding ways.

Compressed Air Automation

Compressed air is the life blood of nearly 80% of all manufacturing in the world and accounts for 10% of all electricity in manufacturing in the United States according to the U.S. Department of Energy. Because of its ubiquitous role in a manufacturing plant, compressed air is often referred to as the fourth utility. Despite its important role in manufacturing, at the end of the day, most users of compressed air just want consistent, clean, dry air.

Enter IoT and the boundless opportunities for automation – including compressed air systems. Remote monitoring features – available on most modern air compressors - can help maximize the system's efficiency and reliability in several ways:

1. Capturing Historical Performance Data

Monitoring controls collect data points on functions such as pressure changes, compressor flow, discharge temperature, run hours, and more; sending those data points to an online dashboard. Plant personnel can then monitor performance and other metrics right from their computer. The data is stored, providing a historical snapshot of a system's performance over time. This allows users to track trends and make data driven capacity decisions as a facility's air power needs change.

2. Providing Timely Maintenance and Service Alerts

Customized alerts delivered to the user's dashboard can signal when it is time to change a filter or perform other maintenance. Alerts can also indicate if an issue is brewing that needs to be investigated, such as a loose bearing or reduced pressure due to dirt or foreign material in the system. These alerts help avoid costly and often devastating downtime by indicating and even predicting when maintenance is needed. And, because this dashboard is online, plant personnel can monitor the system's performance while away from the plant - from home, on their phone or tablet, any time day or night - for added peace of mind.



3. Maximizing Efficiency

Many systems waste up to 30% of compressed air through leaks, misuse, poor maintenance, improper system control (using automatic shutdown control, etc.) and more according to the U.S. Department of Energy. Remote monitoring allows a user to see when air demand has increased without a corresponding increase in output. Users can then make the necessary repairs or adjustments to the compressed air system to eliminate wasted air and wasted energy.

Outsourcing Air

Another type of remote monitoring is managed or outsourced air*. Managed services are some of the fastest-growing sectors of the technology industry. Limited skilled labor, an unreliable supply chain,

uncertain inflationary pressures, and the rising cost of financing are just a few factors that make managed air power an exciting and attractive option. Managed air is different than remote monitoring in that the data points and alerts on the compressed air system go directly to the compressed air supplier - and that supplier manages the compressed air remotely, without involving on-site plant personnel. And, most importantly, the compressed air supplier delivers not only the monitoring service, but the actual compressed air machinery - even the backup air compressors. The customer pays a simple service fee each month for an agreed-upon time period (often 7-10 years) and the equipment, monitoring and backup air are managed for the customer. If maintenance or service is needed, the compressed air supplier takes care of the repairs or service - all of which is typically included in the air supply contract. The supplier also monitors the entire compressed air system's efficiency and can even make recommendations on how to adjust the system (add, replace, or remove air compressors, etc.) as the customer's needs evolve.

Besides the hands- and headache-free supply of compressed air managed air provides, there is also an efficiency factor. With managed air, the compressed air supplier will conduct a thorough air audit at the start of the contract to determine the current and potential needs for the customer. They then design and install the most efficient compressed air system for that operation - all based on data-driven analysis.

Another key difference with managed air is there is no capital expenditure required. Funding for capital expenditures and new projects can be a long and arduous process in many organizations. With managed air, the customer pays a monthly fee without having to endure lengthy approval processes, internal budgeting constraints and more. And, because the monthly fee for outsourced air can be classified as an operational expense, there may

be tax advantages to this option as well. What the customer gets at the end of the day is a new, state-of-the-art, highly optimized and efficient compressed air system, with an uninterrupted supply of compressed air, without having to pay a high upfront cost.

**Hitachi Global Air Power provides customized managed air power - contact your local Sullair distributor for more information.*

The Future and Beyond

The future of compressed air monitoring and managed air lies in what and how much is monitored to facilitate predictive analysis. While many key functions of the air compressor can be monitored, the next generation of compressed air remote monitoring will be in expanding what functions and to what extent those functions are monitored. Using data to go deeper into predictive maintenance to synthesize action plans, based on aggregated information- even from other systems will be standard in the (near) future. Added service alerts, and parts ordering based on activated alerts are tools that will likely become commonplace with compressed air systems. Think of your car's low gas gauge warning that prompts you for directions to the nearest gas station. The same will be true for compressed air; monitoring systems will direct you with links to parts or to request service calls, ship filters or other aftermarket parts providing added convenience, tracking, and speed.

Plant automation is here to stay, and the future is both exciting and boundless. From optimized efficiency to performance transparency and predictive maintenance, the benefits of automated systems are numerous. And the ability to make data-driven decisions has repercussions beyond the bottom line. It allows for manufacturers to do more with less and do it more efficiently. IoT has made our personal lives easier and is now providing that same convenience in our working lives - and in a world of constant change - the timing truly couldn't be better.