

# Compressed Air Alliance: Taking the pain out of your compressed air system

With Industry 4.0 upon us, instrumentation, telemetry and endless amounts of data are being generated about every facet of the manufacturing world. Manufacturing facilities are getting leaner and leaner, with engineering and maintenance managers pulled from one side of the factory to the other. So, who has the time or resources to review this vast array of data, let alone understand it, analyse it and most importantly gain insights from it?

It takes time, energy and effort to become an expert in any specific field; being an expert in the multitude of possibilities in a factory is all but impossible, so you should rely on the true specialists to help keep your systems inline. How are you supposed to know if every one of these systems is running at peak efficiency? Or if something has started to change and needs attention? Or even worse, is on the brink of failure? Sure, it's probably in the data somewhere, but you need the time and patience to find it.

Of course, there are some systems that should warrant at least some attention, and without these systems, the site simply stops producing. For most sites the worst offender is the compressed air system. This system typically uses anywhere from 10%-40% of your factory's energy use. Compressed air is the easiest to waste, with leaks and inappropriate uses often going unchecked. Sadly, they are reliable enough that most people won't look at them daily, weekly, or even monthly unless there is an issue. But when it all goes wrong, everyone from the site manager to the production personnel get involved.

Traditional analysis of compressed air systems involves someone installing a data logger with the appropriate sensors on site. These would normally be power, flow, pressure, dew point and temperature on the system supply, as well as several points around the plant. There is usually a period of waiting for a pre-determined period to log enough data, at a high enough sample rate to provide the detail required, and finally, downloading the data from the logger to a computer and starting the analysis. Only to discover an issue with the equipment and having to start the whole process all over again. With recent developments in technology, it's now very straightforward to have experts monitoring your compressed air system 24 hours a day, seven days a week, letting you know the moment something is out and needs attention. As well as providing that much needed advice to optimise the system and reduce the operating costs of the equipment.

To the layperson, the lines on a chart or data plot are just that, but to an expert they can indicate a lack of capacity, over or under-pressure settings, poor controls, inefficient operation, filter blockages and potential issues or failures beginning to occur. Many of these issues can be analysed, isolated, rectified or even prevented in real time. With the site benefitting from greater reliability and savings from maintenance and energy consumption.

Cloud-based platforms utilising data loggers connected via mobile networks now allow sensors and data gathering to be accessed anywhere in the world. The data is transmitted continuously, allowing an experienced auditor to watch the compressed air system as your factory operates each day. Historical data allows the individual to check the systems broader performance and then make recommendations for adjustments.

## Savings at a meat processing plant

A meat processing plant had a compressed air system that had not been optimised to the site's operation. It has four compressors in total: three variable-speed drive (VSD) compressors and one fixed-speed. One of them is installed in a remote location to ensure pressure stability to specific areas of the plant. Two of the compressors had been recently replaced and everything had been



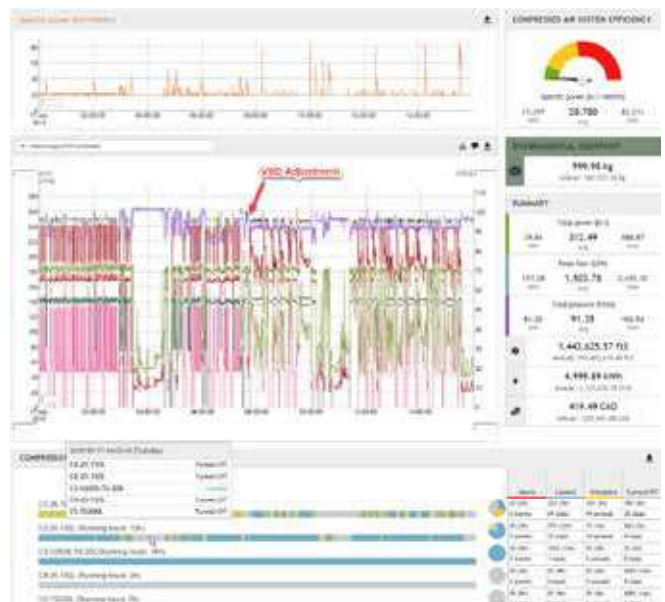
setup by the local supplier. Of the other two, one compressor was drawing close to end of life and was the least efficient machine on the site.

Previously the system had been set up using basic settings, but without the ability to see the system performance from multiple locations in real time, it had been left to a best guess-type scenario and was assumed to be running well. After the sensors had been installed across the site, it was quickly noted that the oldest, least efficient machine was running for large portions of time, despite there being capacity in the newer compressors to deliver site's requirements.

The fix was a simple adjustment of the target pressures on the newer compressors. This allowed them to become the dominant machines and return the older unit to its standby mode. With the recommended adjustments taking place over the phone while being watched by the compressed air system expert from their office, the site made savings of more than \$10,000 per year in energy alone.

## Savings at a sawmill

A monitoring system was installed temporarily at a sawmill around 2,000km away from the monitoring office. Normally this would entail an expert to travel by plane to install the equipment, return to the office for a few weeks, then head back to site to gather the equipment and logged data.



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The Compressed Air Alliance logging device allows data to be sent from the compressed air system to the cloud-based platform, allowing their experts to analyse a system’s performance anywhere in the world.

The site had recently added a new VSD compressor that had three load/unload compressors already installed. Initially it appeared the setpoints of the compressors had been set adequately, but after some historical data was gathered, it became clear there was an issue.

The new VSD was spending most of its time fully loaded rather than trimming the system. At the same time the load/unload compressors were spending a lot of time unloaded. This was further verified by the number of unloaded hours on the load/unload compressors. Typically, VSD compressors should be used to trim the system rather than supply the baseload.

Using remote monitoring it was possible to instruct the site remotely on how to make the adjustments to the system and watch as they implemented the changes, then verify the changes have had the desired effect. After these had been made, further data showed the VSD would now provide the trim as it should and the load/unload compressors would either run fully loaded or shut down when not required. Saving across the site amounted to around \$22,000 per year in energy costs.

Compressed air systems are extremely inefficient and costly to run, but these examples of the power of remote monitoring by compressed air experts show how simple incremental changes to the system can lead to big savings.

Compressed Air Alliance are experts in the compressed air industry. We work with manufacturers to reduce compressed air demand and improve the efficiency and reliability of compressed air systems. We also provide compressed air training and products. We can help businesses with compressed air leak detection, monitoring and measurement, independent advice, air purity testing and project management. **AMT**

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