

Data Logging a Compressed Air System

77.16	82.21	87.00
21.88	17.09	21.18
13.00	10.09	15.00
08.98	07.98	08.58
58.98	35.76	54.48
09.17	16.03	12.87
41.90	33.04	47.30
22.87	26.90	21.40
80.04	75.93	80.00
77.16	82.21	87.00



BCAS
Compressed Air Services

Data logging a compressed air system

Reducing energy costs

With energy costs likely to increase exponentially in the short term at the very least, energy efficiency has never been more important to businesses than it is now.

Compressed air equipment is a significant consumer of electricity and usually accounts for at least 15% of a plant's energy use. Air production is therefore one of the most important areas to start when looking to improve your energy efficiency and reduce costs.

Leaks

By logging the level of air usage over a period of time, it is possible to map peaks and troughs in the air demand pattern, which in turn can help you to identify various issues within the system.

For example, an unexpected level of air use during shutdown times such as evenings and weekends, may signal air leaks and therefore wasted energy and unnecessary costs.

The average leakage rate for a compressed air system is 25% but some plants lose as much as 80% of their air due to leaks. Establishing how much air you are losing allows you to decide whether an air leak detection audit is required which can lead to vast improvements in the operation and efficiency of your facility generating significant financial savings.

Sizing for new plant

It is often difficult to assess whether an existing system is correctly sized for the current load and whether a smaller or larger system is required to maintain adequate capacity and efficient system operation. As a business expands and applications evolve so can the need for compressed air. It may be that equipment has been added to the process and/or that more air is now required than the system was originally designed to produce.

Data logging allows you to assess exactly how much air you are producing versus how much you require. This information is particularly important before purchasing new plant so that you can accurately identify the most efficient size of machine for your particular process. Basing your choice on the existing system's specification alone will not necessarily give you the most efficient, reliable and cost-effective option. Incorrectly sized equipment can lead to excessive running costs, insufficient pressure and breakdowns so making a properly informed choice at this point is crucial.

At BCAS, we use a simulation wizard to indicate the potential cost savings of different compressor configurations, both fixed and variable, against your existing compressor volume. Where possible, this will also allow you to ensure a new system will accommodate future expansion.

'Potential' energy savings are no longer enough however, they are now vital and consequently, they must be measurable.

This is where data-logging comes in:

Air compressors are energy-rated by manufacturers but there are many external factors that can affect their efficiency within a specific set-up.

Before any improvements can be made therefore, data logging must be used to establish a baseline of how much power a system uses (by the kW) and from this it can be determined whether it is performing according to the manufacturer's specification and how much money it is costing you to run.

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Reliability

Compressed air systems are subject to constantly changing conditions to which they must adapt in order to maintain adequate system pressure. It is difficult to closely monitor pressure fluctuations manually but installing logging equipment allows data to be recorded and analysed.

Moreover, if multiple parameters are logged, such as pressure, flow, and compressor power, it can be possible to identify the response of the compressors to pressure changes or vice versa. Investigations and recommendations can then be made to improve the reliability of pressure. In turn, this leads to the system working more effectively and efficiently and with fewer breakdowns – all of which affect your energy costs.

The process

Data loggers are typically fitted to a compressor for 7-14 days in order to record any trends and demand fluctuation throughout the working week, as well as the weekend. The data loggers we use at BCAS, incorporate high-quality sensors to collect and store information relating to a system's pressure, current, and flow rate. Our current and voltage loggers enable true power to be accurately measured, with power costs calculated using these figures.

The latest software technology allows us to analyse, chart, graph and prepare professional audit reports. We use these to recommend system changes that will allow you to improve the reliability of your compressed air system and reduce your energy consumption and costs. Data logging is then used again to establish the effectiveness of any changes made and to measure the resulting energy and cost savings.

Data logging is a vital tool in reducing the amount of energy used to produce compressed air. It provides a foundation for an energy efficiency audit but there are many other measures that can be put in place to help you to reduce your energy consumption. From system design to maintenance and air leak detection, BCAS can help you with all aspects of energy efficiency in compressed air.

For further information or to receive a copy of our Guide to Energy Efficiency in Compressed Air, contact BCAS:

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