CompAir

Compressed air solutions

CASE STUDY

AUTOMOTIVE

Jaguar drives down energy costs with CompAir compressors

Customer
Jaguar

Location
West Midlands-based plants including Whitley, Browns Lane and Castle Bromwich

Application
Compressed air network upgrades, using CompAir energy audits

Products
Oil-lubricated, rotary screw compressors

Customer Benefit
Reduction in energy use / Improved cost of ownership

Benefits-at-a-glance

- Compressor energy consumption reduced by 26% per annum – helping Jaguar to fulfil its sustainability targets
- Highly efficient system with under two years' payback at each site
- Network is engineered to fulfil actual compressed air requirements
- Minimal redundancy and idling time – system optimised for maximum productivity
- Detects leaks in the network – so no energy is wasted

Jaguar has worked with CompAir to upgrade the compressed air networks at its West Midlands-based plants; using an ongoing programme of energy audits to reduce air power consumption by 26% per annum with a maximum two years' payback at each site.

APPLICATION DETAILS

With industry averages suggesting that energy costs account for more than 80% of the total cost of ownership of a compressor over its lifetime, Jaguar began assessing the efficiency of its existing networks with a view to selecting a supplier for its compressed air requirements.

Demonstrating an extensive product range, proven reliability and a number of energy reduction initiatives, CompAir was the ideal choice.

First steps to energy savings

Jaguar's engineering team began the programme in 2005 by replacing two older piston compressors at its design, research and development centre in Whitley.

In order to calculate the energy savings that could be achieved with a new compressed air system, CompAir first carried out a simple air audit on the existing units.

A data-logging device was fitted to each machine to analyse a number of parameters including air use, pressures and energy consumption.

With readings taken every second over a two-week period, CompAir engineers were able to build a very accurate overview of Jaguar's compressed air requirements and could demonstrate a number of cost savings that could be made by upgrading to newer models.

For example, the audit showed the peaks and troughs in compressor usage for a given period, which when analysed against the corresponding production run could give an accurate overview of typical compressed air demands.

Because air is non-hazardous, leaks in the pipework will not affect process safety and can go undetected. However, any leak in the network means that energy is being wasted, sometimes by as much as 20% – put simply, the compressor is having to work harder to produce the required air pressure at the point of use.

Using a simple leak detection survey, the audit process also enabled Jaguar to identify such issues quickly with remedial action undertaken at little cost.

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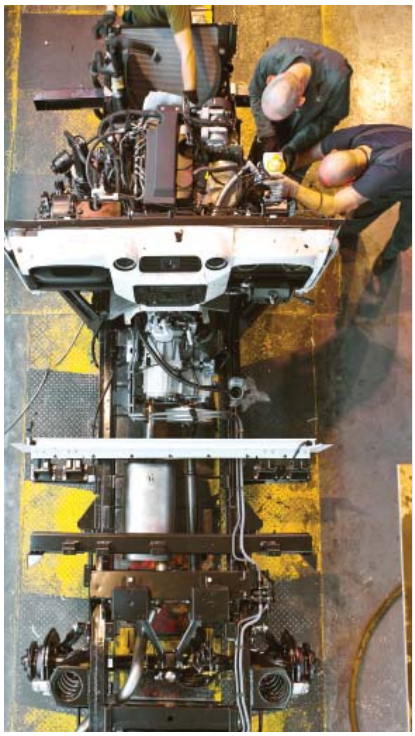

Other reports helped Jaguar to highlight the inefficiencies in the network, such as the compressors idling in off load mode or redundancy within the system.

Upgrading for better efficiency

As a result, Jaguar chose to upgrade the network to two fixed-speed and one variable-speed rotary screw compressor. The system is configured so that one fixed-speed unit and the variable-speed machine run constantly, with the remaining compressor coming online to cope with increased demand.

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Ongoing efficiency improvements

The second stage of the programme saw the upgrade of the compressor system at the Browns Lane veneer-manufacturing centre.

Production at this site had been reduced by around 80% and moved to the Castle Bromwich plant, leaving the existing compressed air network oversized for the application. In addition, the compressor house needed to be moved to a new area of the site where manufacturing would take place.

This gave Jaguar the opportunity to resize and modernise the compressed air network in order to maximise energy efficiency. CompAir engineers recommended a three-

compressor network incorporating two fixed-speed units and one variable-speed 75 kW machine, with the necessary filters and dryers to provide high quality air for the manufacturing process.

Future proofing

The final site to benefit from CompAir's energy audit programme is the Castle Bromwich assembly plant. Here, there are four compressor houses; three serving the main ring network and one for the paint shop.

Jaguar is continuing to log the air usage of each system and to date has replaced one machine with an L132SR variable-speed compressor, to help meet demands from the network more efficiently.

The company is also benefiting from CompAir's Assure Plus service plan, which has helped to reduce annual maintenance costs by almost 50% and ensures the efficient, round-the clock operation of each compressor in the network.