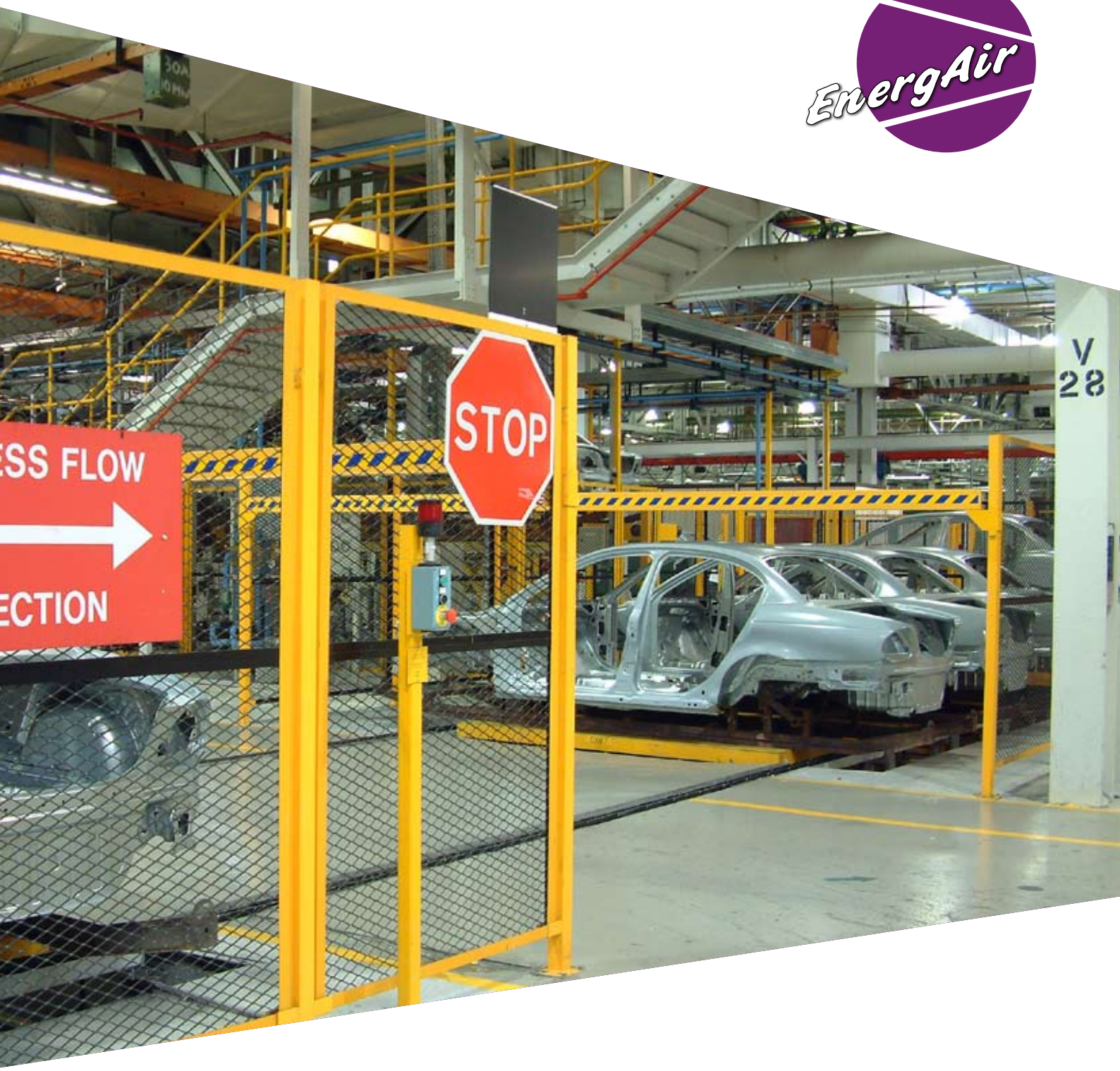
ENERGAIR CASE STUDY

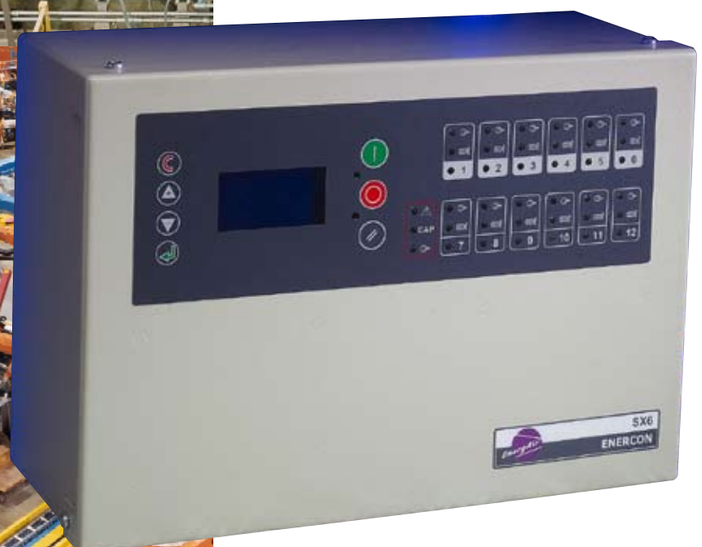


UK
CAR PLANT

ENERGAIR COMPRESSED AIR MANAGEMENT SYSTEM SAVES CAR MAKER £30,000 P/A IN ENERGY COSTS

An EnergAir compressed air management and communication system installed at a UK car plant has achieved an impressive 17% reduction in energy usage. The efficiency gains were made by close control of compressor speed and system pressure including the use of a retrofit variable speed drive. The project has reduced the electricity bill by well over £30k per annum and achieved a capital payback period of a matter of months. Other benefits include increased monitoring visibility and hence improved compressed air service support.

Manufacturing output at the plant totalled over 200,000 vehicles last year working 24/7. Prior to the installation of the EnergAir management system, the energy bill for compressed air was around £350,000 per annum and the facilities team were looking for ways to reduce it. The idea of installing an EnergAir system was put forward by local compressed air service supplier Oscott Air.



Oscott saw the potential for a significant reduction in energy usage and improve their service using the detailed real-time feedback on system status to enable them to react quickly to potential problems before they arose.

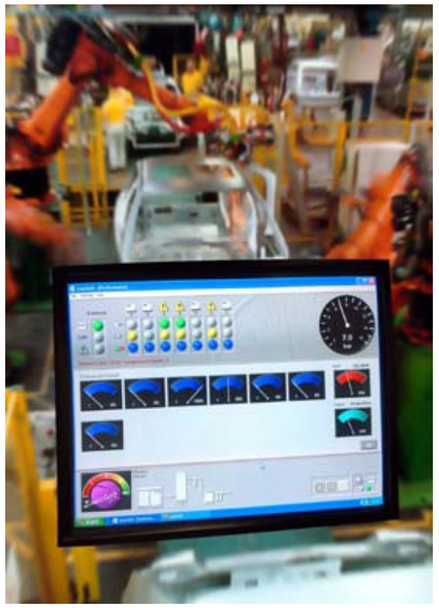
Energy savings were achieved in two ways. Firstly, the plant's seven 160KW fixed-speed screw compressors were transferred from a basic pressure band operated cascade control system to a more sensitive and accurate EnergAir Enercon system controller. The maximum generating/system pressure could then be reduced from 9.1 to 8.4 bar, the pressure reduction did not effecting the performance of any air operated equipment within the plant and resulted in a 9% saving in direct electrical energy costs. The saving is equivalent to £31,500/annum and has been fully audited.

The second method was to connect a retrofit variable speed drive to one compressor and integrate it into the control system. This was installed later on and is set to reduce the energy costs by a further 8% by eliminating in excess of 90% off-load running and effectively maintain a narrower pressure band of between 7.9 and 8.1 bar. The drive enables the system controller to run six of the compressors at their most efficient speed and use the VSD controlled unit to finely balance system pressure. Off-load running refers to compressors running unnecessarily to maintain system pressure when there is no actual demand.

Monitoring is a key element

As compressed air is an integral part of the whole 24/7 production cycle, the challenge for the compressed air service supplier is to achieve an uninterrupted air supply.

The EnergAir system has helped achieved this using the EnergAir 'Alert' automatic early warning system combined with real-time monitoring and remote interrogation.



The monitoring facilities integrated into the system include: energy usage, system efficiency, compressor status, compressor bearing condition, compressor water coolant temperature, dew point analysis, room temperature, air filter status and air discharge pressure to the system.

Monitoring to this depth provides both a highly accurate measurement of system performance over time and the detailed real-time feedback needed to activate EnergAir's Alert software. Threshold levels, dictated by experience and system demands are set in the Alert software for all relevant operating parameters. A time or frequency buffer is set and if any part of the system runs over the threshold, an alarm is tripped. Alarms are categorised due to their seriousness and an automatic warning is generated. Messages are tiered and relayed via modem to from faxes, emails or text messages. Response thresholds are set and in a potential emergency the system will follow a sequenced contact pattern until it gets a response 24/7.

The Alert system then allows Oscott to interrogate the EnergAir system either prompted by an Alert message or as a routine check from their local office and react accordingly. This has reduced the number of callouts and improved response times because the supplier is aware of a potential problem before it has chance to develop and is fully briefed before an onsite visit is made.

Other benefits include compressors running for a reduced number of hours and so extending their life and service intervals. Condition monitoring of dryers and filters allows them to be replaced only when needed, optimising process reliability and performance data also assists the manufacturer with permanent auditing for continual improvement/assessment of the whole compressed air system.

Companies can contact EnergAir for a preliminary site survey and receive an estimate on the amount of energy that can be saved before embarking on a full site audit or installing EnergAir equipment. A full audit provides highly accurate information on system efficiency, performance and potential energy savings. Using this information, EnergAir are able to recommend the most effective solution to compressor control on site and provide an accurate estimate for the payback period.

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