

# Trust proves cutting energy use isn't just a lot of hot air

Industrial Air Power Ltd is the authorised distributor for Ingersoll Rand Industrial Technologies products throughout Wales and the South West of England. The two companies have made a dramatic shift from being suppliers of equipment to providers of solutions. We are fully conversant with all aspects of air generation and equipped to carry out energy audits on any installed system, regardless of size or manufacturer.

A full system audit includes leak detection, measurement of energy consumption, and flow measurement including pressure, temperature and final air quality.

As utility rates continue to rise and firms continue to look to green initiatives, energy consumption has become a growing concern for manufacturers.

One of the largest energy users within a plant is the compressed air system. Energy recovery provides a cost-effective way for manufacturers to reduce their energy bills while simultaneously benefiting the environment by capturing the thermal energy created through the compression process and putting it to work. Where the heat produced from a compressor can be fully utilised, simple payback periods of less than two years are frequently achieved.

Having already worked with Carbon Trust on a variety of projects, Terram called on its expertise when faced with rising energy costs. The specialist manufacturer of geo-synthetic materials, employing 95 staff at its manufacturing plant near Pontypool, worked with Industrial Air Power to eliminate energy inefficiencies and re-design and install a new air compressor system. The result was an industry best in terms of energy usage and savings of £202,000 per annum. It also produced:

- Energy savings of approximately 11.25 million kWh over five years
- Cost savings of approximately £1m in five years
- Emission savings of 7,390 tonnes CO<sub>2</sub> in the same period
- Payback of approximately 24 months

David Roberts, control engineer at Terram Ltd, said: "The savings we are seeing now are unbelievable but just as important is the fact that we are reducing our carbon emissions and therefore benefiting the environment."

Although Terram had already started to investigate the costs for new compressed air systems, it hadn't looked at where, when, how much air was being used. Carbon Trust helped it identify this and used Industrial Air Power to design a system to meet its needs.

Having a tailor-made system installed in turn allowed Terram to capitalise on secondary savings such as heat recovery and compressed air leak reduction.

Ongoing monitoring of the fully automated system allows the savings to



Matthew Lacey, area sales manager, Industrial Air Power (Left) with Basil Thomas, production engineer, Terram

be quantified. Monitoring also ensures that the focus on savings is maintained and remains a high priority for Terram.

The new compressor system was located into the steam boiler house. This enabled Terram to recover the waste heat generated by the compressors and use this to raise the temperature of the water in the hot well, which feeds the boiler. Increased water temperature in turn reduces the amount of gas needed to generate steam.

The aggregated savings from the

has proved that the new machinery provides an average efficiency of 5.8kW/m<sup>3</sup>/min – delivering significant savings. The gas savings are on top of this.

The benefits to Terram have been fourfold: a significant reduction in energy costs, the ability to protect plant integrity, reduced maintenance cost and the added benefit of reduced gas consumption from the increased water temperature in the steam boiler hot well.

Installing new Ingersoll Rand two stage

***"The savings are unbelievable but just as important is the fact that we are reducing our carbon emissions and therefore benefiting the environment"***  
***– David Roberts, control engineer***

installation of the new system and implementation of the measures identified represented an 11.8 per cent reduction in the site's energy consumption and overall a 38.7 per cent reduction in the electrical energy consumption directly associated with the generation of the compressed air. An annual CO<sub>2</sub> saving of 1,214 tonnes has been achieved plus an additional 264 tonnes from a reduction in gas usage due to the heat recovery process.

From monitoring the system, it was calculated that Terram was using on average 85m<sup>3</sup>/min of compressed air with an efficiency of 8kW/m<sup>3</sup>/min, which equated to 7.2 million kWh per annum. By installing a new compressor set supplied by Industrial Air Power, it was calculated that the efficiency could be improved to 6kW/m<sup>3</sup>/min. Post-installation monitoring

fixed speed compressors along with a Nirvana two stage trim compressor, fully automated via a control system provided Terram with primary energy savings. Secondary savings came as a result of the heat recovery process, lower maintenance costs and the leak reduction programme.

The exercise has been successful in achieving reductions of CO<sub>2</sub> emissions

and the overall costs of supplying the service of compressed air to the business.

A Carbon Trust Wales consultant worked together with Industrial Air Power and Terram engineers providing impartial, independent advice enabling the company to make an informed decision and deliver value for money. Carbon Trust independently validated the energy savings and confirmed that they exceeded Industrial Air Power's initial projections.

Through our experience in carrying out hundreds of compressed air audits we have identified the majority of existing compressed air systems include one or more of these deadly sins. This will have and adverse affect on your reliability, productivity and energy consumption.

- System over-pressurisation resulting in increased artificial demand
- Excessive waste through air leakage
- False loading of compressors due to lack of system automation and volume
- Inefficiency caused by cycling fixed output compressors
- Excessive pressure drop

**If you would like advice on calculating your savings potential and increasing your company's profitability contact Industrial Air Power on 01656 658961, email [sales@airpower.co.uk](mailto:sales@airpower.co.uk)**

