

Ceandess

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EnTRESS SOLUTIONS

- Process Mapping
- Energy Monitoring
- Non-contact Measurement
- Process Improvement
- Compressor Efficiency



Ceandess

Established in 1924 and a family run business with a wealth of experience. In-house capabilities allow control of a lean manufacturing process with a modern cloud based planning system. They deliver high quality solutions at the right price, producing high volume products and custom made one off fabrications.

Background to the support provided

The Company is forward thinking and as such wanted to gain the benefits of further developing its resource efficiency. As a result of discussions with the Company, EnTRESS carried out an initial process audit to identify any resource losses and then propose solutions. Following an initial visit to the site it was agreed that the Company's compressed air system be specifically targeted as a suspected source of significant resource use.

In addition to the physical resource investigation the Company expressed an interest in developing further its measurement process particularly on small dimensional details. Solutions to this and monitoring of optimum

light levels in key production areas also formed part of the project.

What was accomplished ?

The knowledge transfer process

Ceandess is a forward thinking Company and as such wanted to gain the benefits of further developing its resource efficiency.



As a result of discussions with the Company, EnTRESS carried an initial process audit to identify any resource losses and then propose possible solutions.

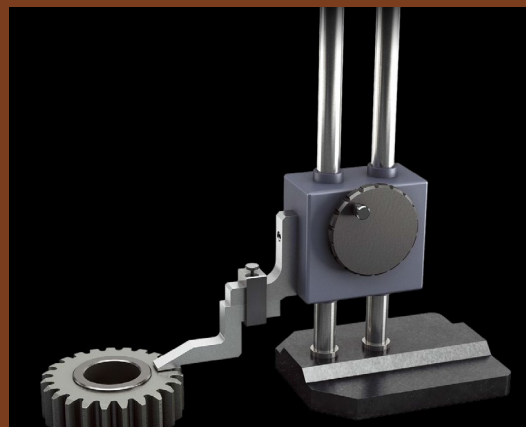
Following an initial site visit to review the production process, it was agreed that the Company's compressed air system be specifically targeted as a suspected source of significant resource use. Two resource streams were explored, energy use of the compressor and losses in the air distribution system. To monitor energy use, a current monitoring data logger was non-invasively installed on the

compressor's 3 phase supply and left on test for a week (Friday to Friday).

The second energy stream, compressed air, was addressed by an inspection of the general condition of the air distribution system with an emphasis on identifying leaks.

Optimum levels of lighting in the main manufacturing area were also the subject of a brief audit to monitor light levels in key production areas coupled with a review of any possible actions.

In addition to the physical resource investigations, the Company expressed an interest in developing



its measurement process, particularly on small dimensional details. To this end, research was carried out on non-contact measurement systems that could enhance the Company's inspection process.



What's Available

- Fully funded one to one mentoring and business support, for the development and / or adoption of environmental technologies, processes and improvements.
- Access to, and collaboration with, leading research provided through the University of Wolverhampton.
- Fully funded in-house resource efficiency audits for Black Country SMEs.
- Technical Review Workshops providing assessments on current products and associated R&D opportunities.
- Environmental Impact Challenges set by large commercial and public organisations, providing SMEs with business opportunities.
- Technology Showcases promoting the uptake of environmental innovations developed by SMEs.

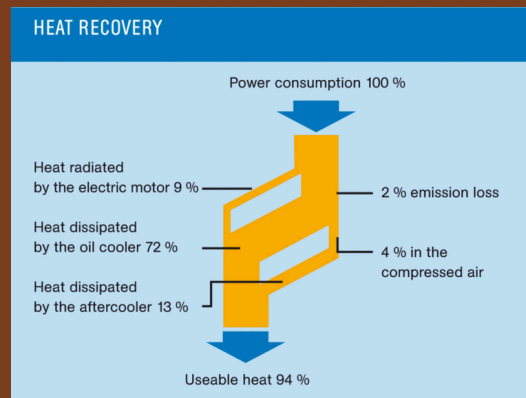


Solutions Identified

- It is estimated that most identifiable leaks are joint dependent and are 0.1-0.39 mm in size. However, industry estimates suggest that each of these can cost £28 / year in lost energy, based on compressed air cost of £ 0.02 per m3 most systems when assessed have a 25-35% leakage rate equivalent to a loss of around £6300.
- The compressor also represents an, as yet, untapped source of waste heat. During the initial survey the temperature of the compressor room was noted and compared the outside & workshop temperatures at the time. (Outside 7.7 °C, Workshop 16.6 °C & Compressor exhaust temperature 44 °C).
- To improve efficiency further, consideration should be given

to replacement of the current compressor with a more efficient model, based on the energy monitoring shown in Fig 1 below.

- Suitable non-contact, rapid measurement systems from Keyence were also identified for the company to subsequently investigate
- Some low cost maintenance solutions & a phased shift to LED technology were identified as solutions to improve energy saving on the lighting system.



Non-contact Measurement

Non-contact measurement can bring a number of advantages to a process.

- 100% inspection is possible with in-process systems.
- Reduced inspection cycle time
- Eliminates operator error
- Measurement possible where contact is limited or impossible
- Non-destructive on fine or decorative finishes

Waste Heat Recovery

Approximately 10% of all electricity used in industry is accounted for by compressed air systems.

It is a thermodynamic fact that around 95% of this energy is converted to heat and wasted to the atmosphere through heat dissipated by the motor & cooling system, with the majority lost via the oil cooler.

50-94% of available thermal energy is recoverable as space heating or in water heating systems.

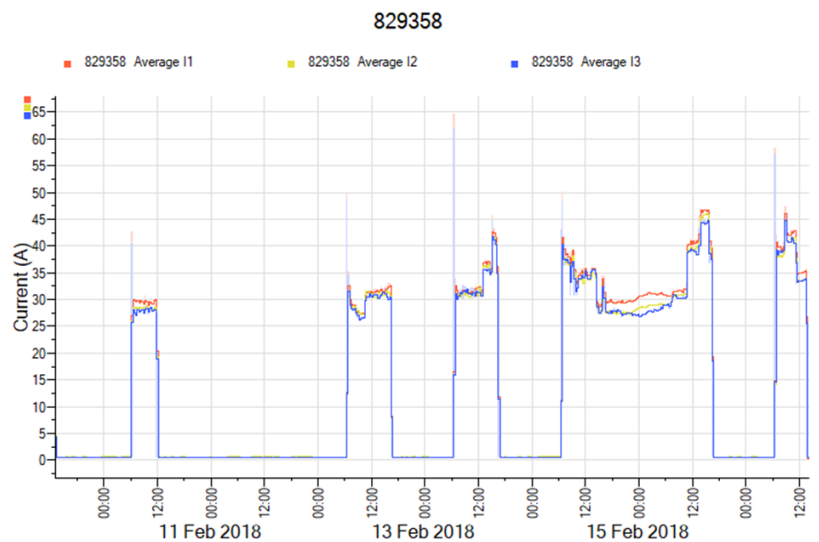


Fig 1. Data logged from compressor 3 phase supply over one week



The Tinytag energy logger used in this project monitors voltage and current and determines power and power factor. Peak and average values can be recorded. Voltage is measured via the standard mains lead and current is measured using non-invasive flexible Rogowski coils. It can be used for spot checks or longer term recording with analytical software to allow results to be exported into report documents.

What is EnTRESS ?

ENTRESS is a new environmental innovation project drawing on University of Wolverhampton expertise, part funded by the European Regional Development Fund (ERDF).

What we do?

Support for Black Country SME's who want to modify their practices for increased sustainability.

Eligibility Criteria:

Open to all Black Country (Sandwell, Dudley, Walsall & Wolverhampton) Small to Medium Size Enterprises (SMEs).

EnTRESS Case Study
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EnTRESS
Environmental Technologies & Resource Efficiency
Support Service

University of Wolverhampton

Faculty of Science & Engineering. ML046, Deanery Row, Off Molineux Street. City Campus Molineux, Wolverhampton. WV1 1LY

Andrew Barnett (01902) 321595 | 07583 050885

Andrew Stott (01902) 518532 | 07583 050887

<https://www.wlv.ac.uk/EnTRESS>



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Development Fund