



Compressed air leak management

Safety, efficiency & environmental impact

Compressed air leaks are the greatest avoidable waste in a typical compressed air system. Such leaks cost money, compromise reliability and safety of the process, and waste energy, causing unnecessary carbon emissions. A well managed system should have a leak rate no higher than 10% of the compressor(s) capacity. A typical industrial system has been shown to have leak rates in excess of 25% and may be up to 60%.

Although more companies are undertaking leak surveys, implementation rates for repairs and ongoing programmes remain low. But the investment in a leak detection survey is wasted unless the repairs are actually carried out - detecting leaks does not save energy or money. A common reason cited for non-repair is that it costs too much money. This suggests that the true cost of leaks in terms of energy wasted and reliability problems has not been quantified. Also they generally underestimate the logistics of managing a leak programme in-house so it falters in the early stages.

Before making other changes such as reducing system pressure, or new investment, it is vital to get leakage rates under control; otherwise the benefit of the other improvements will be negated.

Conducting the survey and leak repair: in-house or contract out?

To be truly effective there must be a complete leak management programme which includes regular leak surveys, and ongoing repairs. There is a range of options available, if carrying out all or part of the programme in-house in which case you should consider the following:

- Do you have the time and resources to complete project within the next 3 months?
- Do you have a sufficiently accurate method to estimate flow rates and cost of leaks to calculate payback times and hence justify the financial investment in repair?
- Who will be responsible for the project and how much time will be required to manage it?
- Do you have access to the appropriate ultrasonic equipment that can detect the required frequencies with sufficient accuracy?
- Will you be able to determine the cause of the leak and the action required to repair it?

Developing an effective leak management programme

Keeping your system leak rate to no more than 10% of compressor capacity to maximise the efficiency of your system is not a one-off activity. Leaks recur in different locations and it can be more cost effective to do a leak survey and repair three times a year than just once. Repairing leaks may be as simple as tightening a joint or isolating redundant piping and/or equipment. However, they may require replacement components so do not underestimate the resource required.

Reducing system pressure

To realise the potential energy savings it is important to re-visit the pressure after implementing the leak repairs. Otherwise the pressure will rise where leaks have been repaired and consume more energy. A system with a previously high leak rate will have been over-pressurised to maintain production, so this is the opportunity to save substantial energy by lowering the pressure.

For further compressed air energy saving advice, visit our two Carbon Trust Networks websites:

www.compressedairaudits.org

www.compressedairenergy.org.uk

You can also go to www.bcas.org.uk/energysavings.asp or send an email to technical@bcas.org.uk