



Gary Fuller, Training & Consulting Programme Manager, Festo

Bringing energy efficiency into view

Many companies struggle to reach their energy saving targets, even a 5-10% KPI to reduce energy spend is a big ask.

As a manufacturer ourselves, we are focused on eliminating waste, improving productivity and reducing our environmental impact. We are naturally very high users of our own automation equipment and strive to do so in the most efficient way possible. To do this we have implemented a diverse and wide ranging strategy to reduce energy consumption and have gained a lot of experience internally. We also work with many other leading

manufacturers and there's one thing that we've found – saving costs on compressed air is not simple. Here are some of the reasons why.

Compressed air costs aren't understood Many users don't know or appreciate the cost of energy, compressed air in particular has frequently been seen as a fixed cost asset, "the compressor is there anyway" and therefore a "free" resource. However, with the cost of electricity nearly

doubling over the last 12 years and electricity consumption being 60-70% of the total cost of compressed air it can be an expensive resource and certainly not one to be squandered. The low hanging fruit for reducing compressed usage is always considered to be leaks – where we're literally blowing money away.

There are some great headline grabbing figures which are frequently quoted often resulting in excitement about fixing →



leaks in compressed air systems. Typically purely electric drive manufacturers will cite older European reports showing that 42% of the cost of compressed air is lost in leakages. That's when leak identification reports are commonly commissioned.

However, alone, this rarely produces the anticipated results, in fact frequently the identified leaks aren't fixed at all. It's not unusual when surveying pneumatic systems that we'll see leakage tags still there years after being marked.

Consciously or unconsciously incompetent?

Not understanding the value of compressed air means that it is frequently forgotten and overlooked, this 'unconscious incompetence' means engineers, operators, maintenance staff or the many other people who walk past leaks, poorly designed or maintained machinery day after day, don't see it as part of their job to report or fix problems.

Energy reduction has to become a shared and embedded responsibility using tools such as Balanced Score Cards and KPIs.

If the team know that something needs to be done and they're being measured on it, they can take the next step to becoming 'consciously incompetent'; a vital step as they will now seek ways to improve the situation and start to be part of the cure rather than the cause.

To make significant changes in the culture of an organisation the change and focus has to come from the top. Whether it's light bulbs, kettles, machines in stand-by or an over pressurised regulator it's only by everyone taking personal responsibility that substantive savings can really be made.

Education is key

The key to this is education; understanding what can be achieved, to believe it can be done. It's about turning the invisible resource of air into a visible asset and showing viable ways to reduce costs. That's when you'll make serious savings and hit your KPIs to reduce the cost of your energy.

Once this need has been established the team will need energy consumption visibility and transparency and the ability

to invest in energy saving measures. Understanding and monitoring energy consumption enables the team to implement actions throughout the consumption phases. This can start in the compressor house, investing in the latest combined heat and power plant, optimised load sharing compressors and distribution systems. Capturing and using the heat energy generated when compressing air considerably improves the overall system efficiency. Heat pumps can even convert this energy into cooling if that is required or utilised as heating or an energy source in other processes such as plating.

Start at the design stage

Retrofitting and upgrading equipment should be considered but has to be done against a background of OEM warranties and the possible need to re-CE mark equipment if substantial changes are made. Clearly the best time to optimise the energy consumption is at the design / purchase stage. Capital equipment purchase specifications must lay down clear expectations in terms of the use of best energy practise in the selection and layout of the machine elements.



“It’s only by every person being responsible that substantive savings can really be made.”

Gary Fuller, Training & Consulting Programme Manager, Festo

Short pipe runs, correctly sized actuator / pressure combinations, intelligent use of vacuum etc. This doesn’t mean the elimination of pneumatics but the best use of pneumatics. It is a gross simplification to think electric actuators are more efficient than electric, they can be, but the opposite can also often be true, it depends upon the application. Even where electric actuators are more efficient, consideration still has to be given to the payback time, if this is excessive then it is clearly better to invest elsewhere.

Energy transparency and control at the point of use

In our own production plants energy transparency and regular analysis are key. Setting individual zone targets means each team make proposals for improvements and can track their progress. Fitting intelligent flow monitors with auto shut off in stand-by conditions can have impressive results. Condition monitoring pressure decay within the system when the supply pressure is isolated enables the clear indication of leaks, wear and potential causes of failure. Individual teams propose their

own measures and share best practise across the plant and internationally.

In sales and marketing the acronym A-I-D-A is frequently used to describe the journey from Attention to Interest, Desire and Action. For energy reduction with compressed air a similar path has to be followed. It cannot be tackled with a single action or even in one dimension. It requires a sustained, continuous effort.

Our workers in our latest Scharnhausen factory are proud of their impressive reductions in energy consumption. They are motivated by their environmental conscience and their ability to have an impact. It starts with the drive from the top, education and awareness. It is sustained, through the engagement of the team and their commitment to the goals they set themselves. ■

www.festo-didactic.co.uk/eee

Take action on energy saving now

Energy Efficiency Experience

The aim of our Managers’ Energy Efficiency Experience that takes place at your premises is to establish your actual energy saving needs in relation to air consumption and usage in the production areas.

See how these savings can be made ‘sustainable’ without the need for expensive initial outlay.

Free guide

Our ‘Energy efficiency in compressed air systems’ guide highlights the hidden costs associated with compressed air and provides practical advice on how to lower your costs and maximise your energy efficiency.



Visit www.festo-didactic.co.uk/eee for useful information to help you reduce your energy costs.