



5 Minute Guide 2.2

PACIA

energy+

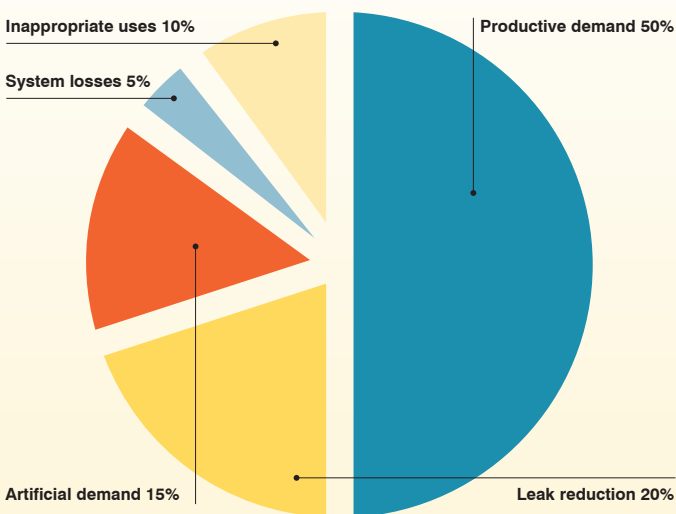
Turn energy savings into business power

Compressed air systems

This 5 Minute Guide provides simple and practical guidance to reduce the energy consumption of your compressed air systems – potentially one of the most wasteful items of equipment in your business.

Compressed air systems use up to 10% of total industrial electricity in Australia. Up to 50% of the compressed air used by industrial businesses can be avoided. Figure 1 shows the breakdown of these inefficiencies. Look carefully at your system for opportunities to save money by becoming more energy efficient.

Figure 1: Compressed air usage and losses for the typical user



Source: Compair, www.compair.com.au/news, 14 January 2013

Fixing a 1.6mm hole in a compressed air pipe **can save you more than \$200 per annum.**

Here are eight simple things you can do to ensure your compressed air system is operating as efficiently as possible and saving you money:

- ✓ **Demand:** scrutinise the use of compressed air to ensure that it is not being used inappropriately when there are more energy- and cost-efficient solutions. Figure 2 shows some examples of more efficient solutions (see page 2).
- ✓ **Air tools:** ensure compressed air tools operate efficiently and air hoses are adequately sized.
- ✓ **Leaks:** check for leaks and ensure they are repaired quickly. A good time to check for leaks is after hours when the other factory equipment is not running.
- ✓ **Automatic controls:** introduce automatic compressor controls to turn equipment on and off, or to part-load to meet the variable demand. Idling compressors can still use up to 40% of full load¹. Types of control include: start/stop, intake valve open/close, modulate intake valves and variable speed drives for partially loaded systems.
- ✓ **System pressure:** set the system air pressures to the lowest practical for the application. Too low a pressure will impair tool efficiencies and affect process time. Too high a pressure may damage equipment, and will promote leaks and increase operating costs. As a general rule, every 100kPa reduction in operating pressure results in about 8% energy and cost savings².
- ✓ **Maintenance:** ensure the air system is not over-dry, there is no water build-up in the system and the compressor's run-time is consistent with manufacturer's best practice guidance.
- ✓ **Air intake temperatures:** position the compressor air intakes for lowest intake temperature. Up to 6% of compressor energy use can be reduced by using cool inlet air that requires less energy to compress³.
- ✓ **Efficient configuration:** ensure low-flow blow down nozzles are installed. Consider multiple compressors sequenced to operate the most efficient total load. Use the right type(s) of compressors for your compressed air requirements.



Learn about **further energy efficient upgrades** for your compressed air systems in the PACIA energy+ 5 Minute Guide 2.3: Motors, pumps and fans. Options include the introduction of variable speed drives on compressors to match loads, and the installation of a compressed air management system for multiple compressors.

Figure 2: Compressed air use alternatives

Compressed air use	Equipment used	Solutions
Blowing or cleaning	Nozzle/gun	Air knife, induction nozzle, low pressure blower, broom/brush
Cooling	Cooling induction system	Air conditioning systems, chilled water, fresh air ventilation, fans
Drying of water on product	Nozzle/gun	Solenoid control, air knife, induction nozzle

Source: Energy Efficiency Best Practice Guide: Compressed Air Systems p7, Sustainability Victoria, 2009

Remember to **refer back to your energy plan regularly**. Go to the PACIA energy+ portal for help in setting up your plan.

1 Chemicals sector: Introducing energy saving opportunities for business, p11, Carbon Trust, 2012

2 www.savepower.nsw.gov.au/business/power-saving-tips/fix-leaks-in-compressed-air-systems.aspx, New South Wales Government, 14 January 2013.

3 <http://portal.cbil.uq.edu.au/Portals/56/factsheets/genmanufacture/00976%20M3%20Compressed%20air.pdf>, Queensland Government, Eco-efficiency opportunities for Queensland manufacturers, Queensland Government, 14 January 2013.

This is just one piece of the energy efficiency puzzle!

There are many other areas that you should also consider. PACIA energy+ covers the key topics and provides you with the tools and information you need to improve your energy efficiency and reduce costs. PACIA energy+ has been designed specifically for businesses in the chemicals and plastics industry.

Go to the PACIA energy+ portal for more: www.paciaenergyplus.org.au



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