

### Energy Efficiency Tips for Compressed Air Systems

#### Eliminate inappropriate uses of compressed air.

- Compressed air should only be used for hand tools when it is dictated by safety or tool capability (e.g. higher torque). Electric hand tools are much less expensive to use.
- Use fans or blowers for high-volume, low-pressure applications.
- Use a dedicated vacuum pump to generate a vacuum.

#### Minimize compressed air leaks.

- No compressed air system is leak free. However, it is possible to limit leaks to no more than 10% of compressor capacity.
- The best leak detector is your ear. If your system is small, then walk the system during breaks or at night when the plant is not working and listen for leaks. If your system is large then hire a certified ultrasonic inspector to look at your system. The potential savings can be huge. For example leaks equivalent to a one-quarter inch diameter hole will waste 101 CFM at 100 psi, which for an around-the-clock operation costs \$6,060 annually at a rate of 8¢/kWh.
- Pay particular attention to quick-connects. Have an operator reporting system in place to identify workstation leaks as they occur.

#### Improve the quality of your intake air.

- Intake air should be as cool as possible. Colder air is denser air and requires less energy to compress and for efficiency the intake air should be from the outside.

- Another reason to use an outside intake is that outside air is cleaner than inside air.
- Use an air intake filter. This will reduce wear and tear on the compressor from particulates. Be sure the intake filter is large enough. The pressure drop across a new intake filter should not be more than 3 psi. Maintain the filter!

#### Remove condensate with minimal air loss.

- Do not use a constant leak at the bottom of a receiver tank to remove condensate. Consider the \$6,060 cost of the ¼" leak discussed above.
- Regularly inspect solenoid-operated drain valves to insure they are not stuck open and that they are not opening for too long or too often.
- Consider a zero loss trap that uses a tank float or level sensor to control the solenoid.

#### Stabilize system pressure.

- Use a receiver tank at the compressor to eliminate pressure drops caused by intermittent high volume use.
- If there is a long distance from your compressor to the end of the air line, place a receiver tank at the end of the line to maintain pressure rather than a second compressor.
- If you need one pressure (e.g. 100 psi) at the compressor to maintain volume but end use pressure is substantially lower (e.g. 70 psi), consider a pressure/flow controller together with a receiver to separate the supply side from the demand side. Having a lower pressure in the supply system will dramatically reduce the amount of leakage and wasted air use by tools.

These energy tips are taken from a series of Compressed Air Energy Tips published by the Energy Efficiency and Renewable Energy branch of the U.S. Department of Energy.

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