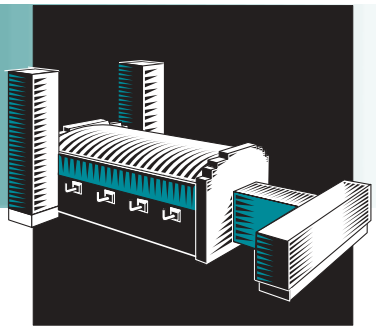
COMPRESSED AIR

Cost Reduction Strategies



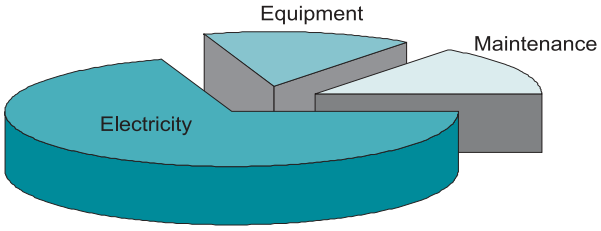
Improving the Performance of Your Compressed Air System

Did you know...
a ¼-inch leak in a 100-psig compressed air line represents a loss of 100 cfm-which equates to 25 hp or over $8,000 per year?

Although air is free, the generation and distribution of compressed air is expensive and requires a huge amount of energy. Many glass plants use compressed air systems that are old, inefficient, or unreliable. Improving the performance of the compressed air system in your plant can reduce system electricity consumption by 20-50%.

Some applications are simply inappropriate uses of compressed air systems. If your plant uses compressed air for any of the following, consider other alternatives.

Open blowing
Aspirating, atomizing
Padding
Dilute and dense phase transport
Vacuum generation
Personal cooling, cabinet cooling
Open hand-held blow guns
Timer drains/open drains for condensate
Air motors



Lifetime Compressed Air System Costs

The following checklist can help you identify opportunities to improve system performance, save energy, and reduce costs.

☐ **System issues**
- Should separate systems be employed for forming and control, due to volume differences?
- Has the distribution system been sized properly?
- Is there value in having compressors distributed near use points?
- Is there room for additional equipment?

☐ **High end-use pressure requirements**
- Are end-use pressure requirements true, versus assumed?
- Are the pressure set points on the compressors configured correctly?
- Are compressors operating at a much higher pressure than the end use requires?

☐ **Complaints of low pressure to certain end uses in the plant**
- Has the cause of the low pressure condition been explored?
- Is there low pressure at the header or at the point of use?
- Have compressor set points been raised to compensate for the low pressure at the end-use application?

☐ **Applications that use high volumes of compressed air for a short duration**
- Have you identified and tracked the timing of high-volume events?
- Has the use of storage been considered?
- Have separate compressed air systems been considered?

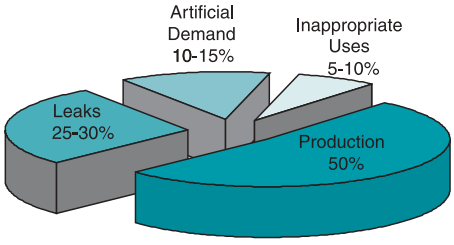
☐ **Air quality issues**
- Is air quality appropriate (good enough, but not too good) for each point of use application?

☐ **System leaks that can be feasibly repaired**
- Have you calculated the energy and financial loss of the leaks?
- Have you tested for leaks in suspect areas?

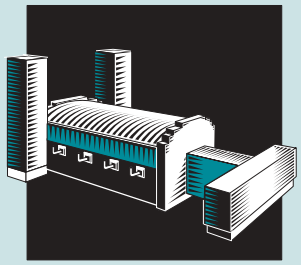
Evaluate and take action

The following table lists energy-saving measures associated with improving the performance of your compressed air system. For each of the measures, the table includes example activities, typical implementation period, and payback period.

Problem	Energy Saving Method	Typical Implementation Period	Typical Payback Period
High End-Use Pressure Requirement	If the requirement is valid, find a better way to serve it, such as with a booster compressor, amplifier, and/or dedicated compressor. Do not allow the entire system pressure to be run higher because of one valid high-pressure end use. If it's not valid, reduce the pressure drop between header and end use.	Immediate	Immediate
High-Volume Intermittent Applications	Add dedicated storage with metered recovery. Electric timer condensate drains that discharge for an excessive amount of time and overlap each other should be modified. Zero air loss drains should be considered.	1 month	1 year
High-Volume Constant Flow	If there is a real, proven requirement for constant flow (i.e., mixer), replace the piece of equipment with a high-volume, low-pressure device, such as a blower; use an engineered nozzle to reduce quantity of air consumed; or install a vacuum pump to replace a venturi system.	<1 month	1-2 months
Inappropriate Applications	Replace with other sources of power. Compressed air can cost up to ten times more in energy than electricity or hydraulics (i.e., for fan cooling).	1 year	1 year
Ineffective Compressor Control Strategy	Ascertain compressor type, its control options, and the effect on your monthly system. Ideally, each compressor, except one "trim" compressor, should operate at full capacity to optimize efficiency. Turn off unneeded compressors to minimize energy consumption. Evaluate compressor replacement with a properly sized compressor.	Immediate	Immediate
Inadequate Maintenance-Air Leakage, Poor Moisture Control, and Excessive Contamination	Compressed air systems require periodic maintenance to operate at peak efficiency and temperatures, and to minimize unscheduled downtime. Most problems can be corrected by making simple adjustments, clearning or replacing parts, or eliminating adverse conditions.	Ongoing	Immediate



Typical Compressed Air System Electrical Consumption



Other Resources

OIT Clearinghouse
800-862-2086

www.oit.doe.gov/bestpractices

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January 2002