



AIR AS A UTILITY: HOW TO (EASILY) INCREASE EFFICIENCY IN YOUR COMPRESSED AIR SYSTEM

By Anne Chalmers



The US Department of Energy estimates that the industrial sector accounts for more than one-third (approximately 36%) of total U.S. end-use energy consumption. Compressed air systems account for 20 to 30 percent of total energy consumption for the average manufacturer. Look at nearly any list of ways to reduce energy use in a manufacturing facility and it will include the importance of improving the efficiency of the compressed air system.

The key word is system. The opportunity for saving comes from reducing the energy that is wasted due to air leaks, poor system design and other inefficiencies. According to the Department of Energy, a holistic system improvement to the compressed air system can result in energy savings from 20 to 50 percent or more of a compressed air system's electricity consumption.

Hunting for Savings

There are many ways to assess compressed air system efficiency; consultants, audits, local technicians as well as internal experts are all good options. Energy Star Treasure Hunts are another approach that have helped hundreds of organizations reduce their facilities' energy use by up to 15 percent. In this very affordable approach, teams walk around a facility looking for quick ways to save energy. Treasure Hunts focus on quick fixes with a short payback period. Many improvements can be made immediately and without significant expenditures or capital investments.

On-going savings in energy costs and reductions in Metric tons of CO2 are not one-and-done events. A factory is a dynamic environment that changes with personnel, upgrades, and expansions and even company ownership. Achieving long term improvements requires implementing multiple strategies over time and consistent monitoring and management by compressed air experts. And that takes time and money.

So, the question is this — why do companies continue to find opportunities for savings in year after year audits? Why are not all the savings realized in the initial audit?

The answer is simple to describe but difficult to address. For compressed air, efficiency is the result of a long list of frequently changing factors. It's not like tuning an engine or changing to a more efficient motor. There are so many variables that the Compressed Air and Gas Institute (CAGI) offers a 20-hour course on Advanced Management of Compressed Air just to introduce all the factors.

Add to that the challenges of finding and retaining technicians who can keep the compressed air system running at peak performance.

While maintenance staff were certified in both quality and environmental-management systems — ISO 9001 and 14001 standards, respectively — they lacked the parts and system expertise needed to effectively support the compressed air generating equipment.

DOE Case Study, Fuji Films

Compressed Air as a Utility — An Efficient Alternative

One approach that addresses all these barriers is to change from an owner/operator model for compressed air to a utility model. Like other compressed gasses, treating and buying air as a utility helps solve the overriding efficiency and reliability problem by transferring responsibility for the generation and quality of air from the owner to a third-party expert and provider. Water experts manage water, electricity experts manage electricity. Buying air instead of equipment removes the need to have on-staff compressed air specialists, leaving personnel resources time to focus on manufacturing the goods that generate revenue.

This utility approach starts with the assessment of needs and the audit of the current compressed air system. Once the current system is clearly documented, data-driven recommendations are made by the experts at the compressed air supplier that will optimize both energy consumption and system reliability. The compressed air supplier is then responsible for delivering the quality and quantity of air according to the agreed upon contract helping to ensure the factory will not be without air — including providing back-up when/if needed. The manufacturer can rest assured that their compressed air needs are met without the hassle, capital expenditure, and worry about whether they are optimizing their compressed air system and staying energy efficient. What could be easier than that?

References

[U.S. Department of Energy](#)

[U.S. Department of Energy; Fuji Case Study](#)

In success stories at <https://www.energystar.gov/treasure-hunt-listing> participants who did multiple hunts consistently found savings potential in not only their compressed air systems, but throughout their operations, year after year.

Company	No. of Treasure Hunts	Potential Percentage Savings Identified
Lockheed Martin	6	12%, 5%, 17%, 3%, 19%, 5%
Tree House Foods	24	13%, 17%, 2%, 4%, 6%, 2%, 1%, 9%, 11%, 2%, 4%, 3%, 6%, 2%, 22%, 8%, 9%, 4%, 3%, 6%, 14%, 16%, 4%, 17%
Boeing	10	6.3%, 7.3%, 7.4%, 10.4%, 17.9%, 19.6%, 19.7%, 19.8%, 23.6%, 54.7%
Fiat	10	6.63%, 15.91%, 33.67%, 10.14%, 6.31%, 4.88%, 18.1%, 14.04%, 17.24%, 7.15%