



Greater efficiency supports patient care.

Repair Compressed Air Leaks

All ECM content was independently developed and reviewed to be vendor-, product-, and service provider-neutral.

Description

Compressed air has historically been a lightly regarded source of energy use despite the associated cost of leakage. Even a pinhole leak in a compressed air system can cost thousands of dollars per year in wasted energy.

Project Talking Points

- Compressed air leaks can go undetected as there will not be significant damage done (like with a water pipe), and the system will just work harder to produce enough compressed air for the end uses
- Compressed air systems have been found to have 20-30% leakage, resulting in thousands of dollars a year in wasted energy
- A “Draw-Down” test can be used to check a compressed air system’s amount of leakage by seeing how much air is being produced during an “unloaded” period
- An Ultrasonic test can be performed to determine the precise location of each leak
- Develop a proactive O&M program to avoid costly compressed air leaks

Triple Bottom Line Benefits

- **Cost benefits:** Repairing compressed air leaks will reduce energy waste, resulting in cost savings for the facility
- **Environmental benefits:** Using less energy will reduce the carbon footprint of the facility
- **Social benefits:** Reductions in hospital operating costs will result in a decreased cost to consumers and more funding for patient care

Purchasing Considerations

- Depending on the size and complexity of the compressed air system, consider whether an outside contractor will be used or if the equipment to detect leaks should be purchased

- Plan for regular compressed air system testing in your facility's annual O&M budget

How-To

1. Engage staff that may be impacted by a compressed air shutdown for repairs, as they may need to be performed during off hours.
2. Perform a leak test to determine locations of leaks. This is most easily performed by ultrasonic testing
 - Tip: Most leaks will be found at joints and at the end use. This will help narrow down your search
3. If a leak is found at a joint, it is most likely the result of poorly applied thread sealant or a loose connection. Apply new sealant, tighten up the connections and re-test.
4. Establish an annual leak repair program as part of your preventive maintenance and ongoing commissioning programs as a best practice.

Tools

- U.S. Department of Energy (See leakage rate table on page 1); [Energy Tips – Compressed Air](#)

Regulations, Codes and Standards, Policies

- OSHA United States Department of Labor Standard 1926.803 – [Compressed Air](#)

ECM Synergies

- Practice Preventive Maintenance of Major HVAC Equipment

Educational Resource

- [ASHRAE Fundamentals of Air System Design](#)
- National Renewable Energy Laboratory, [Compressed Air Evaluation Protocol](#)
- Marshall, Ron; [Finding and Fixing Leaks](#), *Compressed Air Challenge*
- Baker, Bob; [Compressed Air Leaks Leads to Lost Money](#), *Plant Engineering*
- U.S. Department of Energy; [Energy Tips – Compressed Air](#)
- Compressed Air Challenge Training

- [Fundamentals of Compressed Air Systems \(Level 1\)](#)

This is a one-day introductory course designed to teach facility engineers, operators and maintenance staff how to achieve 15-25% cost savings through more effective production and use of compressed air. Participants will learn how to:

1. Calculate the energy cost of compressed air in their facility
2. Improve compressed air system efficiency and reliability
3. Identify inappropriate uses of compressed air
4. Establish a baseline by which they can measure improvements in compressed air performance and efficiency
5. Match system supply to actual production requirements for pressure and flow
6. Find and fix leaks
7. Establish a leak prevention program
8. Better control compressed air to improve productivity and profitability

- [Advanced Management of Compressed Air Systems \(Level 2\)](#)

This is an intensive two-day training that provides in-depth technical information on troubleshooting and making improvements to industrial compressed air systems. This training is designed to help end users as well as industry solution providers learn how to:

1. Collect and use data and tools to assess the efficiency and cost-effectiveness of a compressed air system
2. Develop and use a system profile
3. Implement a system maintenance program
4. Address air quality, highest pressure requirements and high-volume intermittent applications
5. Understand complex control system strategies
6. Align the supply side to demand side operation
7. Explain the value of heat recovery
8. Successfully sell compressed air improvement projects to management

ECM Descriptors

Energy

Category List:

- Building and Maintenance
- HVAC

ECM Attributes:

- Basic Device Upgrades
- System Upgrades

Improvement Type:

- Retrofit/Renovations
- Operations and Maintenance

Department:

- Engineering/Facilities Management

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