



Most common energy wastes in a compressed air system

Energy Checklist

Compressed air is one of the most expensive forms of energy used in production plants, and can comprise up to 10% of the total energy bill. In plants with large compressed air systems, improving efficiency in that area can yield substantial savings.

Common solutions:

According to the U.S. Department of Energy, simply detecting and sealing air leaks can reduce electricity bills for compressors by 20% to 40%. Air leaks are a major source of wasted energy in a compressed air system and often make up between 20% and 30% of a compressor's output.

Facilities with varying load requirements can often benefit from advanced control strategies, while facilities with relatively brief periods of heavy demand can benefit from air storage options.

Energy waste detection and quantification steps in a compressed air system:

STEP 1

Log energy consumption and compare to operational schedules

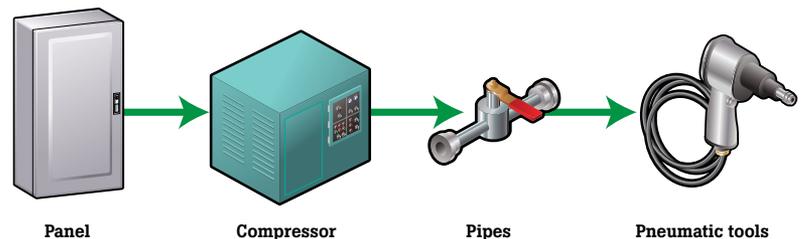
STEP 2

Measure pressure at compressor and outlet. Compare production vs. real demand and calculate pressure drop.

STEP 3

Inspect for leaks.

Measurement points to detect waste



Quick tip:

Four possible solutions for losses:

1. Fix leaks.
2. Use receiver tanks for high volume applications, instead of increasing overall system pressure.
3. Install air shutoff solenoids on all machinery when turned off.
4. Determine whether more air compression than necessary is being delivered. If so, turn it down.

STEP 1

Electrical logging



- 1. Log energy consumption over a full business cycle at all air compressors.
- 2. Use a data logger to gather and store demand profiles and power consumption profiles. This will show you when and why peak and minimal demands occur.

STEP 2

Pressure testing



- 1. Connect a pressure logging tool to the compressor output and log how much pressure the compressor outputs over the business cycle.
- 2. Check pressure differential at the compressor/supply vs. at the demand/pneumatic tool.
- 3. Determine air consumption during operations; establish benchmarks against which to measure improvement.

STEP 3

Leak testing



- 1. Locate leaks in the distribution system by scanning with a handheld ultrasonic leak detector.
- 2. Estimate leak load during non-production. Significant variations in operational requirements may require a day or more of monitoring.

Quick tip:

Most facilities don't prioritize the cost of operating compressed air systems—they just want to get the job done. A recent market study found that only 17 percent of compressed air users valued efficiency as a compressed air system management goal. Nine percent were concerned with containing energy costs. Seventy one percent simply wanted to deliver a consistent, reliable air supply. But with compressed air being as costly as it is, it only makes sense to ensure efficient use and accurate production.