



Pneumatic System Audit

Assessing compressed air system efficiency



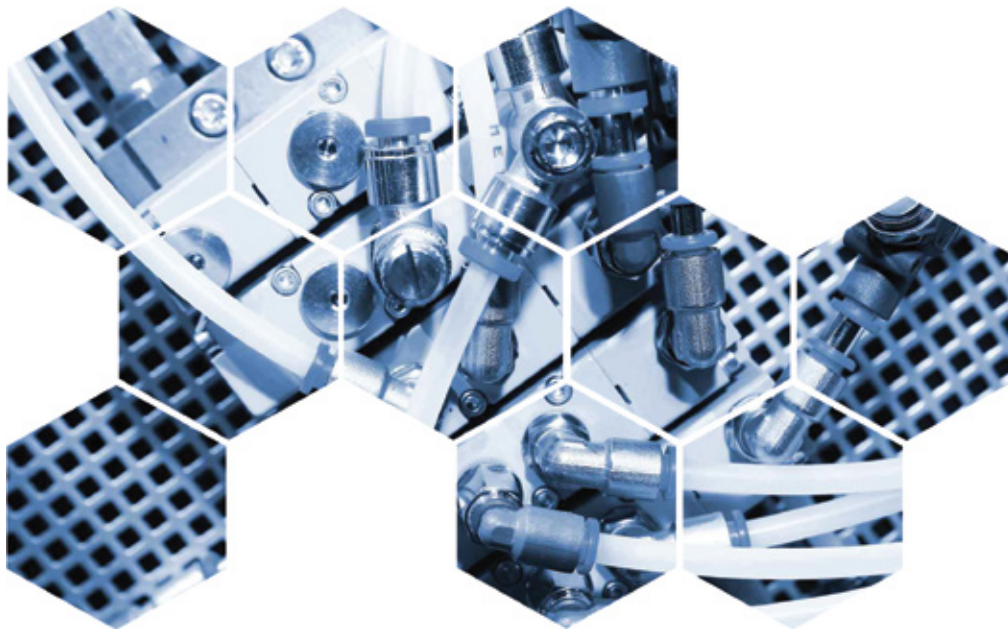
Pneumatic System Audit

As the cost of energy is increasing with every passing year, companies are looking towards efficient systems that would relieve them of cost pressures. One source of this underlying cost is air leakages in the pneumatic system. According to US Department of Energy, air wastages can represent about 20-30% of the total compressor's output, while proactive air leakage detection and repair can reduce this wastage to 10% or less. Aside from the cost of these wastages, companies face huge losses due to production downtimes caused by inconsistencies in their pneumatic systems.

Companies have little understanding of the true possible saving opportunities present in their facilities. The objective of Automate's Pneumatic system audit is to help them identify these opportunities and how best to avail them. Not only does this lower energy costs for users, it also provides a health check of their pneumatic systems, reduced stress on the maintenance staff and ultimately improves the efficiency of production lines.

Automate offers two types of audits;

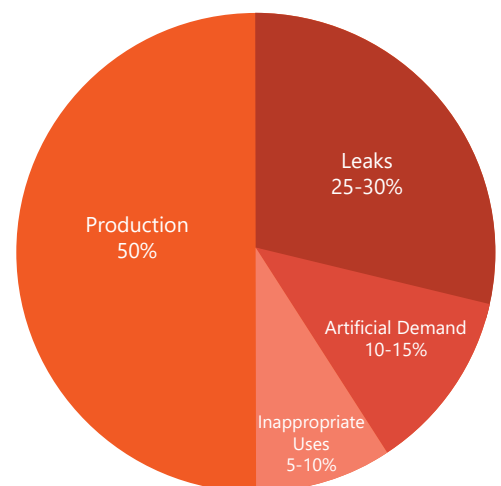
- ▶ Walk the Line Audit, in which our team makes a one day visit to your facility and performs basic audit.
- ▶ Full Audit, which typically involves a few days in which our team performs an in-depth assessment and creates an accurate account of your compressed air system.



Walk the line Audit (WTL)

Automate's WTL Audit involves visual checks and assessment of the installed pneumatic system without any use of hardware. This is typically carried out in the following steps:

- ▶ Assessment of installed compressed air system, highlighting areas where performance can be optimized
- ▶ Our auditors give real-time tips and alternatives to improve performance during the audit
- ▶ A detailed audit report containing analyses of the compressed air system and improvement recommendations is shared after the audit
- ▶ Results are prioritized to show how potential savings match up against the necessary expenditures, which helps you focus on areas where early improvement can have the greatest effect



Typical compressed air consumption pattern

Full Audit

A variety of options are available with Automate’s Full audit, ranging from full system audits to specific measurements, such as leak detection, power and flow rate, etc. Our full audit is a flexible, diagnostic package for compressed air systems that allows customers to select any level of compressed air audit required for their particular system.

- ▶ **Air measurement:** creates a precise profile of your plant’s compressed air demand over specific time duration, identifying energy costs and potential savings. Flow rates are tested without disturbing operations.
- ▶ **Air leak detection and control:** Scans the entire compressed air system and Identifies sources of air leakage using ultrasonic detectors.
 - Air quality check:** evaluates the quality of compressed air, including an assessment of dew point or oil presence, and compares it to benchmarks specific to your system.
- ▶ **Maintenance review:** assesses current maintenance schedules and programs for effectiveness in the equipment, including compressors, filters, dryers, pneumatic cylinders and others.
- ▶ **Monitoring and control solution:** sets out recommendations for long-term monitoring and control to maintain optimum efficiency. With Automate’s Intelligent compressed air monitoring and visualization solution, your complete pneumatic system can be examined from remote locations to monitor real-time performance to help maximize efficiency.

Initial situation	
Compressor output	410 kW
Compressed air consumption	40 m ³ /min
Production hours	8,000 hours/year
Compressor pressure	6 bar
Compressed air consumption	16,475,000 m ³ /year
Average price for compressed air	1.8 ct/m ³
Compressed air costs	\$379,343/year
Results of compressed air audit	
Identified leakages	296
Total compressed air loss	1.63 million m ³ /year
Leakage loss	\$37,672/year
Total project costs	\$39,905
Reduction in compressed air	10%
Cost saving	\$37,672/year
Amortization time	13 months

Typical Audit Summary

Potential losses from air leakages

Diameter of air leak (mm)	Leak rate (m ³ /min) at 7 bar	Energy waste (kWh) at 7.5 kW/m ³ /min	Annual cost at \$0.12/kWh 7000 running hrs
0.5	0.012	0.09	75.6
1.5	0.108	0.81	680.4
3.5	0.426	3.195	2,683.8
6.5	1.68	12.6	10,584



Applicable Standards

ISO8573-1:2010	To specify the purity of compressed air required at a specific point in the pneumatic system
ISO8573 PARTS 2 to 9	To test the compressed air for one or more specific contaminants
FILTERS - ISO12500, DRYERS - ISO7183	To verify the performance of compressed air purification equipment
ISO50001	Energy management System
ISO 11011	Compressed air Energy efficiency Assessment



About Automate International

Automate International is a leading engineering services firm that has transformed itself to provide digital and advanced intelligent solutions with an aim to create long term value proposition in terms of operational sustainability, manufacturing excellence and process optimization in the ever evolving world of pneumatics and industrial control & automation.

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