

AIRMaster+ Executive Summary

Overview: AIRMaster+ is a software tool that helps users analyze energy use and savings opportunities in industrial compressed air systems. AIRMaster+ can be used to baseline existing systems and also model future system operations improvements, and evaluate energy and dollar savings from many energy efficiency measures. AIRMaster+ provides a systematic approach to assessing compressed air systems, analyzing collected data, and reporting results.

The AIRMaster+ LogTool is a companion tool to AIRMaster+ that helps industrial users determine the operating dynamics of a compressed air system. The LogTool is first used to gather critical data in preparation for AIRMaster+. Then, the data is input to AIRMaster+ to model existing and future compressed air system upgrades. Use of LogTool is not required for AIRMaster+, but some data logging is required to properly use AIRMaster+.

AIRMaster+ allows you to estimate the savings of energy efficiency measures. It is not meant to replace an experienced auditor in the evaluation of a compressed air system. AIRMaster+ is intended to model airflow and associated electrical demands as seen by the supply side of the system. AIRMaster+ does not model the dynamic effects of the distribution and end uses. Such issues should be addressed through consultation with an experienced auditor before implementing efficiency recommendations.

AIRMaster+ was used to analyze the compressed air system in a facility that manufactured rubber gaskets. The existing compressors consumed more than 3 million kilowatt hours (kWh) per year, representing more than 20% of the plant's energy consumption. Using AIRMaster+, the plant identified over 1 million kWh in potential energy savings with a payback period of approximately 2 years.

Data Collection Requirements: Prior to using the tool, considerable data needs to be collected. A companion tool, AIRMaster+ Log tool, helps collect some of this data. The following needs to be collected:

- Compressed air systems on site and end uses for each system
- Typical operating day types (data logging required for normal shifts, weekends, other shifts if compressed air consumption is different than the standard shift)
- Compressor performance and operating details
- Measured hourly energy use or air flow for each day type and for each compressor

This includes collecting electrical and flow measurements using data loggers. At least 24 hours of data is required. This data is used to develop an estimated annual baseline. Some plants may not have the tools (data loggers, flow meters, etc.) or expertise to collect this data.

An average plant would require around 3 days to collect the data, run the model, and develop energy efficiency measures. Data loggers are required and may need to be installed for up to one week.

Qualifications: AIRMaster+ is designed for personnel who are interested in improving compressed air system performance, including industrial plant engineers, distributors of compressed air equipment, consulting companies, and utility energy auditors. Significant knowledge of compressed air systems is required. A training class is available from DOE (both one-day and three-day). AIRMaster+ is not a software package that can be simply downloaded and used by an inexperienced user – typically training is required.

Usage of the tool: This tool could be a onetime use tool, or one that is used periodically (every year, or if process or production changes are made, etc.). The tool should be used again after recommended changes are made – for example, after leaks have been fixed.

Ease of Use/Software Compatibility: The tool is designed to be used by a consultant performing an energy assessment, but could also be used by an in-plant staff member who is an expert in compressed air systems and has gone through the training. Having an industrial end-user using the tools without the training is not recommended, unless they are an expert in compressed air systems and understand how to take the proper measurements. A 333 page manual is available for AIRMaster+.

The AIRMaster+ program and data require a personal computer with the following minimum system configuration:

- Microsoft Windows operating system version 95 or later
- Pentium-based microprocessor (Pentium 133 minimum)
- 32 megabytes (MB) of RAM (64 MB recommended)
- CD-ROM drive
- 20 MB of free hard disk space
- VGA graphics (800x600 resolution recommended) with 256 colors or better
- Use small font settings

Product roll-out roadmap: Upgrades are not planned for AIRMaster+ or the LogTool this year, but may be planned for 2012.