

New Technologies in Energy Efficiency Workshop

AIRMASTER+ Software (Compressed Air Systems)

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Outline

- Compressed Air Systems
- **AirMaster+ Software**
 - History
 - Features
 - Demonstration

Compressed Air Systems

- Support the manufacturing processes by supplying **clean, dry** air at high pressures
 - The compressed air system is to fulfill this requirement both effectively and efficiently
 - The compression of air is a **very inefficient** process
 - Consumes up to 20% of industrial electrical usage
 - Large energy consumption + Inefficient system
- ***Much potential for energy savings and cost savings***

AirMaster+ Software

- Developed by Washington State University Energy Program (2000) for U.S. Department of Energy
 - Current version (v 1.1.2): 3/1/2007
- Windows-based software tool for analyzing compressed-air systems
 - Model existing system and proposed future systems
 - Evaluate savings from energy efficiency improvements
- Models airflow and electrical demands as seen by **supply** side of system
 - Does **NOT** model dynamic effects of distribution and end uses
- AirMaster+ software is **not** intended to replace an experienced auditor in the evaluation of a compressed-air system

AirMaster+ Software

- Available via FREE download from website (on provided CD, too):
<http://www1.eere.energy.gov/industry/bestpractices/software.html#air>

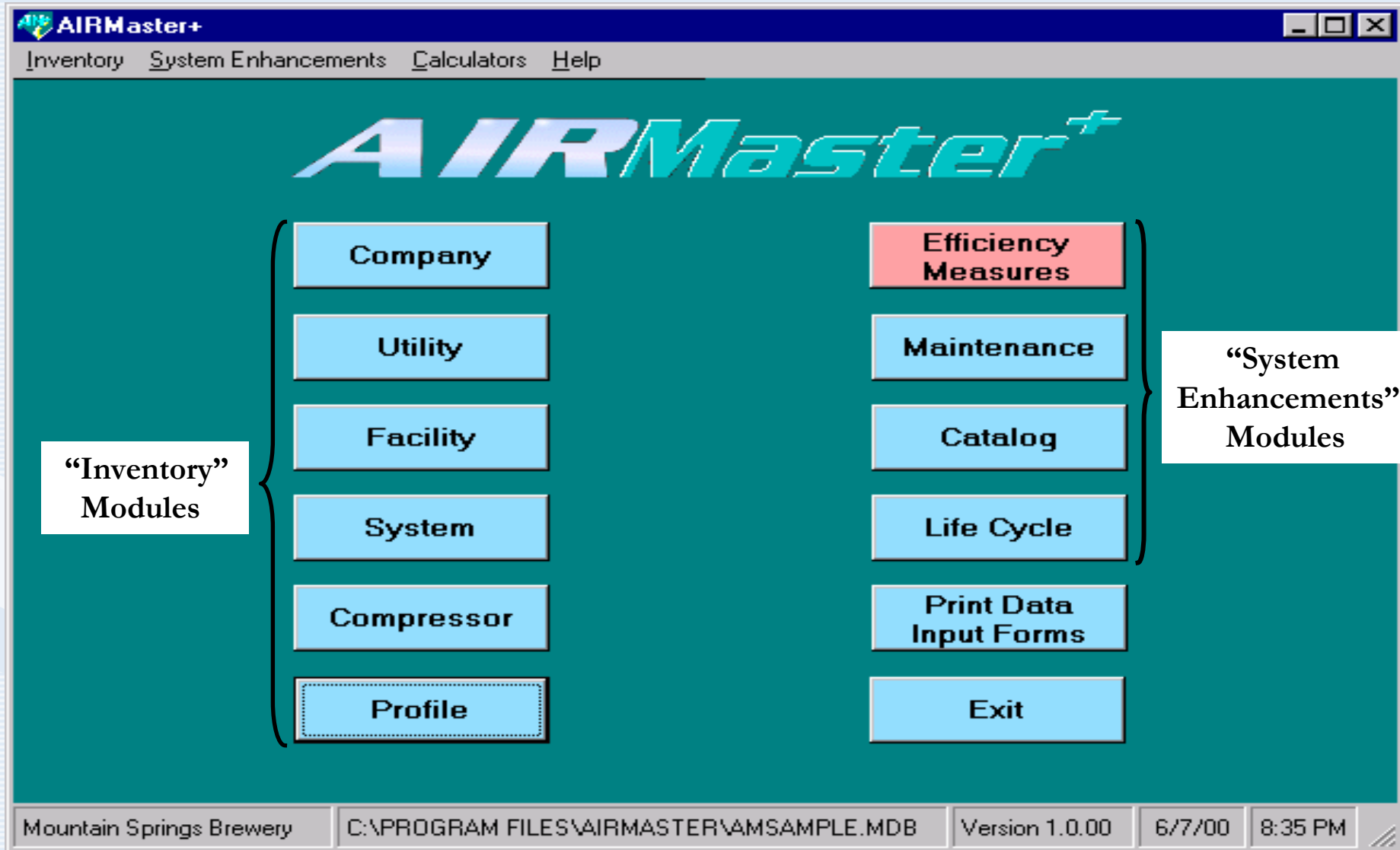
- Software itself

Start → All Programs → AirMaster+ → AirMaster+

- User's Manual (MS Word file – 332 pages total)

Start → All Programs → AirMaster+ → AirMaster+ User's Manual

AirMaster+ Software Main Menu with 12 Modules



AirMaster+ Software

Activating Module

(e.g. “Company” module)

- Three methods
 1. Using Mouse: click on “**Company**” directly
 2. Using Mouse: “**Inventory**” → “**Company Database**”
 3. Using Keyboard: “**Alt-I**” and then “**Shift-C**”

AirMaster+ Software Module - Toolbar Buttons



ADD – Create new record



EDIT – Make changes to displayed data



SAVE – Save displayed information



DELETE – Delete the displayed record



PRINT - Print (and preview) chosen information



HELP – Display helpful information

AirMaster+ Software

- **“Inventory” Modules**

- 1) Company
- 2) Utility – includes Rate Schedules
- 3) Facility – includes Utility Rates and Summary of Air Compressors
- 4) System – information for all Compressed Air Systems
- 5) Compressor – information about in-plant Air Compressors
- 6) Profile – includes Hourly Airflow Delivery and Load Information for each Air Compressor

AirMaster+ Software

- **“System Enhancements” Modules**
 - **Efficiency Measures** – evaluates proposed system improvements
 - Energy Efficiency Measure (EEM)
 - **Maintenance** – contains maintenance records
 - **Catalog** – contains information about **generic** Compressors
 - **Life Cycle** – conducts Life Cycle economic analysis to determine the cost-effectiveness of proposed system improvements

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- **Calculators**

- 1) SCFM - ACFM Conversion

- Converts airflow requirements between actual conditions and standard conditions

(CAGI: 14.5 psia, 68°F, 0% RH

ASME: 14.9 psia, 68°F, 36% RH)

- 2) Altitude Correction

- Calculates actual required airflow

- 3) Air Storage Capacity

- Calculates system air storage capacity using data

- 4) Cycle Time

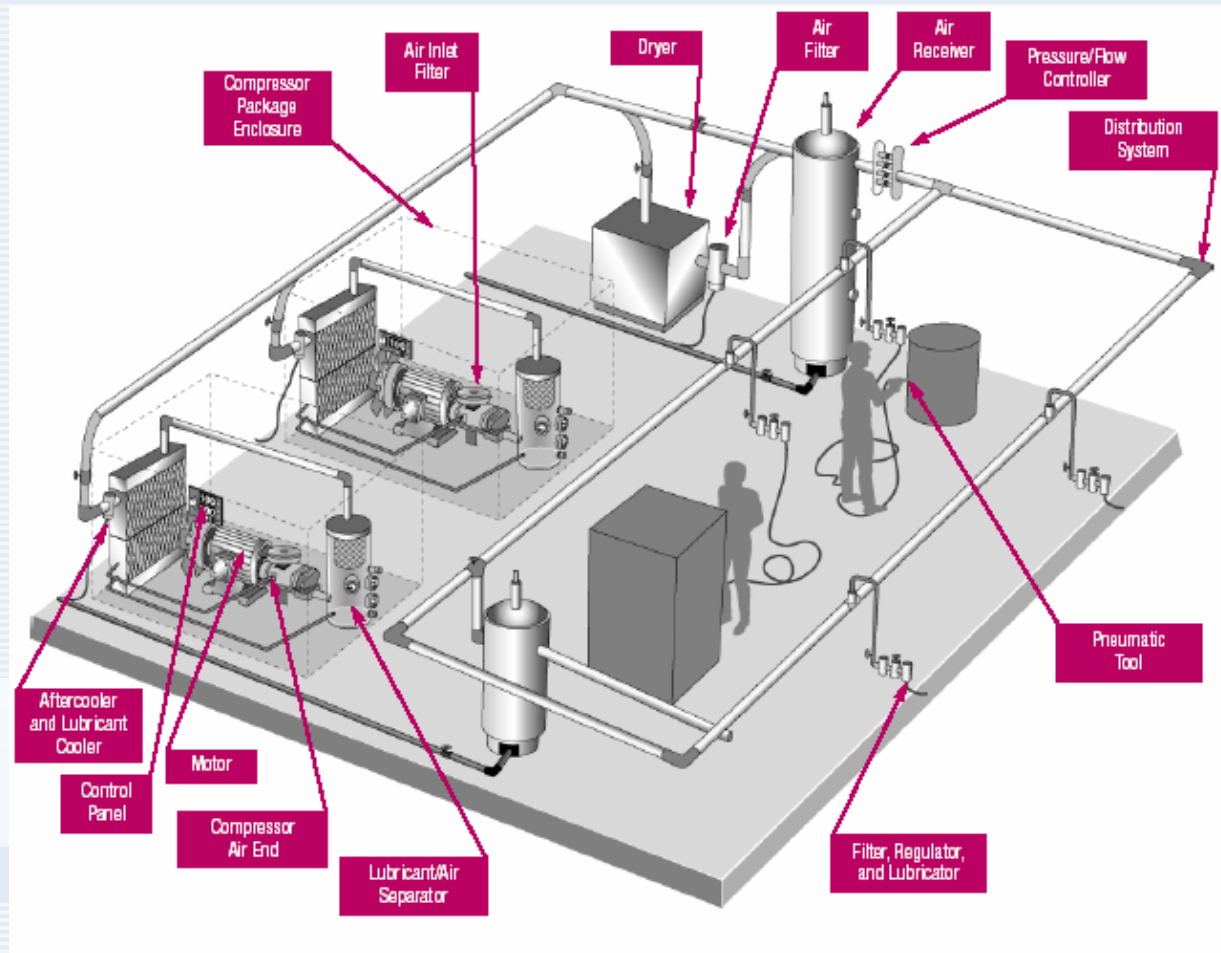
- Determines the cycle time (to pump up and drain down) of a compressor equipped with unloading controls

AirMaster+ Software

QUESTIONS?



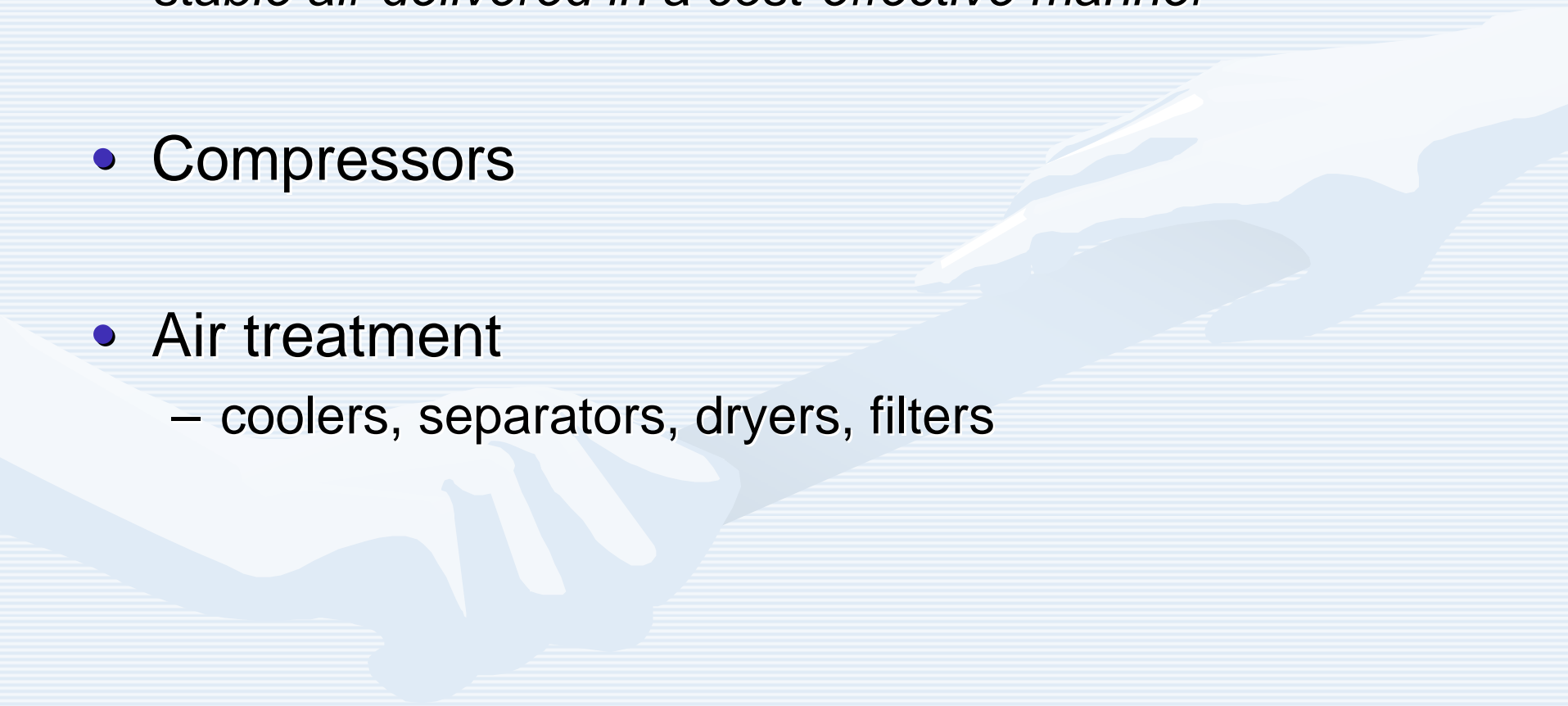
Components of a Compressed Air System



Components of a Compressed Air System

Supply side *properly managed, results in clean, dry, stable air delivered in a cost-effective manner*

- Compressors
- Air treatment
 - coolers, separators, dryers, filters



Components of a Compressed Air System

Demand side *properly managed, minimizes wasted air and uses for inappropriate applications*

- Distribution system
- Storage
- End-use equipment

