

Title: Standard Operating Procedure for Air Dryers		
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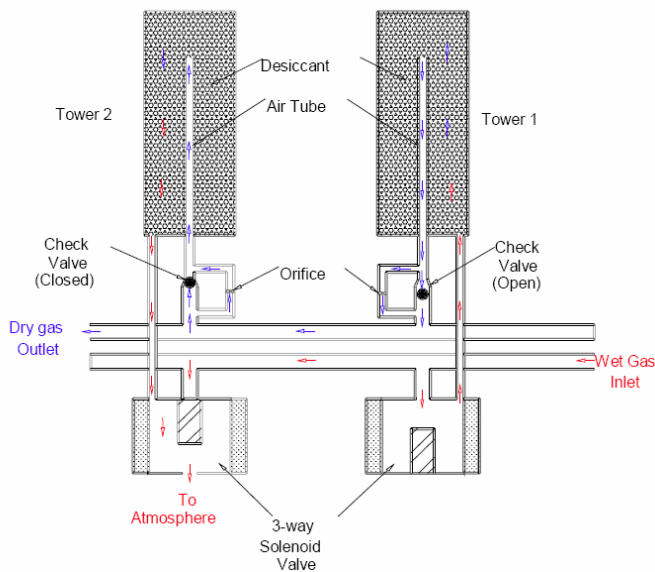
1. INTRODUCTION AND SCOPE

The Puregas and Bendix model air dryers are designed to effectively remove moisture or other unwanted components from a compressed air stream. They separate the various components using Pressure Swing Absorption (PSA) technology. This SOP will explain the principle and details of that operation.

2. PRINCIPLE OF THE METHOD

The process involves two desiccant chambers, 3-way solenoid valves, orifices, and a solid-state electronic timer. The process involves 2 separate modes. In the first mode, compressed air is pushed into the first desiccant chamber containing molecular sieve (commonly known as mol sieve), a hygroscopic absorbent material to remove excessive moisture, CO₂, and other elements. The compressed gas flows through this chamber removing excess moisture and elements, while after the chamber a small amount of dry air is controlled through an orifice to regenerate the off-line chamber. The timer then switches to the other mode, whereas the second chamber is utilized to trap moisture and elements, and a small amount is utilized to regenerate the first chamber. The timer will maintain a cycle between chambers to ensure constant use and regeneration is maintained regularly.

Figure 1: Operation of Mol sieve regenerative air dryers



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3. MEASUREMENT RANGE AND SENSITIVITY

Not applicable.

4. EQUIPMENT AND APPARATUS

The following model is used in this method.

- Puregas and Bendix model air dryers

5. INTERFERENCES

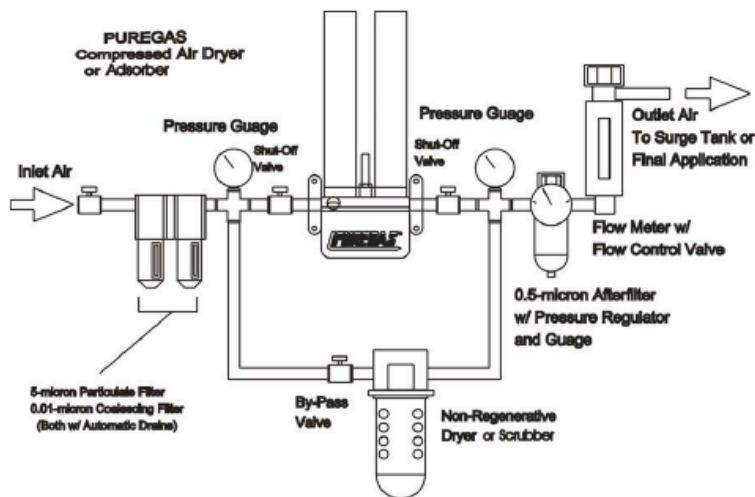
The air dryers should be located in the coolest practical location not subject to freezing temperatures. The operating life will be reduced at temperatures above 125°F, or 52°C. Also, if the pressure generated prior to the drier is moisture and particulate trapped, the removed components will aid in the extended life of the drier.

6. PRECISION AND ACCURACY

Not applicable.

7. SITE REQUIREMENTS

The installation diagram below demonstrates all ideal installation elements.



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Airflow through the unit is demonstrated from left to right. The following model demonstrates the use of a by-pass valve if in the event the drier needs to be serviced. A 5-micron filter installed at the inlet and outlet of the drier will protect both the drier and the process utilizing the dry air. Under no circumstances should the provided pressure exceed 125 psi or 150 psi, depending on the model. Please consult the manual to ensure maximum pressures are not exceeded.

8. INSTALLATION REQUIREMENTS

The user must be aware of the flow path indicated on the drier for proper operation. The unit will operate as required with provided power. Before wiring, confirm the label associated with the driers for electrical characteristics. Some method may be required to regulate the flow or pressure prior to the application of the pressurized air; the method to perform this task should be installed after the drier to ensure proper operation.

9. OPERATIONAL REQUIREMENTS

These units should provide years of service with minimal attention. Ensure on a regular basis that the solenoids are switching properly and cycling regularly. Dessicant towers should be inspected annually for excessive dirt or oil fouling. Examine the filtration devices for foiling or dirt and clean as required. Seal the entire system periodically and inspect for leaks utilizing snoop or other liquid bubbling compound. Ensure that the orifices returning dry air to each tower is clean and free of debris.

10. CALIBRATION

Not applicable.

11. APPLICABLE DOCUMENTS

- **EM-036a** Instruction Manual for Puregas Compressed air dryers and absorbers.

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12. LITERATURE REFERENCES

- Instruction Manual for Puregas Compressed air dryers and absorbers, Columbus, August 2001.

13. REVISION HISTORY

Revision 0 (new document)

Reviewed February 1, 2011

14. APPROVAL



Approved by: **Harry Benders**
Title: **Air Monitoring Team Leader**

Date: **June 20, 2008**