PROCESS INDUSTRY PRACTICES

COMPLETE REVISION
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Process Control

PIP PCEIA001
Instrument Air Systems Guideline

PURPOSE AND USE OF PROCESS INDUSTRY PRACTICES

In an effort to minimize the cost of process industry facilities, this Practice has been prepared from the technical requirements in the existing standards of major industrial users, contractors, or standards organizations. By harmonizing these technical requirements into a single set of Practices, administrative, application, and engineering costs to both the purchaser and the manufacturer should be reduced. While this Practice is expected to incorporate the majority of requirements of most users, individual applications may involve requirements that will be appended to and take precedence over this Practice. Determinations concerning fitness for purpose and particular matters or application of the Practice to particular project or engineering situations should not be made solely on information contained in these materials. The use of trade names from time to time should not be viewed as an expression of preference but rather recognized as normal usage in the trade. Other brands having the same specifications are equally correct and may be substituted for those named. All Practices or guidelines are intended to be consistent with applicable laws and regulations including OSHA requirements. To the extent these Practices or guidelines should conflict with OSHA or other applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by the Practice.

This Practice is subject to revision at any time.

PUBLISHING HISTORY

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Table of Contents

1. Scope 2

2. References 2
2.1 Process Industry Practices 2
2.2 Industry Codes and Standards 2

3. System Design 2
3.1 General 2
3.2 System Pressure 3
3.3 Capacity/Sizing 3
3.4 Air Quality 3
3.5 Air-sets 4

4. Equipment 4
4.1 General 4
4.2 Monitoring and Control Systems 4
4.3 Compressors 5
4.4 Intake Air Filters 5
4.5 Compressor Aftercoolers 5
4.6 Air Receivers 5
4.7 Air Dryers 6
4.8 Air Dryer Prefilters 6
4.9 Afterfilters 7

5. Reliability and Availability 7
5.1 General 7
5.2 Design Considerations 7
5.3 Inert Gas Backup Supply 8

6. Piping Distribution System 8
6.1 General 8
6.2 Piping and Tubing 9
6.3 Valves 9

7. Testing - Piping 10

1. Scope

This Practice provides guidelines for designing instrument air systems that supply pneumatically actuated instruments and valves. This Practice provides design guidelines for air quality, capacity, sizing, and testing of instrument air systems.

2. References

Applicable parts of the following Practices and industry codes and standards shall be considered an integral part of this Practice. The edition in effect on the date of contract award shall be used, except as otherwise noted. Short titles are used herein where appropriate.

2.1 Process Industry Practices (PIP)

- PIP PCCIA001 - *Instrument Air Systems Design Criteria*
- PIP PCCIP001 - *Instrument Piping and Tubing Systems Criteria*
- PIP PCIIA000 - *Instrument Air Installation Details*

2.2 Industry Codes and Standards

- American Petroleum Institute (API)
  - API STD 672 - *Packaged, Integrally Geared Centrifugal Air Compressors for Petroleum, Chemical, and Gas Industry Services*
- American Society for Mechanical Engineers (ASME)
  - ASME - *Boiler and Pressure Vessel Code*, Section VIII, Division 1
- (ISA) The International Society of Automation
  - ISA 7.0.01 - *Quality Standard for Instrument Air*
- National Fire Protection Association (NFPA)
  - NFPA 496 - *Standard for Purged and Pressurized Enclosures for Electrical Equipment*

3. System Design

3.1 General

3.1.1 The instrument air system should be designed to meet the specified pressure, capacity, and air quality requirements.

3.1.2 The instrument air system should not be cross-connected to any other air system other than the backup system to prevent cross-contamination.

3.1.3 Instrument air should only be used for pneumatic instrumentation, and for purging instrumentation enclosures in accordance with *NFPA 496*.

3.1.4 Purging Process Connections

3.1.4.1 Provisions should be made to prevent the backflow of process material to the instrument air system from process connections.

3.1.4.2 Instrument air should not be used for processes that cannot have air or require an inert gas.