PROCESS INDUSTRY PRACTICES

TECHNICAL REVISION
September 2022

Process Control

PIP PCCPA001
Process Analyzer System Design Criteria

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

August 2000	*Issued*	*September 2022*	*Technical Revision*
September 2006	*Complete Revision*		
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1. Scope

This Practice describes the engineering, design, and fabrication requirements for use by an analyzer systems engineer for the design and installation of process analyzer systems used for monitoring and control for the following measurements:

a. Process

b. Effluent

c. Ambient atmospheric

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 the contract award shall be used, except as otherwise noted. Short titles are used herein where appropriate.

2.1 Process Industry Practices (PIP)

– PIP PCSPA001 - *Instructions for Process Analyzer Project Documentation Requirements Sheets*

– PIP PCSPA002 - *Instructions for Process Analyzer System Data Sheets*

2.2 Industry Codes and Standards

– IEC TR61831 - *On-Line Analyser Systems – Guide to Design and Installation*

– NFPA 496 - *Standard for Purged and Pressurized Enclosures for Electrical Equipment*

3. Definitions

calibration and auto-calibration: Procedure for introduction of a known standard to the analyzer. Measured results are compared with the standard, and the response factors of the analyzer are adjusted so that the measured results match the standard. Auto-calibration is the same activity with no human intervention and is normally on a fixed time cycle.

Factory Acceptance Tests (FAT): Tests that are performed at an Analyzer System Vendor's (ASV) facility after complete fabrication and assembly of the analyzer system(s)

fast loop: Part of the sample transport system that is designed to transport the process sample close to but not through the analyzer. The purpose is to reduce the time lag in getting sample from the process sample tap to the analyzer and it should be returned to process whenever possible. The term "speed loop or bypass sample line" is sometimes used to define the same part of the system.

Original Equipment Manufacturer (OEM) Tests: Acceptance tests that are performed at the Analyzer Manufacturer's facility. These tests must have defined and measurable parameters with repeatability factors or tolerance factors that are stated in the data