PROCESS INDUSTRY PRACTICES

January 2018

P&ID

PIP PIE001
Process Flow Diagram Documentation Guidelines

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.

PRINTING HISTORY

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Not printed with State funds

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Table of Contents

1. Scope

This Practice provides general guidelines for the format and content of Process Flow Diagrams (PFDs) for process and utility systems.

This Practice covers the development of new PFDs and does not apply to existing PFDs developed before the adoption of this Practice.

The Practice applies to all diagrams that fit the definition of a PFD in Section 3.

This Practice can be applied to any CAD system used for developing PFDs and is not vendor, hardware, or software specific.

Although this Practice provides general guidelines for the development of PFDs, individual applications may require differing approaches than those recommended in this Practice. Determinations concerning fitness for purpose and matters of application of the Practice to a particular project or engineering situation should not be made solely on the information contained in this Practice.

Example PFDs in the Appendixes of this Practice are not intended to recommend specific design details or requirements, but are included to provide illustrations of various options available to the user.

2. References

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

Process Industry Practices (PIP)

– PIP PIC001 - *Piping and Instrumentation Diagram Documentation Criteria*

3. Definitions

anchor point: Operating conditions critical to the process performance which are required in order to achieve the desired processing objective (e.g., distillation column overhead pressure and temperature)

block flow diagram: Simplified PFD showing process steps (e.g., unit representation or batch processes within one vessel or unit) but not necessarily using symbology for equipment

heat and material balance (H&MB): Tabulation of the composition, flow, temperature, pressure and applicable physical properties (e.g., enthalpy, density, viscosity) of every major stream shown on a PFD. H&MB may also be known as mass and energy balance

heat exchanger duty table: Listing of heat transfer loads

nameplate capacity: Nominal capacity of a production unit based on the stream factor over a given period of time

operating conditions: Set of stream properties for manufacture of a particular product

plant: Location of an operating unit depicted by one or more PFDs

*process***:** Equipment configuration and operating conditions for manufacturing of one or more products