PROCESS INDUSTRY PRACTICES

REAFFIRMATION W/EDITORIAL REVISION
November 2018

Process Control

PIP PCELI001
Level Measurement 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.

PUBLISHING HISTORY

June 1998	*Issued*
August 2006	*Complete Revision*
February 2014	*Complete Revision*
November 2018	*Reaffirmation w/Editorial Revision*

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Table of Contents

1. Scope

This Practice describes the guidelines for selection and installation of instrumentation for liquids and solids level measurement. This Practice does not include guidelines for tank gauging systems or weighing systems.

2. References

Applicable parts of the following Practices and other references 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. References that are not cited in the narrative of this Practice contain additional useful information regarding level measurement.

2.1 Process Industry Practices (PIP)

- PIP PCCLI001 - *Level Measurement Design Criteria*
- PIP PCCEL001 - *Instrumentation Electrical Requirements*
- PIP PCCGN001 - *General Instrumentation Design Basis*
- PIP PCCGN002 - *General Instrument Installation Criteria*
- PIP PCILI100 - *Level Transmitter Installation Details*

2.2 Industry Codes and Standards

- American Petroleum Institute (API)
  - API RP 551 - *Process Measurement Instrumentation*
  - API RP 554 - *Process Instrument and Control*
- American Society of Mechanical Engineers (ASME)
  - *ASME Boiler Pressure and Vessel Code*, Section I, Part PG-60 - "Requirements for Miscellaneous Pipes, Valves and Fittings"

3. General Guidance

3.1 A data set should be provided for each level sensor in either electronic or hard-copy format and contain a minimum data set in accordance with *ISA S20.20, ISA S20.26, ISA S20.27,* or *ISA S20.28* specification forms.

3.2 Level instrument wetted materials of construction should be compatible with the process.

3.3 Level instruments should be connected to vessels or standpipes and not to process flow lines.

3.4 Piping from a vessel to a standpipe should not have traps or pockets. Level gauges and cage-type level transmitters should be installed above or level with the vessel connection to permit drainage into the vessel.

3.5 Block, vent, and drain valves should be provided on level gauges or external cage-type level instruments. The elimination of block, vent, or drain valves should require owner approval.

Comment: Certain process fluids may prevent the use of block, vent, and drain valves.

3.6 Ease of maintenance should be considered when choosing between internally and externally mounted instruments.