PROCESS INDUSTRY PRACTICES

TECHNICAL REVISION
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Vessels

PIP VESSM001
Specification for Small Pressure Vessels and Heat Exchangers with Limited Design Conditions

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

March 1999	*Issued*
June 2000	*Technical Correction*
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February 2012	*Complete Revision*
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1. Scope

This Practice provides general requirements for the design, materials, fabrication, examination, inspection, testing, certification and pressure relief of:

a. Three classes of small pressure vessels as defined by size and MAWP in Table 1a or 1b.

b. Heat exchangers with the limited design conditions shown in Table 1a or 1b of this Practice

This Practice is applicable to:

a. The standard, pre-designed pressure vessels and heat exchangers supplied as part of pre-engineered package units (e.g., refrigeration and air-compressor systems)

b. "Off-the-shelf" vessels and exchangers

c. Vessels (e.g., filters) or exchangers built from the Manufacturer's standard parts

For purposes of this Practice, it is understood that the term "vessel" includes heat exchangers.

This Practice is not intended for the following:

a. Vessel in "Lethal Service" (as defined in Section VIII, Division 1 of the ASME Boiler and Pressure Vessel Code (*Code*))

b. Vessels for which design wall thickness is governed by loadings from wind pressure or earthquake forces

c. Custom shell-and-tube heat exchangers outside the scope of Table 1a or 1b

2. References

Applicable parts of the following Practices, industry codes and standards, and government regulations 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 VEDV1003 - *Documentation Requirements for Vessels, ASME Code Section VIII, Division 1 and 2*
- PIP VEFV1100 - *Vessel/S&T Heat Exchanger Standard Details (US Customary Units)*
- PIP VEFV1100M - *Vessel/S&T Heat Exchanger Standard Details (Metric Units)*
- PIP VEFV1101 - *Vessel Nameplate Bracket*

2.2 Industry Codes and Standards

- American Society of Mechanical Engineers (ASME)
  - *ASME Boiler and Pressure Vessel Code*
  - Section VIII, Division 1 - *Pressure Vessels* (Code)
- Standards of the Tubular Exchanger Manufacturers Association (TEMA)

2.3 Government Regulations

- US Department of Labor, Occupational Safety and Health Administration (OSHA)
  - OSHA 29 CFR 1910.119 - *Process Safety Management of Highly Hazardous Chemicals*

3. Definitions

Code: The *ASME Boiler and Pressure Vessel Code,* Section VIII, Division 1{or 2} and reference sections (e.g., Section II and Section IX) and any *Code* Cases permitted by the *User.* References to Division 2 are identified in braces { }.

construction: An all-inclusive term comprising materials, design, fabrication, examination, inspection, testing, certification (i.e., *Code* stamp and Manufacturer's Data Report), {Manufacturer's Design Report}, and pressure relief. *Manufacturer:* The party who designs and constructs the vessels. In accordance with the *Code* definition, the Manufacturer is the party that possesses a valid Certificate of Authorization to manufacture pressure vessels with the ASME Mark.

Owner: The party who owns the facility wherein the vessel will be used. The owner is typically also the User.

Purchase order: Drawings, specifications, or service-specific data provided by the Purchaser for a vessel

Purchaser: The party who selects and specifies the mechanical design requirements (e.g., Vessel Drawing/Data Sheet {User's Design Specification}), consistent with User criteria, for use by the Manufacturer. The Purchaser is also responsible for placing the purchase order for the vessel or vessel components. The Purchaser may also be the Owner, User, or the Owner's or User's Designated Agent (e.g., engineering contractor).

4. Requirements

4.1 General

4.1.1 This Practice may be used for a custom-designed vessel or exchanger if approved in writing by Purchaser.

4.1.2 The vessel or exchanger shall be constructed in accordance with:

a. The purchase order

b. This Practice

c. Purchaser's data sheet, *PIP VEDV1003-D.* Purchaser shall provide the duty requirements for a heat exchanger in a separate specification such as the TEMA data sheet (Figure G-5.2).

d. *PIP VEFV1100* or *PIP VEFV1100M* for details

4.1.3 The Manufacturer shall be responsible for the construction of the vessel in accordance with this Practice. Mechanical design requirements provided in the purchase order shall not relieve Manufacturer of this responsibility.