

Master Class Series



Impact Testing and Toughness Requirements for Pressure Vessels; ASME Section VIII, Divisions 1 & 2

A Practical, Case Study-based Training Program
Led by:

John P. Swezy, Jr.

7.5 Hours • .75 CEUs • 7.5 PDHs

About this Master Class (MC125)

All pressure vessel designers need to evaluate their vessel designs for toughness considerations, and determine if impact testing or other types of toughness testing is required. The rules of ASME Section VIII, Divisions 1 and 2 may require toughness testing to be performed to demonstrate the suitability of the vessel for service at the designated minimum design metal temperature (MDMT), or may provide several options for exemption from toughness testing under qualifying conditions. This one-day MasterClass provides an in-depth review of the rules of ASME Section VIII, Divisions 1 and 2, and uses case studies to demonstrate their application to different material groupings and service conditions, giving participants a foundational understanding for applying toughness requirements.

For more information and to register, visit:

go.asme.org/mc125

ASME Training & Development

Setting the Standard for Workforce Learning Solutions



The ASME Master Class Series focuses on applications and case studies of a particular topic. Each Master Class is led by an ASME Master, an expert in his professional discipline, who brings a wealth of knowledge and practical examples to the forum. Participants are expected to have prior knowledge of the topic area to gain the most from this interactive environment.

Sessions are focused on real world examples and case studies, with active class discussion and analysis.

About this MasterClass

This one-day MasterClass provides an in-depth review of the rules and application of the ASME Section VIII, Divisions 1 & 2 code rules for toughness requirements associated with a pressure vessel design. The rules of Parts UG, UCS, UHA and UNF of Division 1, and Part 3 of Division 2, used for determining when toughness testing is required or may be exempted, how to perform toughness testing when it is required, and the detailed technical criteria that apply to toughness testing are discussed in depth. Case studies illustrate proper application of the Code rules to specific design situations for various vessel types and materials of construction to provide participants with a better understanding of how the rules fit together in real world applications.

Participants are encouraged to bring examples of toughness applications encountered on the job for in-class discussion.

Upon completion, attendees will be able to

- Determine when toughness testing is required, what type(s) of testing are required to be performed, and the applicable acceptance criteria.
- Apply code provisions for exemption from toughness testing for specific materials of construction, governing thicknesses, and minimum design metal temperatures.
- Identify requirements for welding procedure specification qualification with impact testing, and the acceptance criteria to be achieved for acceptance.
- Explain the principles of production impact testing, when it is required, and the applicable conditions for performance and acceptance.

Who Should Attend

This MasterClass is intended for fabricators and designers who desire a better understanding of toughness requirements for pressure vessels.

About this ASME Master

John P. Swezy, Jr.

has over 40 years of experience in steam and combustion driven prime mover electrical generation plants and associated engineering auxiliary systems, and over 20 years of experience in



developing and implementing detailed procedures, work instructions, and QC programs for design, welded fabrication, repairs, and alterations of pressure equipment following ASME, B31, NBIC, API, DOT and various International Codes and Standards. He also has extensive experience in the area of nondestructive examination.

Mr. Swezy has been a member of various ASME Codes & Standards Committees since 1996. He is a National Board Commissioned Boiler and Pressure Vessel Inspector and an American Welding Society Certified Welding Inspector (CWI). He is recognized for his expertise with the ASME Code rules of Section VIII, Divisions 1 and 2 as they apply to toughness, fabrication, and examination of pressure vessels. He is past Chair of the Subgroup on Toughness, current Chair of the Subgroup on Fabrication and Examination, and member of various other Code Committees for Pressure Vessels and Piping. He was a recipient of the ASME Dedicated Service Award in 2013.

MasterClass Requirements

This MasterClass is structured on the assumption that participants have a basic knowledge of ASME Section VIII, Divisions 1 and 2. *A readily available copy of the code books is recommended.*

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AGENDA

The contents are presented in several case studies, tentatively organized as shown below. The one-day schedule allows for ample discussion and interaction with attendees. The instructors reserve the right to modify the content to address the audience's needs and preferences.

One-day Course: 8:00 am – 5:00 pm

- Overview of ASME Section VIII, Divisions 1 and 2 rules and terminology applicable to toughness testing
- Exemptions from toughness testing for carbon steel vessels (Parts UG & UCS)
- Requirements for toughness testing of carbon steel vessels (Part UCS)
- Case Study 1: Carbon steel pressure vessels (exempted from toughness testing)
- Case Study 2: Carbon steel pressure vessels (toughness testing required)
- Exemptions from toughness testing for stainless steel vessels (Part UHA)
- Requirements for toughness testing of stainless steel vessels (Part UHA)
- Case Study 3: Stainless steel pressure vessels (exempted from toughness testing)
- Case Study 4: Stainless steel pressure vessels (toughness testing required)
- General requirements for toughness testing (Part UG)
- Requirements and exemptions from toughness testing for nonferrous vessels (Part UNF)
- Case Study 5: Nonferrous pressure vessels (exempted from impact testing)
- Examples of unique toughness rule applications
- Summary and Wrap-up