

# Master Class Series



## Piping Failures – Causes and Prevention (MC117)

A Practical, Case Study-based Training Program

Led by:

**Don Frikken, P.E.**

7.5 Hours • .75 CEUs • 7.5 PDHs

### About this MasterClass

This one-day MasterClass provides a practical examination of the fundamental causes of piping failures and describes how the failures could have been prevented. A wide variety of failures are discussed, and include mechanisms such as fatigue, overload, corrosion and others. Mistakes made during design, construction, operation, maintenance and inspection are reviewed in detail.

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

For more information and to register, visit

[go.asme.org/mc117](http://go.asme.org/mc117)

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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 Master Class

This one-day MasterClass provides a foundation of knowledge necessary for those responsible for assuring the mechanical integrity of existing piping systems, as well as those responsible for designing and constructing new piping systems. The program presents background on fundamental causes of piping failures and describes how the failures could have been prevented. A wide variety of failures are explored, and include mechanisms such as fatigue, overload, corrosion and others. Mistakes made during design, construction, operation, maintenance and inspection are discussed in detail.

*Participants are encouraged to bring examples of troublesome failures they have experienced or are experiencing for class discussion.*

## Upon completion, attendees will be able to

- Identify the probable causes of piping failures, and
- Recommend methods to correct future similar failures

## Who Should Attend

Engineers, senior designers, maintenance, quality assurance, inspection and manufacturing personnel who work with process piping (e.g., in the chemical, petroleum, plastic processing, pulp and paper fields), will find this masterclass an essential resource and time-saving means to gain an understanding of piping failures and remedies.

## About this ASME Master

**Don Frikken, P.E.,** is an internationally recognized authority in piping design, currently employed by Becht Engineering, and prior to that, with Solutia, Inc. and Monsanto Company for 34 years. He worked on a wide range of activities



including piping mechanical design, project engineering, and engineering standards. Don's principal specialty is piping design, including design of complex piping systems, piping flexibility analysis, selection of piping components including valves, development of piping standards and specifications, and developing and teaching numerous piping seminars and workshops.

Don is an ASME Fellow and is active on various ASME standards committees. He is a member and past Chair of the ASME B31.3 Process Piping Code committee, as well as member and past Chair of the B31 Standards Committee. Don has received a number of awards, including the ASME Melvin R. Green Codes and Standards Medal, which recognizes outstanding contributions to the development of documents used in ASME programs of technical codification, standardization and certification. Don graduated with a B.S.M.E. from Kansas State University and has a master's degree in civil engineering from the University of Missouri-Rolla.

## MasterClass Requirements

This Master Class is structured on the assumption that participants have a basic understanding of at least one of the ASME B31 piping codes.

# Piping Failures - Causes and Remedies

## AGENDA

The contents are presented in 7 sections, tentatively organized as shown below. The schedule allows for ample discussion and interaction with attendees. The instructor reserves the right to modify the content to address the audience's needs and preferences.

8:00am – 5:00pm

Section	Title	Topics Covered
1	Introduction	<ul style="list-style-type: none"><li>➤ Piping System Failure</li><li>➤ Releases from Piping</li><li>➤ Fundamental Mistakes</li></ul>
2	Corrosion	<ul style="list-style-type: none"><li>➤ General Loss of Metal</li><li>➤ Stress Corrosion Cracking</li><li>➤ Degradation of Materials</li><li>➤ API 570</li></ul>
3	Flanged Joints	<ul style="list-style-type: none"><li>➤ Selection of Components</li><li>➤ Joint Assembly</li><li>➤ ASME PCC-1</li></ul>
4	Valves	<ul style="list-style-type: none"><li>➤ Design</li><li>➤ Application</li><li>➤ Unexpected Failures</li></ul>
5	Small Branch Connections	<ul style="list-style-type: none"><li>➤ Dead Ends</li><li>➤ Robustness</li><li>➤ Vibration</li></ul>
6	Expansion Joints	<ul style="list-style-type: none"><li>➤ Pressure Thrust</li><li>➤ Proper Installation</li><li>➤ Failure Modes</li></ul>
7	Practical Examples	<ul style="list-style-type: none"><li>➤ Thick Stock Pump</li><li>➤ Process Condensate</li><li>➤ Rupture and Hydrogen Blast</li><li>➤ Valve Bonnet Bolting</li><li>➤ Gasoline Pipeline</li><li>➤ Chlorine Release</li><li>➤ Steam Explosion</li><li>➤ Leak Testing</li></ul>
8	Summary & Wrap-Up	<ul style="list-style-type: none"><li>➤ Q&amp;A and Feedback</li></ul>