Run-or-Repair Operability Decisions for Pressure Equipment and Piping Systems

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

George Antaki, P.E.

15 Hours • 1.5 CEUs • 15 PDHs

About this Master Class *(MC132)*

A plant objective is to attain the maximum economic benefit and service life from existing equipment without sacrificing integrity. This requires accurate assessment of the condition of the equipment and their suitability for operability. This two-day MasterClass provides an in-depth review of the rules and application of the ASME codes and standards in making run-or-repair operability decisions for pressure equipment and piping systems. The class is based on a series of Case Studies of damaged conditions and how to diagnose their cause, how to determine the integrity of the system or component, how to decide whether to keep the system or component in service, and how to repair in accordance with ASME PCC-2 Standard.

For more information and to register, visit
http://go.asme.org/mc132

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ASME MasterClass Series

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 two-day MasterClass provides an in-depth review of the rules and application of the ASME, NBIC and API codes and standards in making run-or-repair operability decisions for pressure equipment (tanks, vessels) and piping and tubing systems. The class is based on a series of Case Studies of abnormal and damaged conditions, how to diagnose their cause, how to determine the integrity of the system or component, how to decide whether to keep the system or component in service, and how to repair and prevent recurrence. In making these assessments, we will discuss what guidance is available in ASME B&PV, ASME B31, ASME Post-Construction Codes, API 579, NBIC, and regulations; as well as what is not addressed in codes, standards and regulations, and is therefore at the discretion of the engineer.

Upon completion, attendees will be able to

- Distinguish which parts of run-or-repair operability decisions are addressed in ASME-API-NBIC codes and standards; and which parts are at the discretion of the engineer.
- Apply basic run-or-repair principles to diagnose the cause of damage or abnormal condition, and know what simplified and advanced methods and criteria are available for their analysis.
- Identify the criteria used for making operability decisions for several types of generic damage mechanisms, including fatigue, pitting, corrosion, cracking, overload, leaks, and component support failures.

Who Should Attend

- This Master Class is intended for plant staff engineers, designers, project engineers, maintenance engineers, inspectors, and regulators who desire a practical roadmap for making run-or-repair and operability decisions based on the sound application of ASME codes and standards, regulations, and engineering practice.

About this ASME Master

George Antaki, P.E. is a Fellow of the ASME, with over 40 years of experience in pressure equipment. He is internationally recognized for his expertise in design, analysis, and fitness-for-service evaluation of pressure equipment and piping systems. He is the Chairman of ASME B31 Mechanical Design Committee, Chairman of ASME III Working Group Piping Design, member of the ASME III Subgroup Component Design, and ASME Operation and Maintenance Subgroup Piping. He is the author of three textbooks on the subject of pressure equipment design and integrity evaluation, including: *Fitness-for-Service for Piping, Vessels, and Tanks (*McGraw-Hill).

Mr. Antaki earned his degree from the University of Liege, Belgium in 1975, and his Master's degree in Mechanical Engineering from Carnegie Mellon University in 1985.

MasterClass Requirements

This MasterClass is structured on the assumption that participants have a basic knowledge of ASME Pressure Vessel Codes & Standards.

Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.

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AGENDA

The contents are presented in several case studies, tentatively organized as shown below. The two-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.

Day One: 8:00am – 5:00pm

Overview of ASME and NBIC codes and API standards related to run-or-repair operability decisions

Logical structured approach to run-or-repair decisions
Damage mechanisms, failure modes, design vs. in-service margins

Case Study 1: Corroded Tank
Inspection techniques, causes, run-or-repair decision, role of regulations and codes-standards, options for repairs

Case Study 2: Corroded Piping System
Inspection techniques, causes, run-or-repair decision, role of regulations and codes-standards, options for repairs

Case Study 3: Pitting Corrosion of Vessel
Inspection techniques, causes, run-or-repair decision, role of regulations and codes-standards, options for repairs

Case Study 4: Fatigue Failure by Thermal Transient
Causes, role of regulations and codes-standards, options to prevent recurrence

End of Day 1

Day Two: 8:00am – 5:00pm

Case Study 5: Flow-Induced Vibration in Piping
Observations, measurements, causes, run-or-repair decision, role of regulations and codes-standards, options for prevention, options for mitigation

Case Study 6: Waterhammer
Observations, causes, run-or-repair decision, role of regulations and codes-standards, options for prevention, options for mitigation

Case Study 7: Rupture of a Mechanical Joint
Inspection techniques, causes, run-or-repair decision, role of regulations and codes-standards, options for repairs

Case Study 8: Leakage of Flange Joint
Causes, role of regulations and codes-standards, options for repair

Case Study 9: Repairs
Overview of ASME Post-Construction Code PCC-2 repair techniques: Welded repairs, and non-welded repairs: Selection, planning, specifying, and implementing the repair.

Summary and Wrap-up