NEW at ASME Code Week!

PVP Failure Mode Case Study Series led by PVP Code Experts

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.

LEARN IT RIGHT FROM THE EXPERTS WHO WRITE THE CODES. The Program offers a series of case study workshops, with each workshop addressing the fundamentals of a damage mechanism, their causes and characteristics, method of inspection to detect the extent of damage, and the methods and criteria to evaluate the component's fitness-for-service. Rules and application of ASME and API Codes as well as other industry regulations are discussed in making run-or-repair decisions.

This program is an essential resource for engineers, inspectors, and regulators who desire a practical roadmap for making run-or-repair and operability decisions based on the sound application of ASME/API codes, industry regulations, and engineering practice.

Participants can elect to attend any number of workshops or attend all seven over two and a half days.

PVP Integrity Assessment and Repair Using ASME/API Codes, an Overview (August 9, 2pm-4pm)

This 2-hour workshop introduces the approach to Integrity Assessment and repairs of fixed equipment (tanks, vessels, and piping systems) across industries, including the chemical process industry, oil-gas pipeline industry, refineries and petrochemicals, nuclear power, and fossil power plants.

You will learn about:

- The codes, standards, and regulations related to integrity and repairs that govern each industry
- The contents and general approach of the various codes and standards on integrity assessment and repairs
- The damage and degradation mechanisms that are covered in the various codes and standards
- The repair techniques that are covered in the various codes and standards
- The role of the owner, the designer, and the jurisdiction
- Ongoing developments with ASME Codes on Integrity Assessment and Repairs of Pressure Equipment

PVP Failure Mode Case Study 1: General Metal Loss Corrosion (August 10, 8am-10am)

This 2-hour workshop reviews the causes and characteristics of **General Metal Loss Corrosion**, how to diagnose their causes, 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, guidance available in ASME Codes and other industry regulations are discussed, as well as what is not addressed in codes and regulations, and is therefore at the discretion of the engineer.

You will learn how to:

- Recognize the type and causes of **General Metal Loss Corrosion**
- Apply the correct NDE technique to characterize the corrosion
- Estimate the corrosion rate
- Evaluate the remaining life of the component, based on API-579/ASME FFS-1 and ASME XI
- Make run-or-repair decisions
- Select the repair technique in accordance with ASME PCC-2, API-510 & 570, API-653 and Steel Tank Institute Standards

PVP Failure Mode Case Study 2: Local Thin Areas (August 10, 10:30am-12:30pm)

This 2-hour workshop reviews the causes and characteristics of **Local Thin Areas**, how to diagnose their causes, 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, guidance available in ASME Codes and other industry regulations are discussed, as well as what is not addressed in codes and regulations, and is therefore at the discretion of the engineer.

You will learn how to:

- Recognize the type and causes of **Local Thin Areas**
- Apply the correct NDE technique to characterize the corrosion
- Estimate the corrosion rate
- Evaluate the remaining life of the component based on API-579/ASME FFS-1 and ASME XI
- Make run-or-repair decisions
- Select the repair technique in accordance with ASME PCC-2, API-510 & 570, API-653 and Steel Tank Institute Standards

PVP Failure Mode Case Study 3: Pitting Corrosion (August 10, 1:15pm-3:15pm)

This 2-hour workshop reviews the causes and characteristics of **Pitting Corrosion**, how to diagnose their causes, 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, guidance available in ASME Codes and other industry regulations are discussed, as well as what is not addressed in codes and regulations, and is therefore at the discretion of the engineer.

You will learn how to:

- Recognize the type and causes of **Pitting Corrosion**
- Apply the correct NDE technique to characterize the corrosion
- Estimate the corrosion rate
- Evaluate the remaining life of the component based on API-579/ASME FFS-1 and ASME XI
- Make run-or-repair decisions
- Select the repair technique in accordance with ASME PCC-2, API-510 and 570, API-653 and Steel Tank Institute Standards

PVP Failure Mode Case Study 4: Stress Corrosion Cracking (August 10, 3:30pm-5:30pm)

This 2-hour workshop reviews the causes and characteristics of **Stress Corrosion Cracking (SCC)**, how to diagnose their causes, 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. Prediction of SCC onset and progression are discussed in detail, as well as failure assessments and repair options.

You will learn how to:

- Recognize the type and causes of **Stress Corrosion Cracking**
- Apply the correct NDE technique to characterize the corrosion
- Estimate the corrosion rate
- Evaluate the remaining life of the component based on API-579/ASME FFS-1 and ASME XI
- Make run-or-repair decisions
- Select the repair technique in accordance with ASME PCC-2, API-510 and 570, API-653 and Steel Tank Institute Standards

PVP Failure Mode Case Study 5: Flow-Induced Vibration in Pipes (August 11, 8am-10am)

This 2-hour workshop reviews the causes and characteristics of **Flow-Induced Vibration (FIV) in Pipes**, how to diagnose its 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 mitigate or eliminate. Assessment of severity of FIV is discussed in detail as well as prevention and mitigation options.

You will learn how to:

- Recognize the type and causes of **Flow-Induced Vibration (FIV) in Pipes**
- Assess severity of FIV
- Evaluate the remaining life of the component, based on API-579/ASME FFS-1 and ASME XI
- Make run-or-repair decisions

PVP Failure Mode Case Study 6: Waterhammer Damage in Pipes (August 11, 10:30-12:30)

This 2-hour workshop reviews the causes and characteristics of **Waterhammer Damage in Pipes**, how to diagnose its causes, 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. Assessment of severity is discussed in detail as well as prevention and mitigation options.

You will learn how to:

- Recognize the type and causes of **Waterhammer Damage in Pipes**
- Assess severity of damage
- Evaluate the remaining life of the component
- Make run-or-repair decisions

INSTRUCTORS:

George Antaki is an ASME Fellow with over 40 years of experience in mechanical and structural integrity in the power and process industries. He is internationally recognized for his expertise in design, analysis, and fitness-for-service evaluation of pressure equipment and piping systems. George is chairman of ASME III Working Group Piping Design, chairman of ASME B31 Mechanical Design Committee, past member of the joint API-579/ASME FFS-1 committee, and the ASME Post-Construction Code. He has authored three textbooks on the design, trouble-shooting, fitness-for-service, and repair of pressure equipment.

Tony Scribner is a recognized authority in Materials Engineering and Corrosion Control in the Chemical Process Industries. He has forty years of experience in failure analysis, materials selection, design of equipment to minimize corrosion, troubleshooting and process modifications to minimize corrosion. He has led and been the technology lead for the Materials Engineering function for Union Carbide for more than 30 years and oversaw the development of specifications for five technology areas. Tony is a Licensed Professional Engineer in California. He was Associate Director of the Materials Technology Institute.

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