

INVENO STEAM ENGINEERING TEAM

**STEAM SYSTEM
SAFETY, RISK,
AND HAZARD
ASSESSMENT**



INVENO
ENGINEERING LLC

STEAM SYSTEM SAFETY IS THE *NUMBER ONE* *PRIORITY*

Inveno Engineering maximizes steam system compliance, safety, and reliability

Is your steam system designed, installed, and operating to meet today's codes and best practices for personnel safety and risk-free, reliable operation?

Have you taken all the steps necessary to ensure that your steam system is not causing lost time incidents or production shutdowns?

The **Inveno Steam Engineering Team** can conduct an on-site detailed engineering assessment of your steam system and identify all design, installation, and operational deficiencies. Our team consists of *world-renowned steam and condensate system experts*. We can help your plant identify and address the risks and hazards that jeopardize the safe operation and profitability of your steam and condensate system.

Our safety, risk, and hazard steam system engineering assessments offer **many benefits**:

- **Achieving a safe work environment for all plant personnel**
- **Reducing the risks that can lead to production downtime**
- **Avoiding issues that can result in unreliable, inefficient operation**
- **Reducing the risk of safety violations that lead to costly legal penalties**

These benefits are why plants all over the world turn to Inveno to conduct comprehensive on-site assessments of their steam and condensate systems.

The **Inveno** Steam System Safety, Risk, and Hazard Engineering Assessment

Our **Steam System Safety, Risk, and Hazard Engineering Assessment** program *analyzes your steam system operation* and **establishes an actionable roadmap to bring it into compliance with applicable codes and best practices**. In this program, field-experienced Inveno engineers review all aspects of your steam system to determine how to close the gap between your actual operation and a compliant operation.

OUR PROGRAM CONSISTS OF FOUR STEPS:

STEP 01



Customizing your assessment:

Inveno has developed a comprehensive *steam system assessment framework*. We recognize that one size does not fit all, so we work with your team to tailor our framework **to your specific plant operation**. In collaboration with your team, we review your plant's history of steam system failures and incidents to identify the highest priorities for improving your system. We then customize our assessment to address these priorities while ensuring compliance with applicable national and local codes and standards.



Conducting the assessment:

Our team assesses your steam and condensate system for potential risks and hazards to safe operation. Our engineers are intimately familiar with all national codes and standards, and we study all applicable local codes before conducting the assessment. Our comprehensive program reviews over 300 items in the steam system, covering everything from boilers to boiler support equipment, steam distribution, end users, and condensate systems, ensuring that all components comply with applicable codes, including ASME boiler, ASME pressure vessel, B31.1, B31.3, NFPA, and NEC. Our **Steam Engineering Teams** employ state-of-the-art software systems to identify deficiencies in the steam and condensate system. Throughout the assessment, our team remains in *close communication with your management, operations, engineering, safety, environmental, and maintenance teams* to ensure all aspects of our assessment are reviewed and documented.



STEP 02



Written report of findings and roadmap:

Our written assessment report is structured as an **easy-to-follow remediation plan**. We provide a roadmap that explains, step by step, how to achieve a high level of steam system safety by eliminating risks and hazards in your operation. We provide detailed information, such as photographs and heat maps, about each deficiency and provide recommendations for remediation. We also share details regarding best practices that may provide additional benefits to your plant from our extensive database. Each item is organized by plant area and steam system component. We describe our field observations, analyze whether items are in compliance or noncompliance, assess the severity of the risk, assign a priority level for correction, and more. Our goal is to **get your plant in compliance as efficiently and as quickly as possible**.

Remediation:

Our work does not end with our assessment report. Achieving a safe steam and condensate system requires ongoing vigilance. We can help you **execute the remediation plan**, monitor and validate your plant's progress against the plan, and present the remediation plan to corporate management. Our validation program can begin whenever you schedule remediation activities. It's all part of our commitment to ensuring you attain continuous improvement: **we help you set realistic milestones and offer reliable guidance** to help you accomplish them.

Our Inveno Steam Engineering Team

All work is either performed or supervised and reviewed by **Kelly Paffel**, *Technical Manager*. Kelly is recognized worldwide as a steam system expert and has over 39 years of experience designing and troubleshooting steam and condensate systems. Kelly has written 82 technical papers on steam and condensate systems and has published 31 articles on steam systems. He is also one of the **world's foremost trainers in steam system engineering**, designs and operations. Our Steam Engineering Team members have conducted hundreds of engineering assessments over the past several decades. They bring in-depth knowledge of code compliance and best practices to all their engineering work.

Contact us today to learn how to optimize your steam and condensate system's safety and performance.