



INVENO ENGINEERING

THE LEADER IN STEAM
SYSTEM ENGINEERING,
SYSTEM OPTIMIZATION,
AND RELIABILITY

www.invenoinc.com

» INVENO ENGINEERING

The steam and condensate experts at **Invenco Engineering** have one goal: helping your plant achieve a world-class steam system operation. We can review your entire steam and condensate system from generation to distribution, and from end-user processes to condensate recovery.

If you're expanding your steam system or looking to optimize your system, partnering with **Invenco Engineering** ensures that your steam system is designed and operating properly. We learn your objectives, study your operations to identify and resolve problems, develop a road map to achieve your goals, and walk you through the proposed opportunities.

With our 80+ years of field experience with steam and condensate systems, our team has seen every type of situation. Based on our expertise, our engineering team typically can solve your problems in a fraction of the time that it would take our competitors. Our team members know what steam devices work in different applications, but more importantly, we know what does not work.

Our Services

Whether you need to improve production, enhance steam quality, boost performance, or increase safety, we can help with our full range of services:

- *Steam system design and engineering*
- *Steam system optimization*
- *Steam system reliability*
- *Steam system safety*
- *Steam system benchmarking*
- *Steam system training*

With the right solutions from **Invenco Engineering**, plants experience the following benefits:

- Optimal steam system performance
- Efficient attainment of product quality and production
- Reduced total cost of ownership through increasing reliability
- Lower fuel costs through improved energy efficiency
- Lower environmental impact with less energy waste and reduced emissions
- Improved safety record
- Stronger code compliance

Our Services

We are so confident that our engineering team will exceed your expectations that we offer a **100% satisfaction guarantee**.

Steam System Design and Engineering

To manufacture products of the highest quality, today's industrial plant requires a steam system that offers unparalleled performance and reliability. **Invenco Engineering** helps plants choose the right solutions to improve productivity, efficiency, code compliance, and safety.

How We Can Help

- **Boilers:** We help plants choose boilers that integrate with their existing systems based on an assessment of fuel, sizing, operating pressure, flue gas recovery, and heat recovery.
- **Steam distribution systems:** We perform in-depth engineering studies of steam distribution systems to help plants optimize steam pressure, quality, and quantity.
- **Condensate systems:** We help plants select the right condensate system—gravity, low-pressure, medium-pressure, or high-pressure—and pumps for their application.
- **Pressure-reducing valves (PRVs):** Unreliable or failed PRVs can slow processes or halt production. We ensure PRVs match plant production requirements; where upgrades are required, we design the system, select components, and supervise their installation.
- **Steam turbines:** We select condensate removal and insulation solutions that will yield the highest-quality steam for turbine applications.

Steam System Optimization

To reduce fuel costs and achieve a high steam system thermal cycle efficiency, you must manage your steam system, not allow it to manage you. Our services improve the performance of all four components of steam systems: generation, distribution, consumption, and condensate recovery.

How We Can Help

Invenco helps clients achieve efficiency goals with the following services:

- **Reduce energy consumption and harmful emissions:** By showing plants how to eliminate steam losses, we help them go green while boosting their bottom line.
- **Measure system performance:** Our engineers establish benchmarks and measure key performance indicators so plants can make better decisions about energy management.
- **Recapture energy:** We help plants integrate technologies that reduce energy loss, including flash steam recovery, pressurized condensate systems, cascade systems, thermocompressors, vent condensers, economizers, insulation, and blowdown systems.
- **Enhance steam quality:** We measure steam quality, determine the cause of any deficits, and develop a corrective action plan to meet plants' steam and product quality goals.



● Steam System Reliability and Safety

With our deep understanding of industry best practices, Invenco detects and fixes problems and establishes procedures so plants can achieve a high degree of reliability, meet code requirements, and prevent future issues.

How We Can Help

- **Boost operational reliability through root cause analysis:** We diagnose the source of problems to prevent the same problems from recurring.
- **Achieve uniform performance with standard operating procedures (SOPs):** We draft detailed SOPs that enable consistent operation and reduce the likelihood of accidents.
- **Avoid water hammer safety threats:** We help prevent errors in system design, startup, maintenance, component selection, and installation that can lead to destructive water hammer.
- **Ensure that your plant is up to code:** Our steam specialists study systems, evaluate CAD designs, examine safety valve settings, and review welding certificates to ensure that plants meet all applicable codes.

● Steam System Training

Invenco Engineering provides a full array of hands-on steam training programs.

Our training manager and mentor is world-renowned steam expert **Kelly Paffel**, who has more than 40 years of experience in steam and condensate system operation, optimization, and design. Plants and engineers around the globe use the best practices that Mr. Paffel has drafted to ensure the proper operation of their steam and condensate systems.

How We Can Help

Our training covers more than 40 steam subjects and can be customized to plant needs. Students earn valuable CEU credits while plants benefit from improved productivity, greater efficiency, better safety, and higher employee satisfaction.

Contact us

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