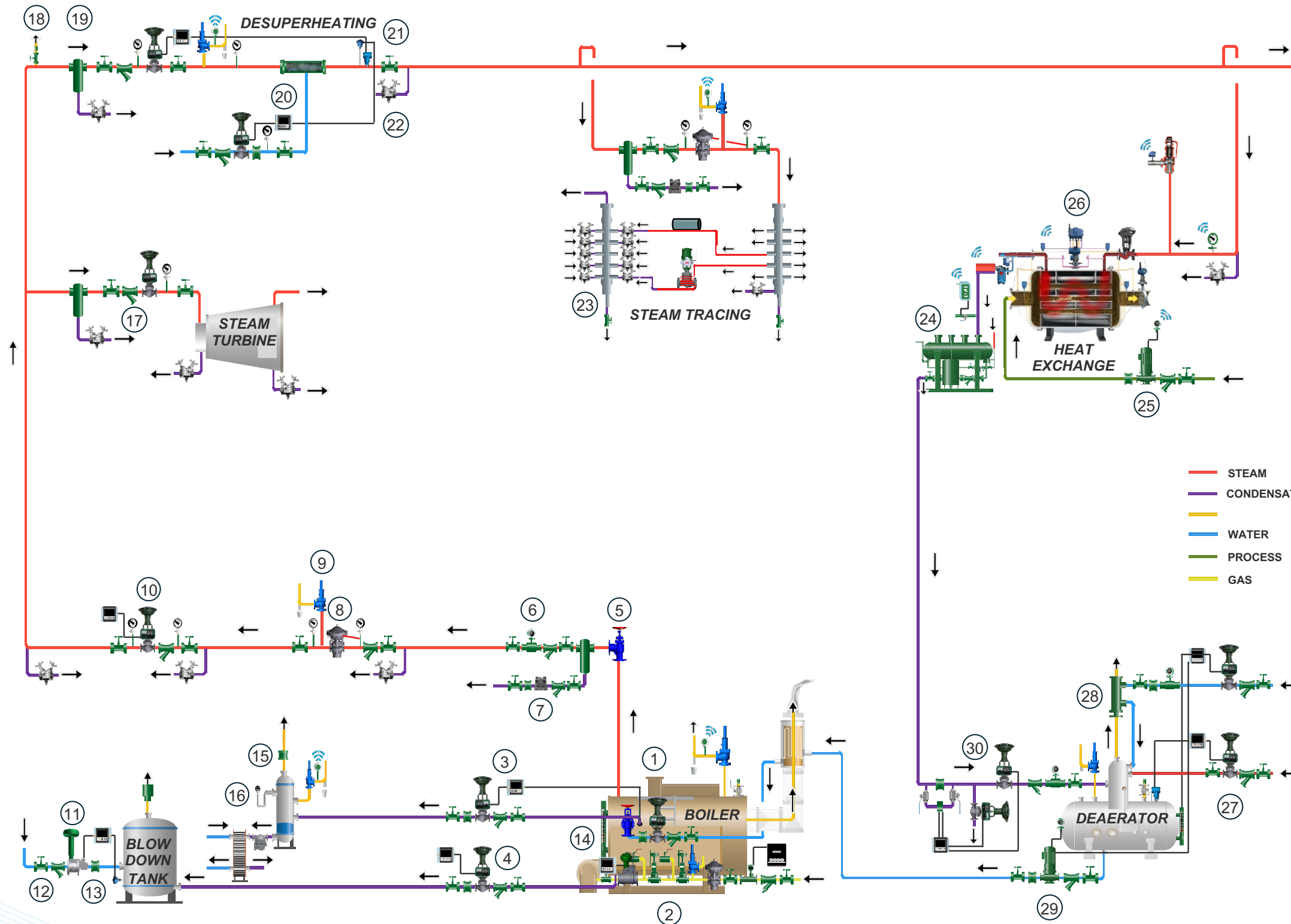




SpartanPRO™ Steam Program

*Unlocking the Full Potential
of Your Steam System*

PRIORITIZING FIELD ASSET HEALTH: Optimizing Performance & Cost Savings



1. Boiler
2. Combustion Controls
3. Boiler Blow-down Valve
4. Boiler Blow-off Valve
5. Non-Return Valve
6. Flow Meters
7. Steam Trap
8. Pressure Regulator
9. Pressure Safety Relief Valve
10. Control Valve
11. Actuated Isolation Valve
12. Isolation Valve
13. Check Valve
14. Level Indicator
15. Flash Vessel
16. Plate & Frame Heat Exchanger
17. Y-Strainer
18. Air Vent
19. Steam Moisture Separator
20. Desuperheaters
21. Pressure/Temperature Transmitter
22. Compact Trap Stations
23. Steam Tracing Manifolds
24. Condensate Pumps
25. Variable Frequency Drives (VFD)
26. Shell & Tube Heat Exchanger
27. Level Transmitters & Gauges
28. Exhaust Vent Condenser
29. Boiler Feedwater Pump
30. Contamination Detection Controls

Steam Service Program Overview

Spartan can design a customized analysis of your entire steam system, considering as many components as you require. From steam generation, distribution, end-use equipment and heat and condensate recovery, our team of in-house specialists can help you to identify and implement improvements leading to substantial cost reductions, safety and reliability improvements and contribute to energy conservation and greenhouse gas emissions reduction.

CUSTOMER EDUCATION:

- Steam System Knowledge
- Maintenance & Troubleshooting
- Reliability Consulting
- One-on-One Onsite Training



PROJECT SERVICES:

- Project Management
- Project Engineering
- Main Instrument Supplier
- EPC & Integrator Support
- OEM Support



SUPPORT & SERVICE:

- 24/7 Emergency Support & Service
- Steam Trap Management Program
- Vendor Managed Inventory Program
- Steam Asset Review
- Critical Spares Analysis



STEAM & CONDENSATE:

- Steam & Condensate Header Balancing
- Optimization & Opportunity Mapping
- Advanced Process Control Services
- Heat Exchanger Optimization
- Waste Heat Recovery
- SpartanPRO™ Industry Ready Solutions



COMPLIANCE:

- MSAPR Compliance for Steam Generation
- GHG Reductions
- CSA B149.3 Compliance
- CarbonVUE™ Operational Carbon Accounting & Verification



STEAM SOLUTIONS:

- Complete Product Portfolio
- Diagnostics, Analysis & Trending
- Remote Monitoring Solutions
- Predictive Maintenance Programs
- Critical Asset Performance Optimization
- Steam Specialty Equipment
- Custom Designed Packaged Solutions
- Custom Designed Boiler Systems



DATA MANAGEMENT & ANALYSIS:

- Advanced Data Analytics
- Machine Learning for Process Industries
- Control Performance Monitoring
- Predictive Maintenance Programs
- Critical Asset Performance Optimization
- Energy Management Information System (EMIS)
- OT Data Connection



DIGITAL TRANSFORMATION:

- Customer Online Portal
- Online Chat

FIELD SERVICES:

- 24/7 Emergency Support & Service
- Startup & Commissioning
- Outages, Turnarounds, Shutdowns
- Steam Trap Testing Services
- PSV Steam Testing Services
- Field Asset Repair Services
- Desuperheater Efficiency Services
- Process Applications Optimization Services
- Boroscope Site Inspections
- Non-Intrusive Flow Meter Validation

1. The Health of Your Field Assets Matters

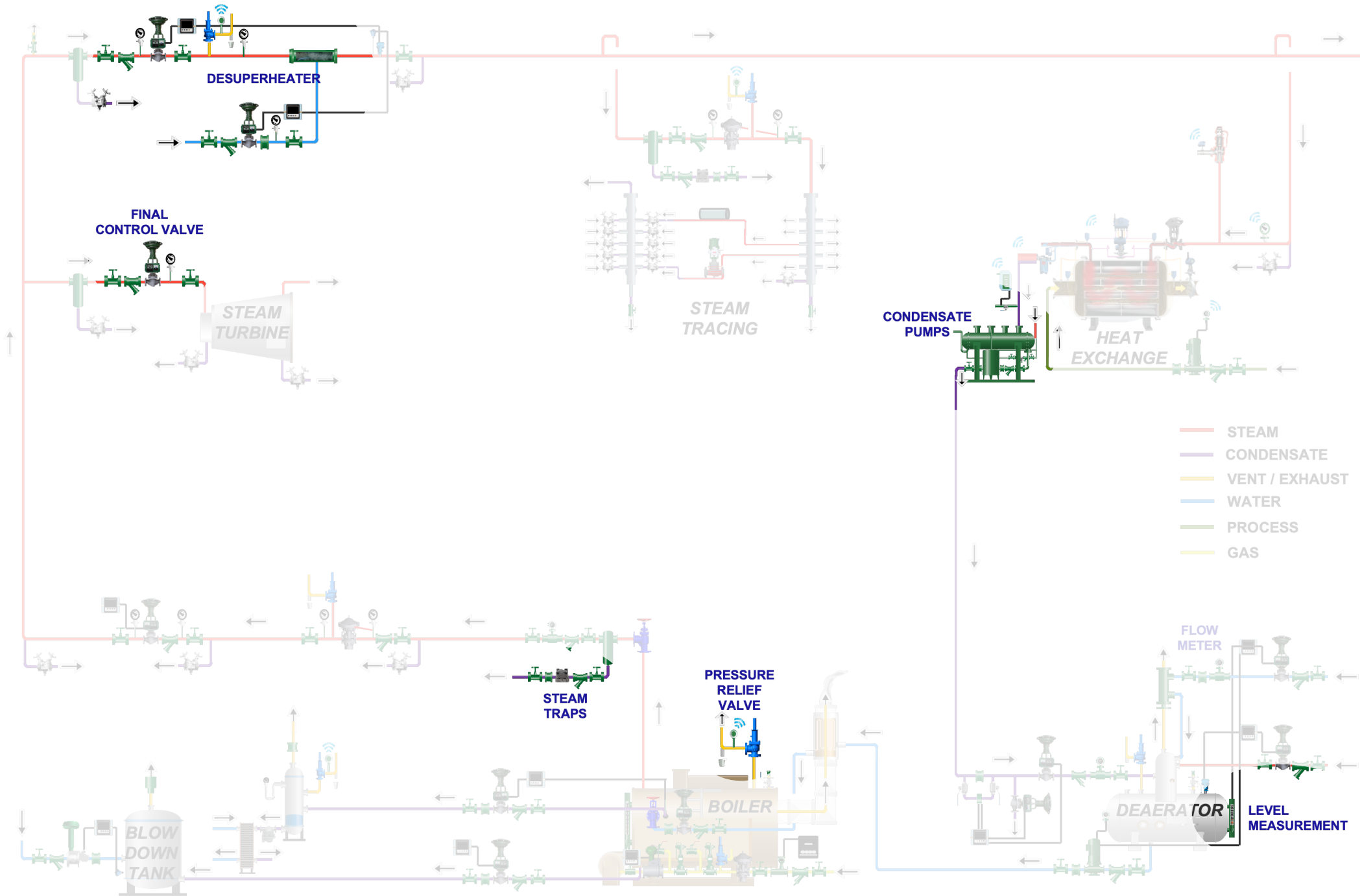
Say goodbye to the pain of unexpected downtime and costly repairs with our in-field service solutions. Our routine assessments are the antidote to asset headaches, ensuring early detection of issues to prevent disruptions. By upholding performance standards and slashing operational expenses, we deliver unparalleled value, enhancing your overall operational efficiency and reliability. Don't let asset issues hold you back - choose Spartan Controls and experience the relief of proactive maintenance today.

Results:

- Quantified steam leakage rates from assets
- Lowered asset failure rates
- Reduced maintenance costs
- Minimized unplanned downtime
- Reduced energy consumption



Explore our Case Studies



LET'S TALK ASSETS

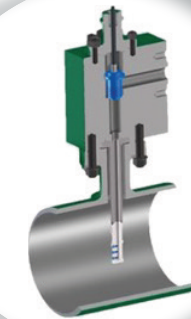


STEAM TRAP

- When was the last time your steam traps were operationally tested?
- Are you experiencing annual repeat failures?
- Are you noticing any erosion, corrosion, or water hammer in your lines?

CONTROL VALVES

- Are your control valves hunting or cycling to maintain setpoint?
- During repairs, are there any indications of cavitation or wiredraw?
- Have you considered control valve health and diagnostic monitoring?



DESUPERHEATING

- Are you experiencing wet saturated steam at your desuperheaters?
- Is your process taking too long to heat?
- Have you noticed any pipe cracks around the desuperheaters?

PRESSURE SAFETY RELIEF VALVE

- Is the current strategy for testing and recertifying SRV on-site or at repair facilities?
- How often are your Section I SRVs tested?
- Would it help reduce the cost of spares inventory management if parts, assemblies, and certifications were available locally?



CONDENSATE PUMPS

- Have you dealt with pump cavitation?
- Is there differential pressure from multiple lines mixing in common condensate return lines?
- Are your condensate receivers venting to atmosphere?

LEVEL MEASUREMENT

- Is the boiler level indicator visible and in good working condition?
- Are there any calibration or interference issues with the level indicator?
- Are you experiencing process buildup on the level gauges or transmitters?



2. Application Assessments Reveal Root Cause Issues

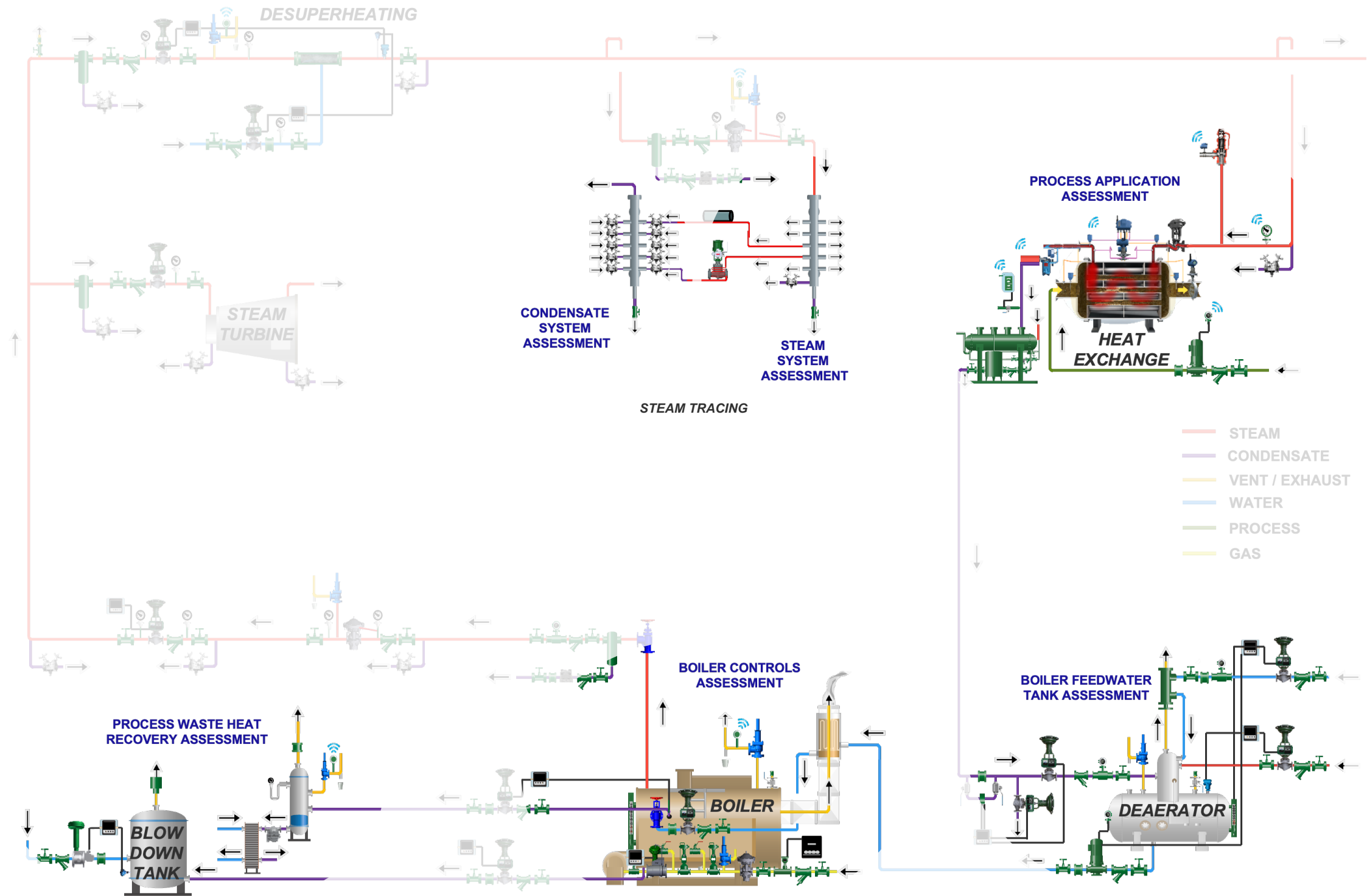
Unlock the potential of your steam applications with our comprehensive in-field service solutions. Our team of subject matter experts goes beyond reviewing assets, offering thorough assessments to reveal root cause issues within the entire application. Addressing safety concerns, installation issues and optimizing processes with precision. You can trust our team for actionable insights that drive effective resolutions and ongoing improvements.

Results:

- Quantification of energy and water savings
- Defined opportunities for achieving GHG emission reductions
- Root cause analysis
- Implementation of best practices for installation
- Development of custom modern solutions



Explore our Case Studies



LET'S TALK PROCESS

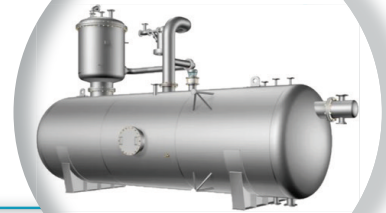


BOILER CONTROLS

- Are you experiencing boiler carryover issues?
- Are additional boilers required during high load conditions?
- Are your boiler blowdown controls manual or automatic?

BOILER FEED WATER TANK

- Is the feedwater tank corroding or eroding?
- Are you experiencing stratification issues?
- Are you dealing with high chemical costs?



PROCESS HEATING APPLICATIONS

- Are you experiencing heat exchanger fouling or calcification?
- Are your exchangers struggling to maintain temperature?
- Are you dealing with water hammer issues?

PROCESS WASTE HEAT RECOVERY

- Are any steam vent lines from condensate receivers venting to atmosphere?
- Are you recovering the heat from blowdown water before it is drained?
- Are you interested in reducing your carbon emissions and water consumption?



STEAM DISTRIBUTION SYSTEM

- Are there any water hammer issues in your steam lines?
- Are you dealing with eroding or corroding lines?
- Have any of your valves experienced wire draw?

CONDENSATE RETURN SYSTEM

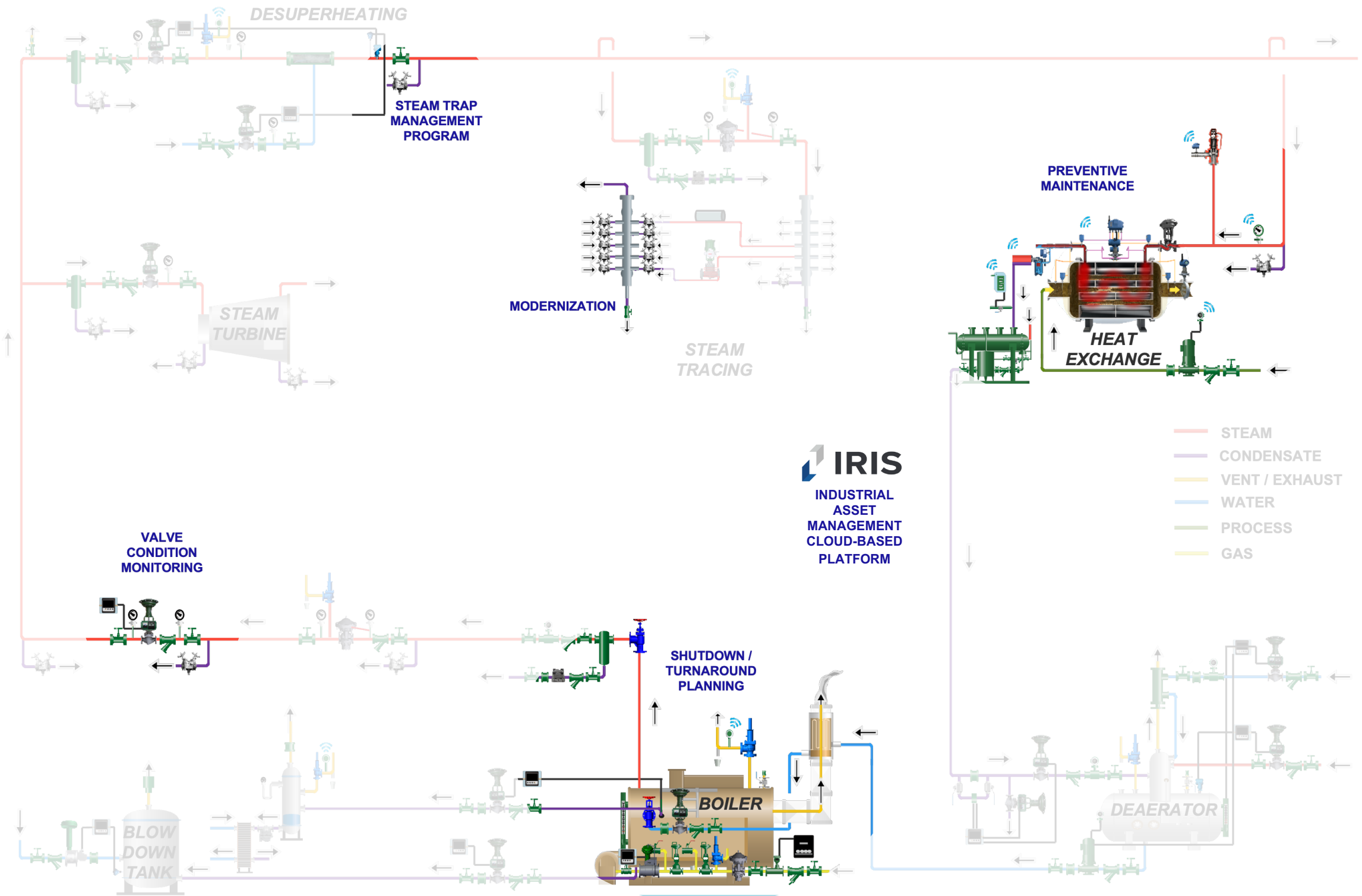
- Are you experiencing water hammer issues in your condensate lines?
- Are your condensate lines eroding or corroding?
- Are you experiencing repeat steam trap failures?



3. Steam System Management

Spartan offers tailored analyses for your complete steam system, encompassing all necessary components. Whether it's steam generation, distribution, end-use equipment, or heat and condensate recovery, our team of experts can assist in pinpointing and executing operational improvements.

These enhancements not only lead to significant cost savings but also bolster safety and reliability, while simultaneously promoting energy conservation and reducing greenhouse gas emissions.



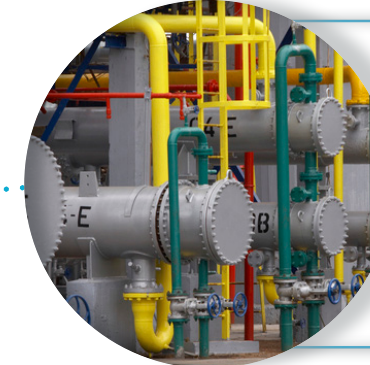
Explore our Case Studies

LET'S TALK SYSTEMS



STEAM TRAP MANAGEMENT PROGRAM

- Are your steam lines standardized to optimize spares inventory management?
- Are repair/replacements part of your shutdown/turnaround plan?
- Is energy being compromised to achieve reliability?



PREVENTATIVE MAINTENANCE

- Is the steam supply pressure lower than required?
- Is the condensate return system over pressurized?
- Are your steam lines experiencing corrosion or erosion?



MODERNIZATION

- Has debris in your condensate lines led to trap replacements?
- Have your pressure regulators been repaired or recently function tested?
- How often have you repaired a leaking steam tracer manifold?
- When was the last time the ASME Section I boiler pressure relief was tested?



VALVE CONDITION MONITORING

- Are you interested in reducing variability and minimizing downtime?
- How long does it take to identify poorly performing valves?
- Are you interested in reports with actionable insights to improve reliability and save valuable resources?

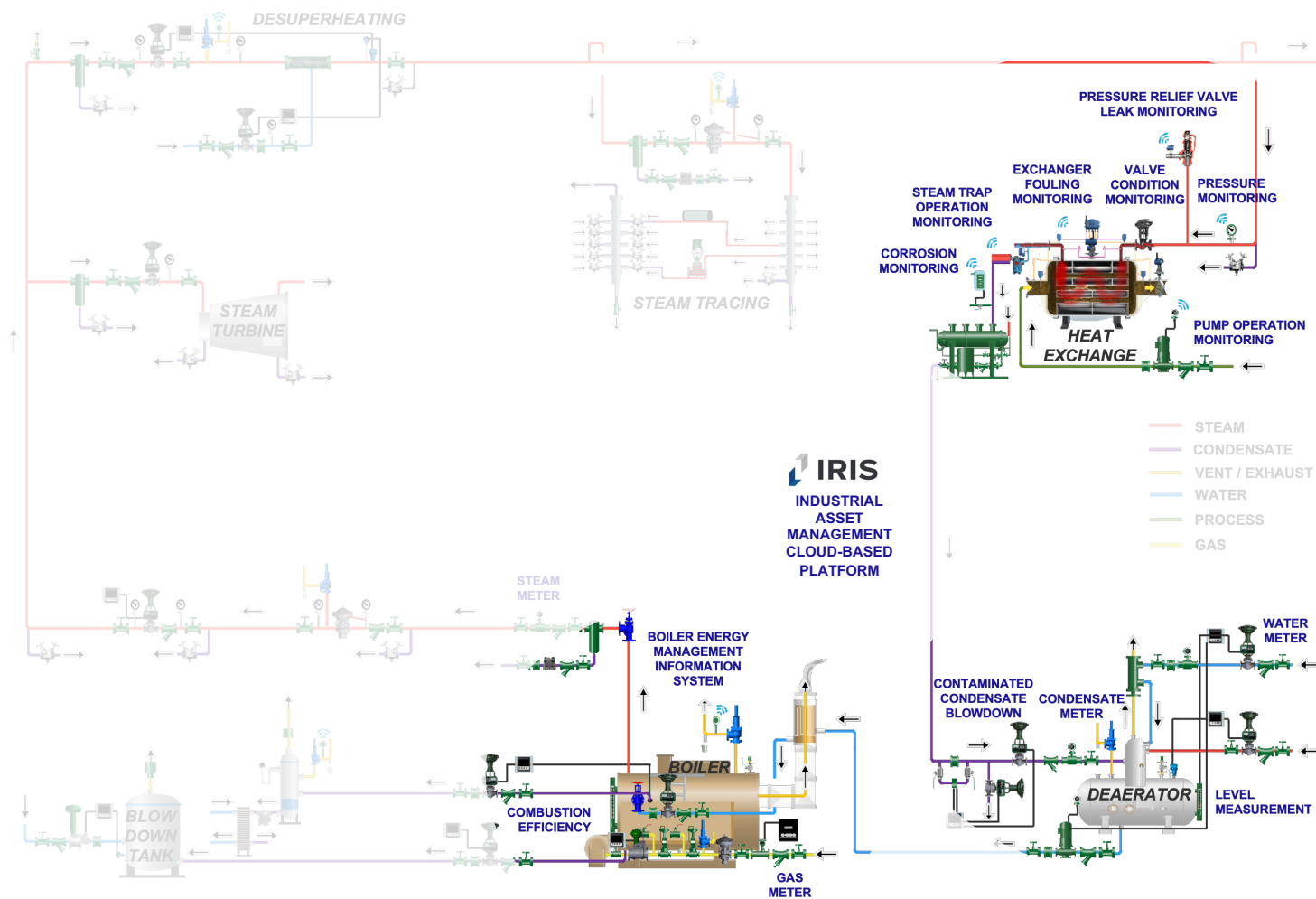


SHUTDOWN/TURNAROUND PLANNING

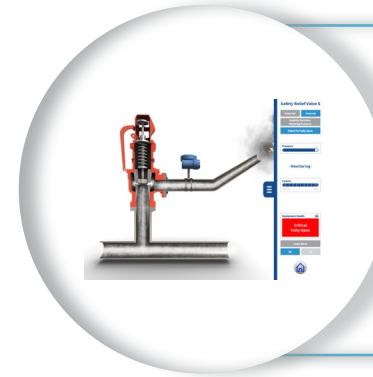
- Have you dealt with unexpected scope creep?
- Has the steam system and all components been considered for the scope?
- Has your steam system contributed to a startup or shutdown delay?

4. Digital Analysis

Predictive analytics offer valuable insights into the dynamics of your steam system and its interconnected equipment, including combustion controls and specialty valve monitoring. These insights empower you to devise strategies for proactive monitoring and maintenance, ensuring the holistic health of your system. By optimizing performance through predictive analytics, you can actively contribute to your organization's overarching sustainability and reliability objectives.



Explore our Case Studies



WIRELESS REMOTE MONITORING

- Is there a current process for identifying fouling and scaling inside heat exchangers?
- Are there any lines with multiple pressure relief valves? How do you identify which one is leaking?
- Are any pumps cavitating or prone to failure?
- Are you interested in monitoring corrosion in your steam and condensate lines?



ENERGY MANAGEMENT INFORMATION SYSTEM (EMIS)

- What is the operating efficiency of your boilers? Is the real-time and historical consumption known?
- What is the cost of your failed assets?
- Is having access to data embedded alerts, troubleshooting support, and root cause analysis important to your operations?
- Are you interested in accurately forecasting energy consumption using advanced data analytics with machine learning and AI?



AMS DEVICE MANAGER

- How long does it take to identify issues with valves and instruments? How long does it take to commission them?
- Are you interested in having access to a centralized location for asset data?
- Would automatic reporting tools help save time and resources?
- What is your current process for monitoring and recording data from 10+ valves?



Experience Industrial Innovation

Our team of experts are **ready to assist** you in optimizing your steam system while saving costs ~ **Call us today** or request a quote online 24/7

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