

VALVES | ACTUATION | MEASUREMENT | MONITORING



STEAM SOLUTIONS

WHO WE ARE

Experience industrial innovation at Spartan Controls—the recognized leading provider of industrial automation solutions in Western Canada. Since 1963, Spartan has provided customers with high performance solutions, industry expertise, lifecycle support, and technical training, delivering value our customers want.

INDUSTRIES WE SERVE

Our automation solutions serve a wide range of industries, including oil and gas, oil sands, mining, chemical, pulp and paper, power, pipeline, and municipal sectors. At Spartan, we are committed to sustainability and exceptional customer experiences, where expertise and collaboration drive success.

ABOUT STEAM SOLUTIONS

Spartan’s products and solutions encompass a holistic system approach that can enhance the overall operation of steam systems. This requires an understanding of the various applications and stages of a typical steam process. Key opportunities include improving boiler steam generation rates to meet demand changes, ensuring accurate/advanced steam pressure and temperature control for effective process heat transfer, fast removal of condensate from processes, efficient recovery and return of waste heat energy and utilities, as well as process/asset monitoring and protection of connected equipment.



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1. Integrated Packaged Solutions (pages 4-5)

Integrate pre-packaged solutions, including packaged boilers, designed and built fabricated systems, shutdown & turnaround planning, field system assessments, and software solutions.

2. Boiler Application (pages 6-7)

Protect boilers and processes under variable load conditions to ensure fast steam generation rates. Supply steam at accurate pressures and temperatures safely and efficiently.

3. Direct Steam Injection Application (pages 8-9)

Protect and manage process with high-performance isolation valve solutions offering Class I to Class VI shutoff across various industrial applications.

4. Process Heating Application (pages 10-11)

Accurate control flow, pressure, temperature, level, and transmitted set points for process applications. Control valve solutions include specialized trims and precise flow characteristics.

5. Measurement Instrumentation (page 12-13)

Achieve exceptional accuracy and repeatability, transmitting precise data for pressure, temperature, flow, level, vibration, conductivity, differential pressure, and more across processes.

6. Wireless Monitoring Solutions (pages 14-15)

Monitor and manage asset operations and performance with integrated suite of digital solutions, enabling seamless device integration, live monitoring, and robust connectivity.

7. Condensate & Heat Recovery Application (pages 16-17)

Improve steam quality, process heating return hot water and recover waste heat with steam traps, condensate pumps and recovery systems. Reduce cost of utilities & production.

8. Boiler Feed Tank Application (pages 18-19)

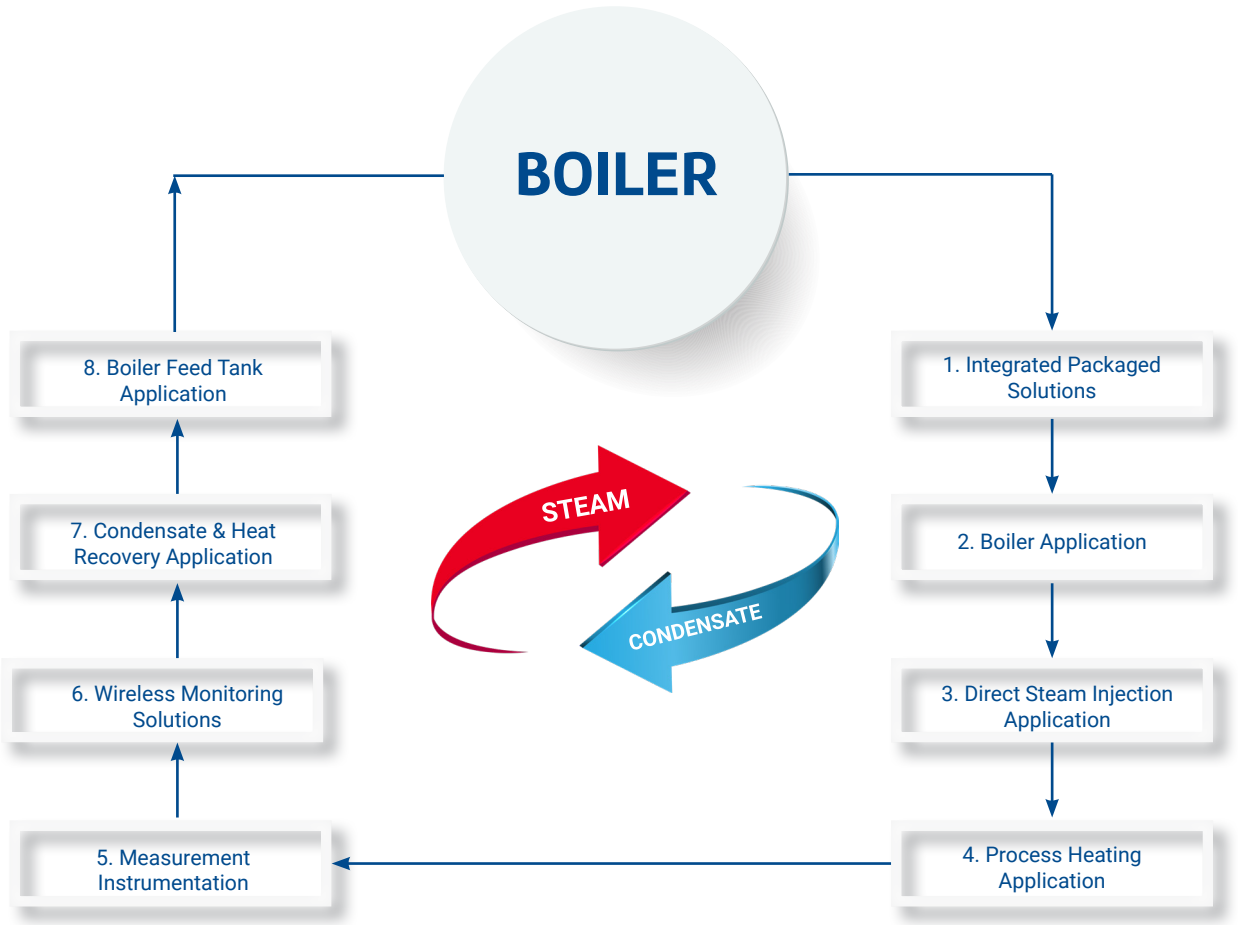
Protect the boiler feedwater tank and improve response times for the boiler feedwater pump. Safeguard the boiler by reducing corrosion and contamination in the feed tank.

9. Education (page 20)

Spartan Controls offers both local on-site and remote educational seminars covering a wide range of topics. Additionally, we can customize seminar topics. We also customize seminars based on customer requests to address specific priorities and solutions..

10. Services (page 21)

Spartan Controls provides on-site operational testing of installed assets and expert troubleshooting with root cause analysis from subject matter experts. We also offer asset management programs, advanced monitoring solutions, and data analytics through integrated software solutions.





INTEGRATED PACKAGED SOLUTIONS



Fabricated Packaged Solutions



Packaged Boilers



Fabricated Packaged Fuel Trains

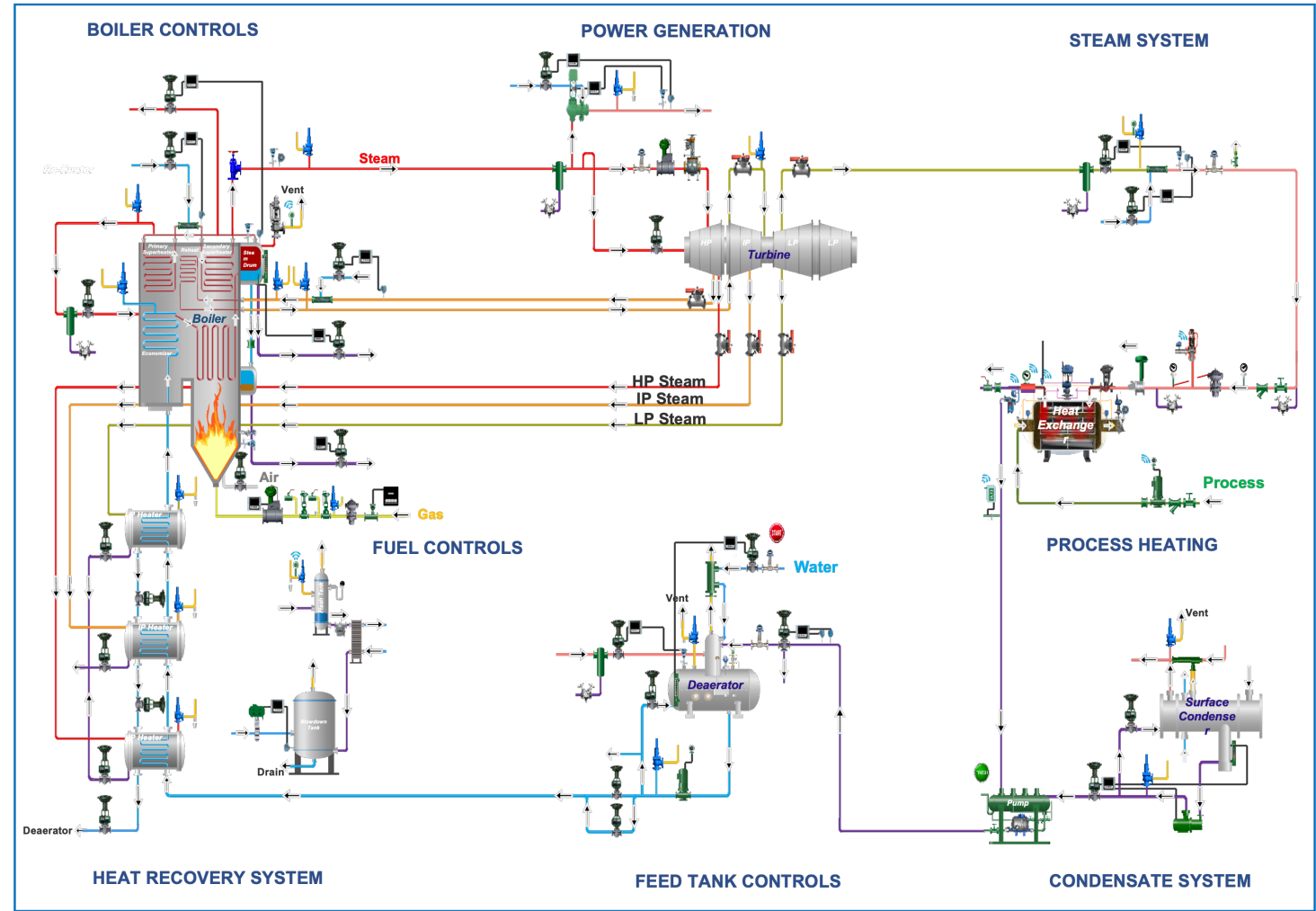


CarbonVue, StackVue, PowerVue, FlameVue, RegVue, FailVue, RemVue, TruckVue



Packaged CEMS Solutions
Packaged Combustion Control System
Packaged Combustion Air System
Packaged Burner Management System
Packaged Delta V Control Panels
Packaged Heat Exchanger Solution
Steam Pressure Reducing Station
Steam Trap Station
Steam Flow Meter Station

PLANT-WIDE INTEGRATED SOLUTIONS



Field Asset Management Services

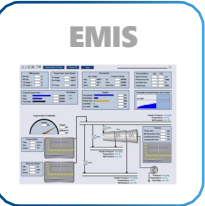
Software Solutions



Advanced Process Control



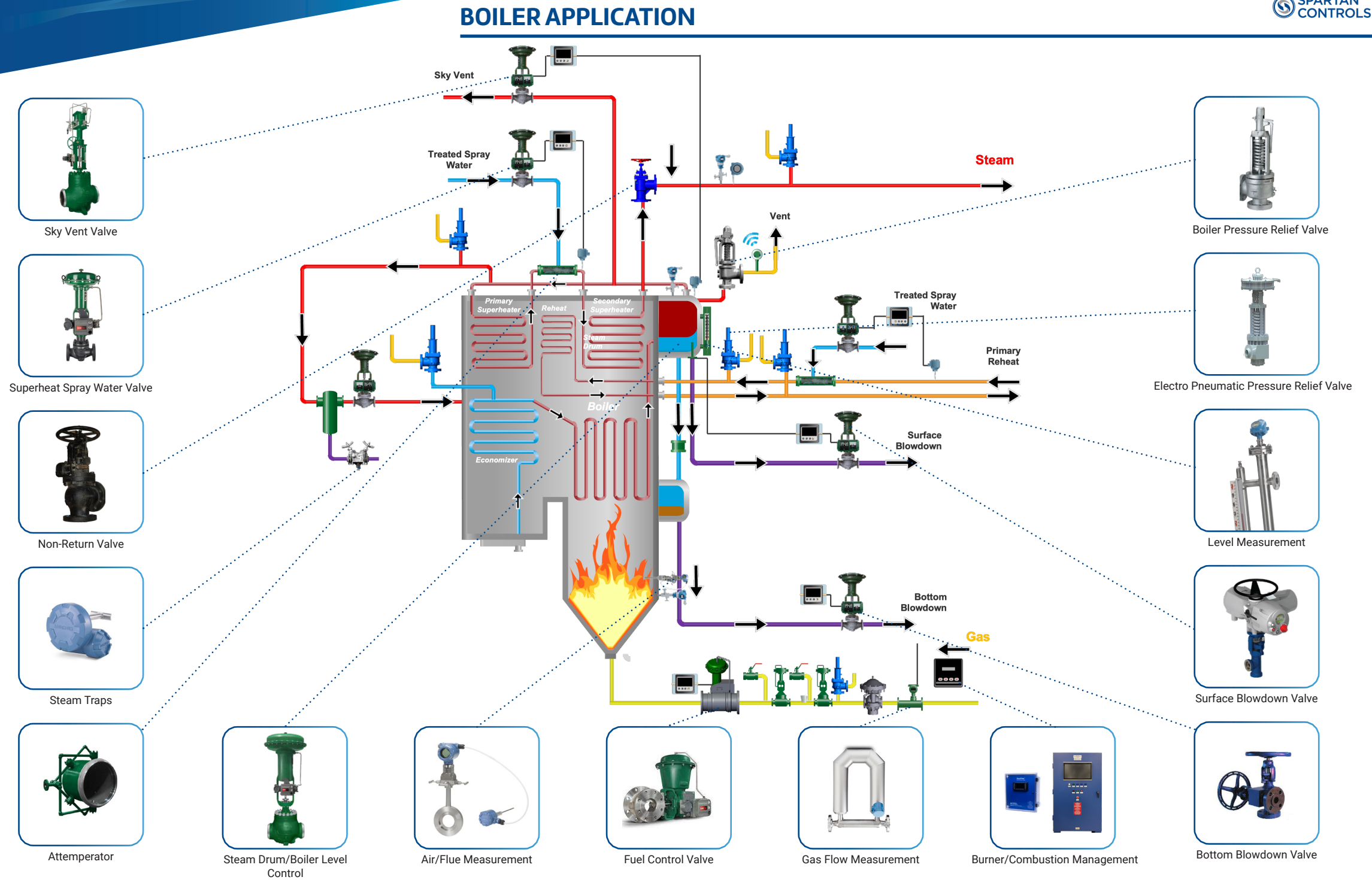
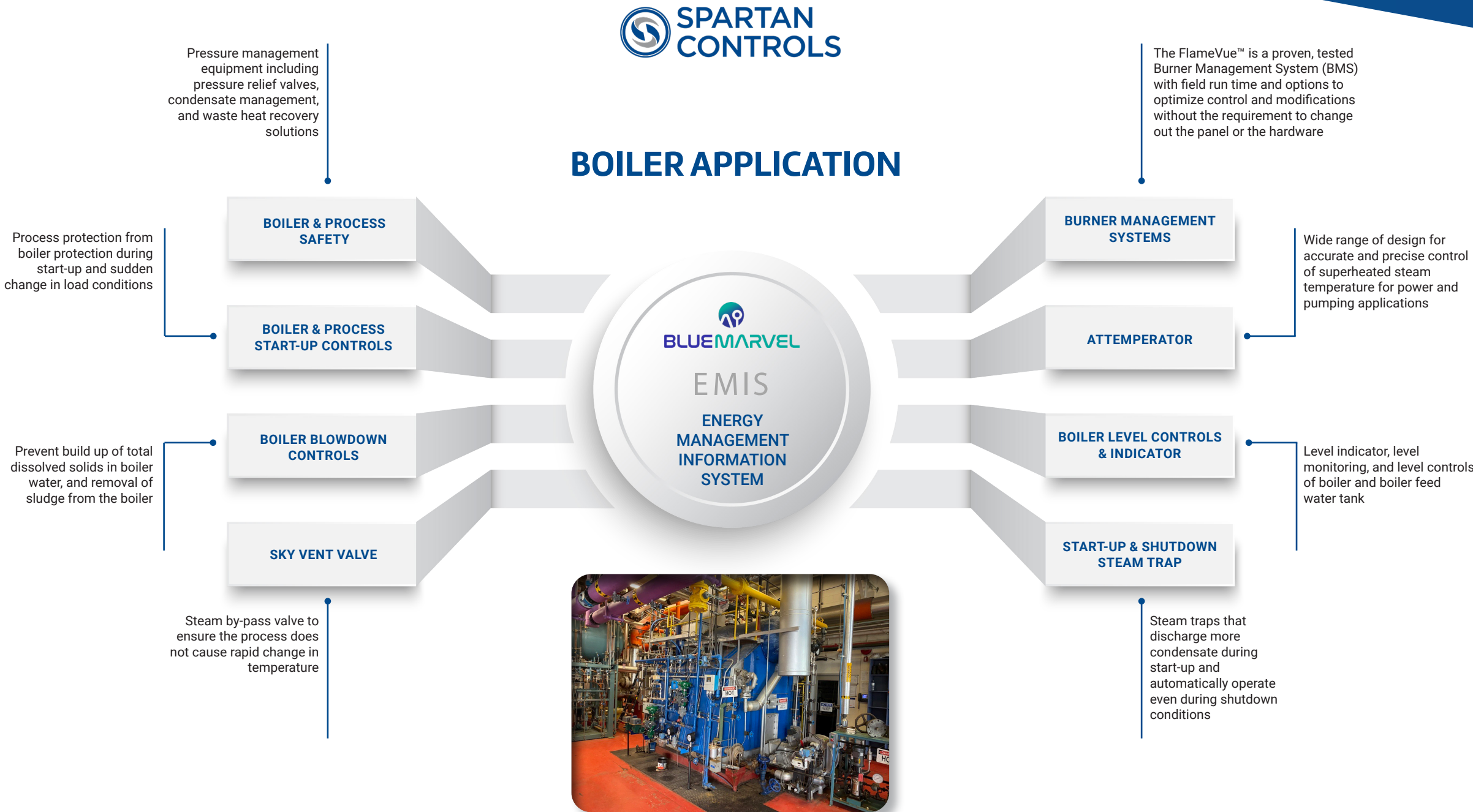
Asset Management Software Device Manager



Energy Management System



DeltaV - Distributed Control System (DCS)



Wide range of manual isolation valves available for various industrial applications in oil, gas, refinery, upgrader, chemical, in-situ, paper, power, food, beverage, and hospitals

Industry proven tight shut-off for steam applications with reduced wear. Improving capital and maintenance cost

High-performance valve suitable for high-temperature application with less required torque compared to floating ball valve

In line repairable high pressure globe valve for maximum service life

ISOLATION VALVE
(GATE, GLOBE, BALL, BUTTERFLY)

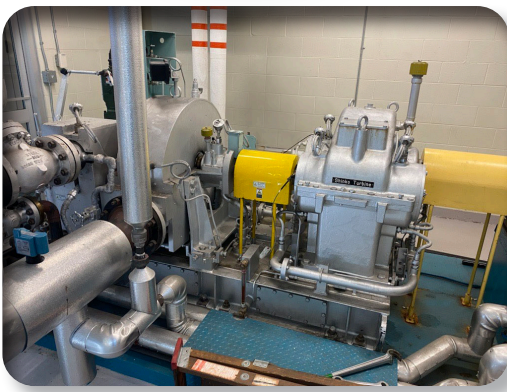
TRIPLE OFFSET VALVE

HIGH PERFORMANCE BUTTERFLY VALVE

WELBOND VALVE



DIRECT STEAM INJECTION APPLICATION



TURBINE AIR EXTRACTION VALVE

TURBINE BY-PASS VALVE
(STEAM CONDITIONING VALVE)

TRUNNION BALL VALVE

STEAM SERVICE BALL VALVE

Protect the compressor During startup or shutdown from axial over thrusting by relieving pressure in the system

Effectively by-pass high temperature steam from turbine at saturated temperatures for efficient condensing

High-performance valve suitable for high temperature application with less required torque compared to floating ball valve

Designed to handle high-temperature, abrasive, corrosive medium with tight seal for uni-directional and bi-directional flow

DIRECT STEAM INJECTION



Actuators & Positioners



Steam Turbine By-Pass Spray Water Valve



Steam Conditioning Valve (Turbine By-Pass Valve)



Drip & Tracer Steam Trap



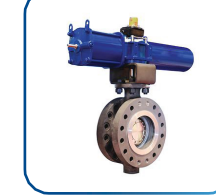
Actuated Ball Valve



Steam Shut-off Valve (Trunnion Ball Valve)



Steam Seal Regulator (Rising Stem Valve)



Main Heat/Reat Valve (Triple Offset Valve)



Steam Extraction Valve (Swing Check & Actuator)



Parallel Sliding Gate Valve



Spring Pressure Relief Valve



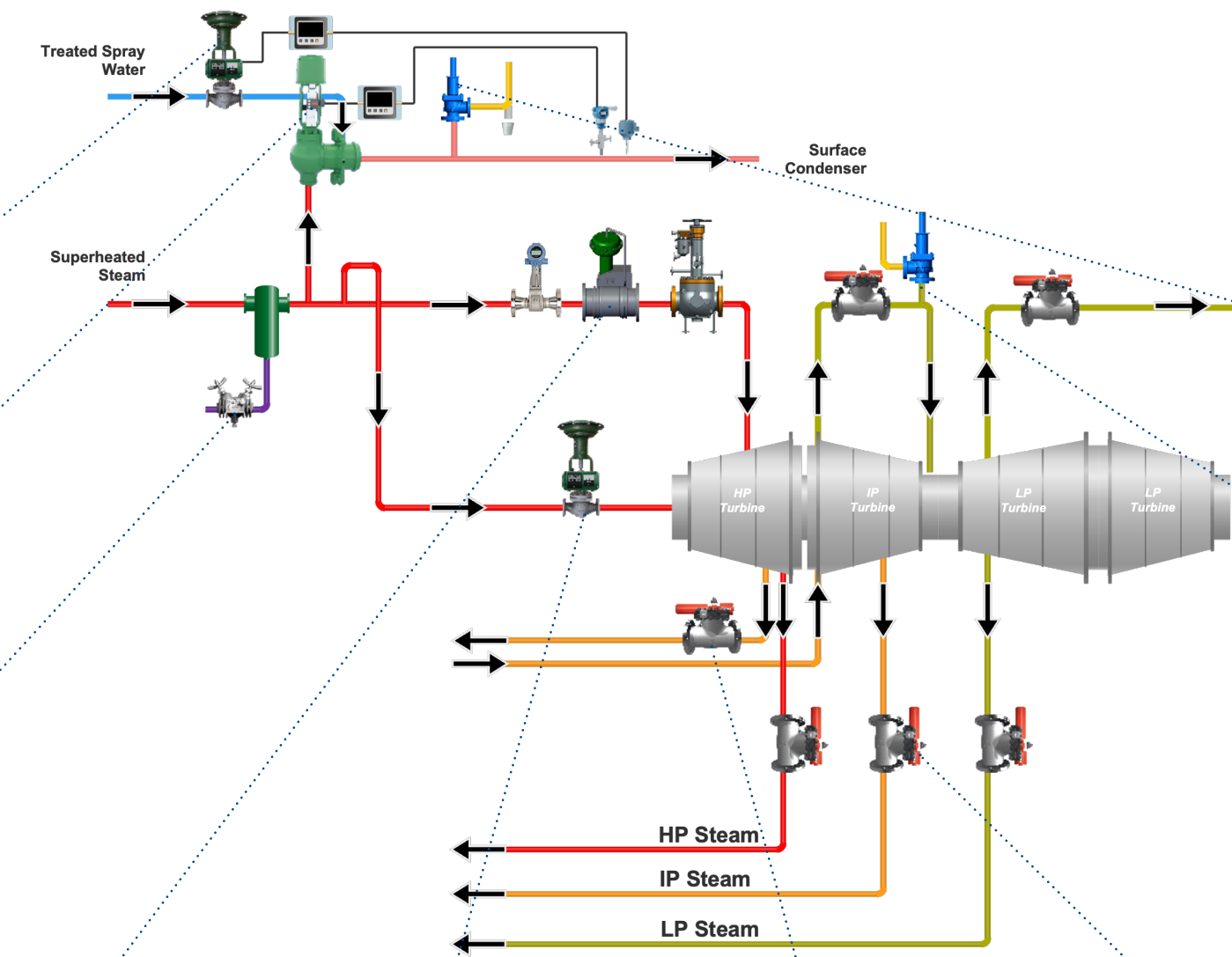
Pilot Operated Pressure Relief Valve



Pressure Regulator



Vent/Drain Valve (Welbond Valve)





PROCESS HEATING APPLICATION



Industry leader with wide range of innovation valves designs to control flow, level, pressure, and temperature. Types of trim available are Standard, Cavitrol, Whisper, WhisperFlo, Dirty Service, Severe Service, Micro-form, Anti-Cavitation, Balanced, Unbalanced, Tight Shut-off, Cryogenic, and High Temperature

Mechanically adjust and maintain accurate pressure setpoint for consistent process operation

Release access pressure from the system for ASME Section I, and ASME Section VIII applications

Modulating control valve for diverting and mixing applications for liquids

- CONTROL VALVE
- PRESSURE REGULATOR
- PRESSURE RELIEF VALVE
- THREE-WAY CONTROL VALVE

Accurate control of superheated steam temperature with wide range of specialized industrial products for Desuperheating steam

Keep steam quality dry with fit and forget steam moisture separator for process applications and controls

Remove condensate from various high-capacity process heating applications with use of thermodynamic, thermostatic, and mechanical traps

Intrinsically safe high temperature rated mechanical pumps. Operated by steam, compressed air or compressed gas

- DESUPERHEATER
- DRY STEAM SUPPLY
- PROCESS STEAM TRAP
- CONDENSATE PUMP

PROCESS HEATING



Steam Quality Conditioning



Desuperheating



Gauge Cock/Sight Glass



Process Steam Trap



Mixing/Diverting Valve



Fabricated Condensate Return System



Temperature Control Valve



Variable Frequency Drive (VFD)



Steam Safety Shut-off Valve



Steam/Process/Heat Exchanger Pressure Relief Valve



Air Vent/Y-Strainer



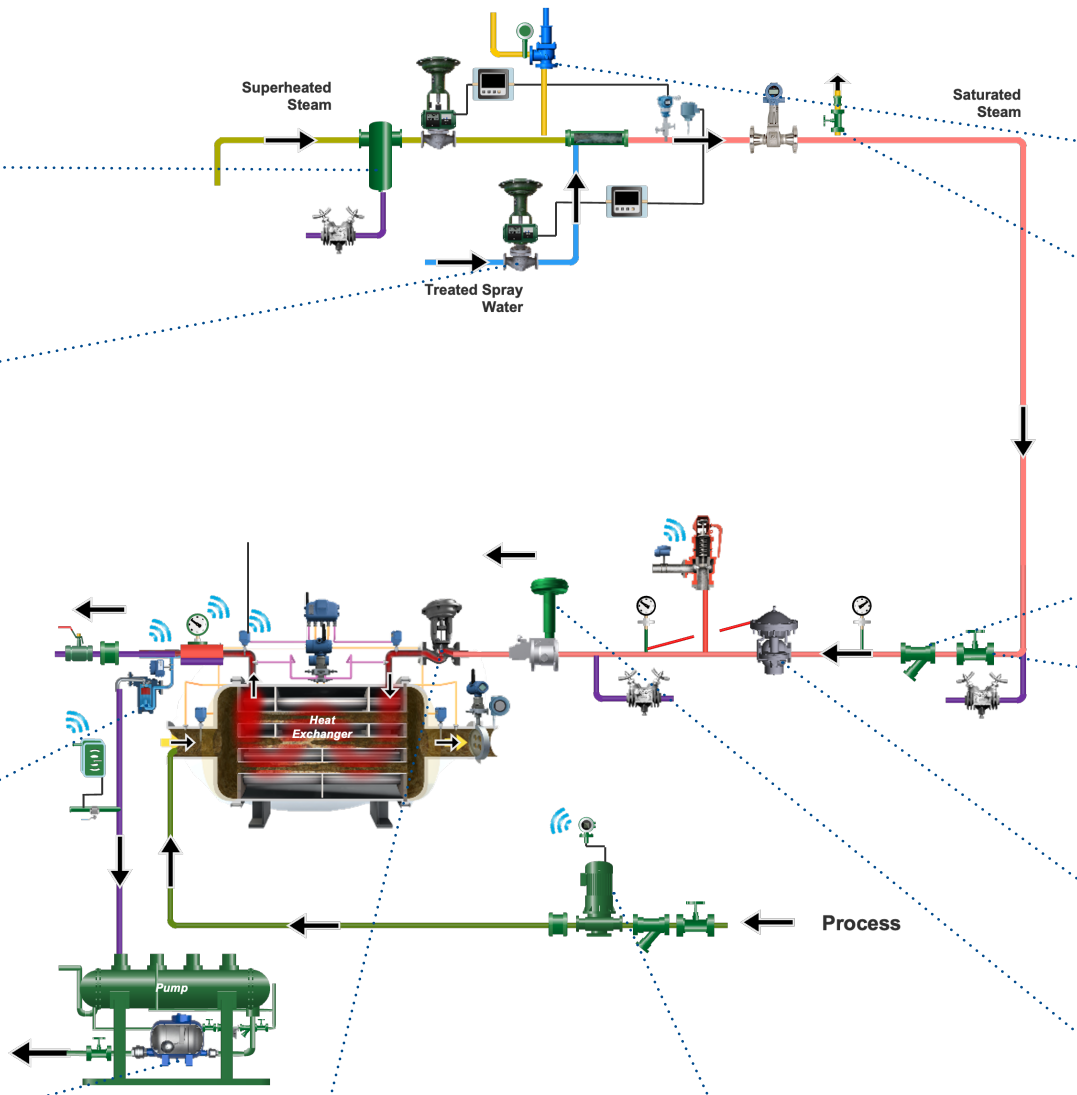
Manual Isolation Valve



Jet Pumps, Liquid Heaters & Injectors

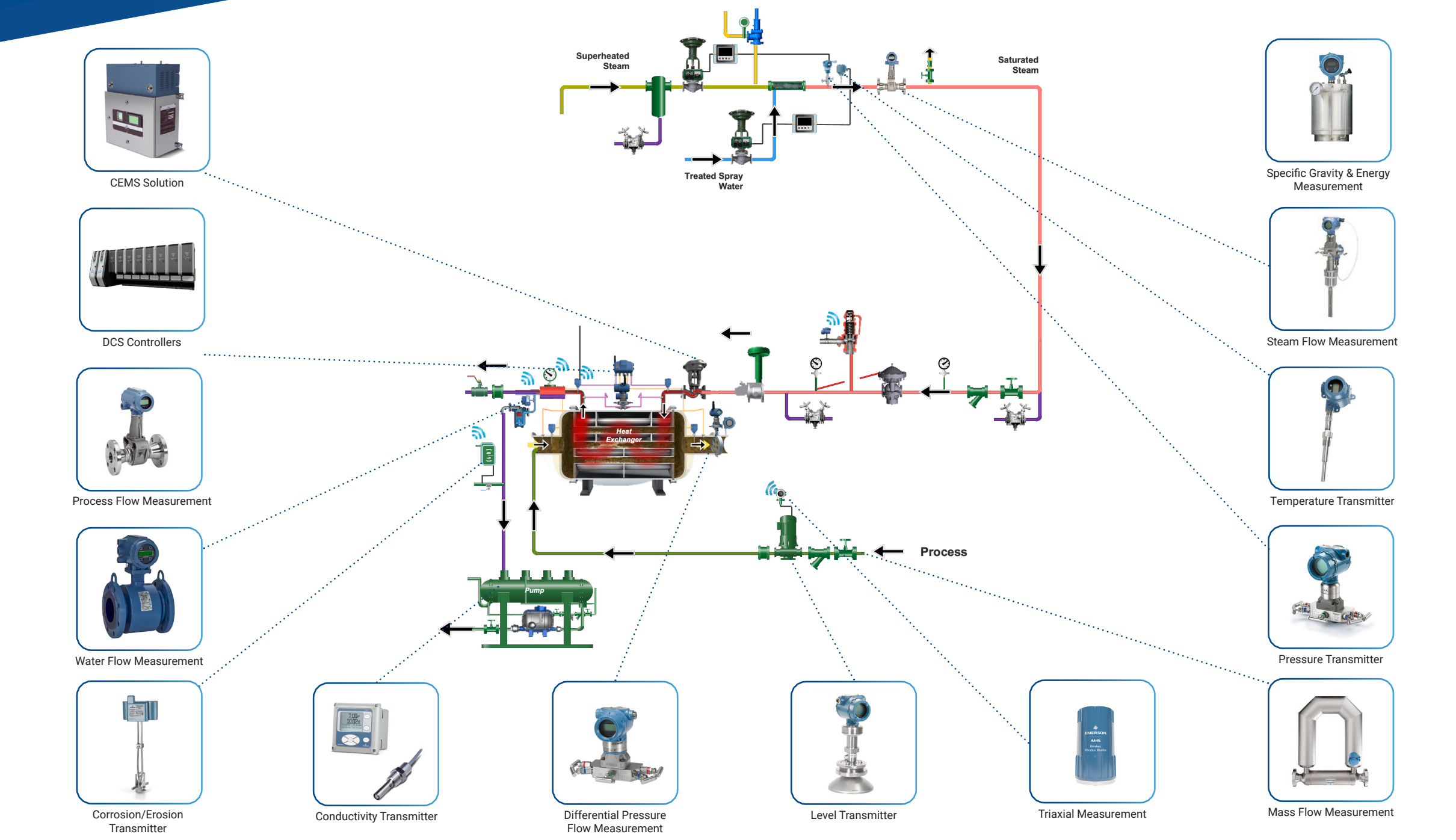


Pressure Reduction



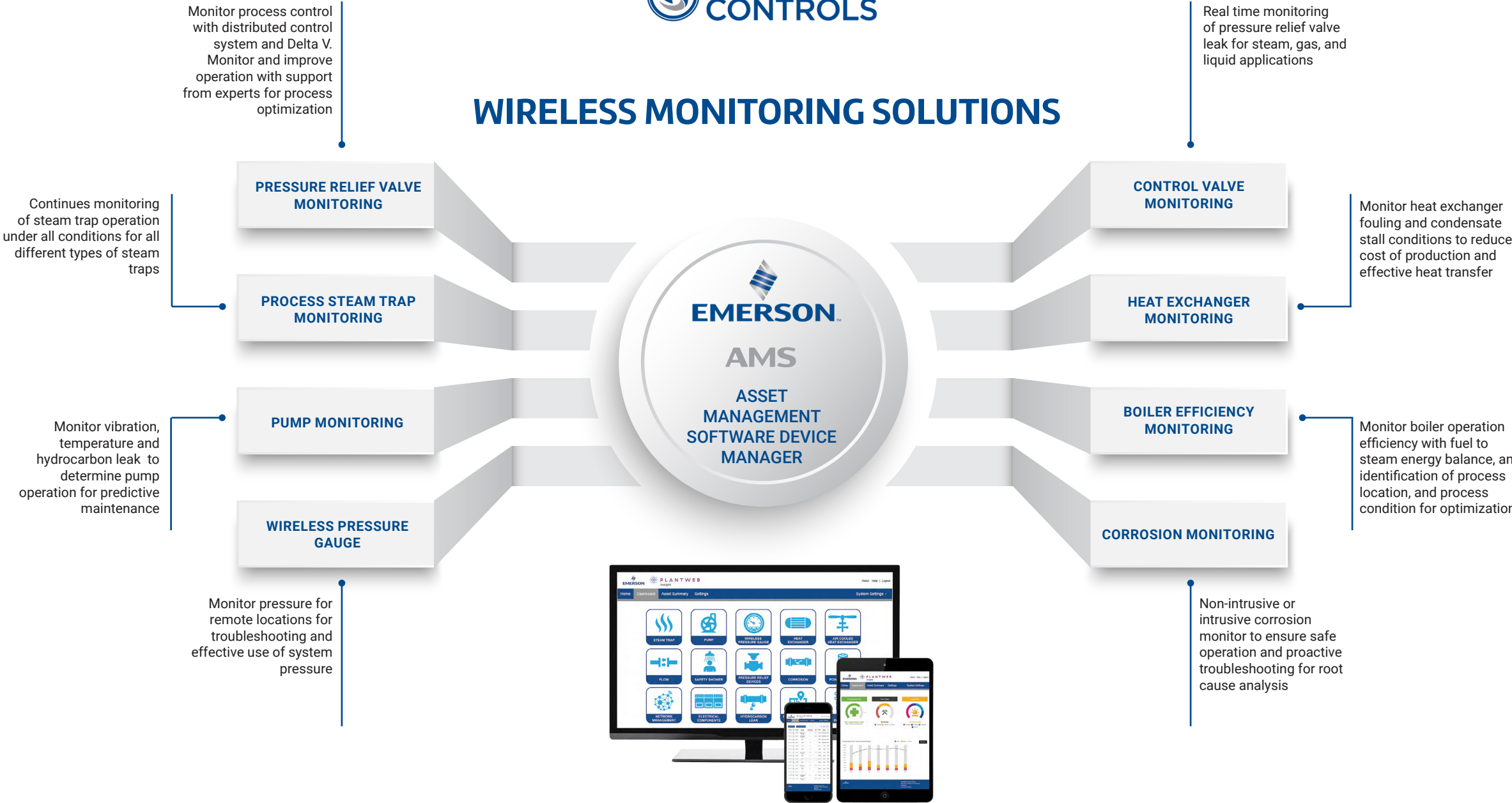


MEASUREMENT INSTRUMENTATION

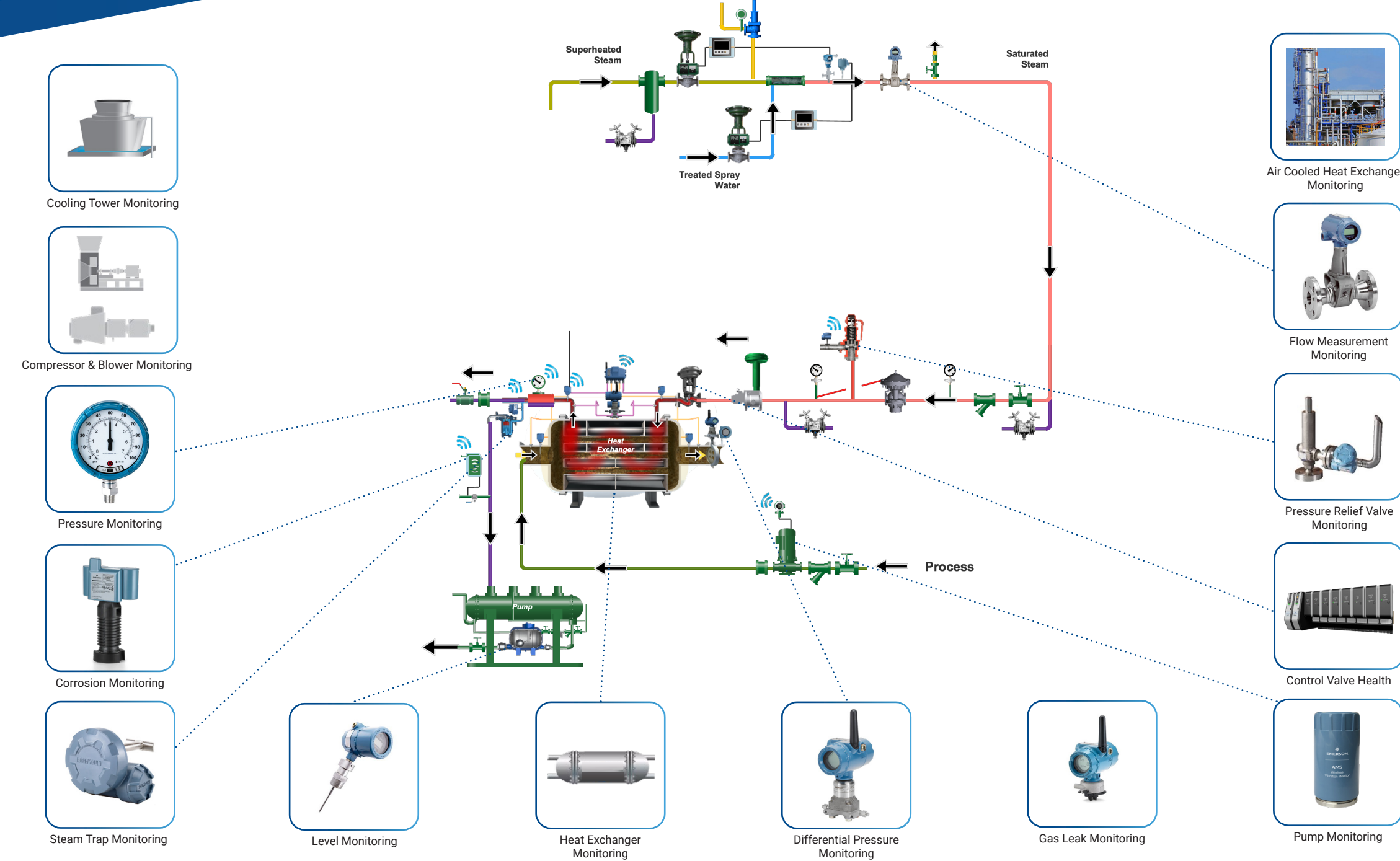


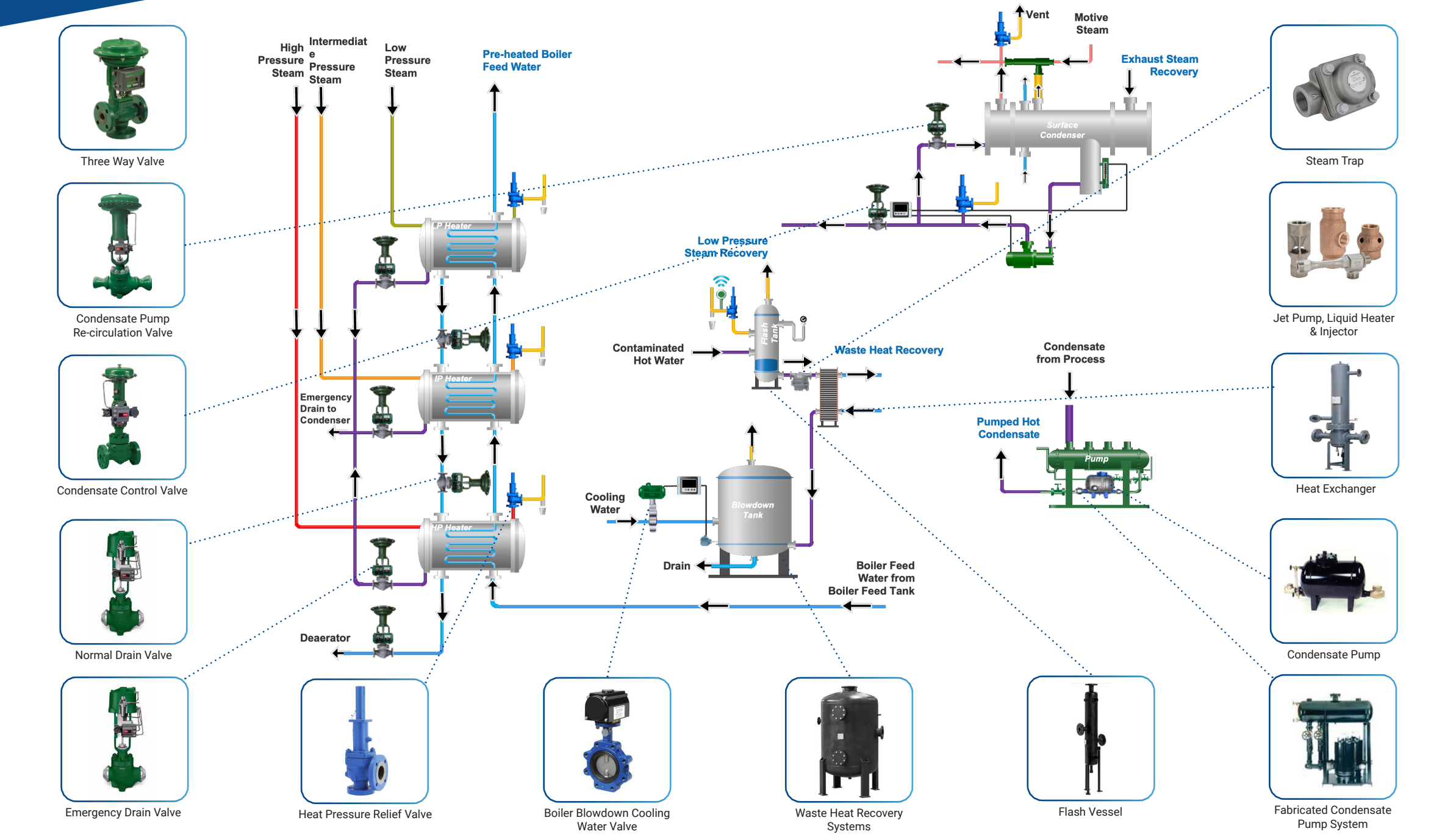
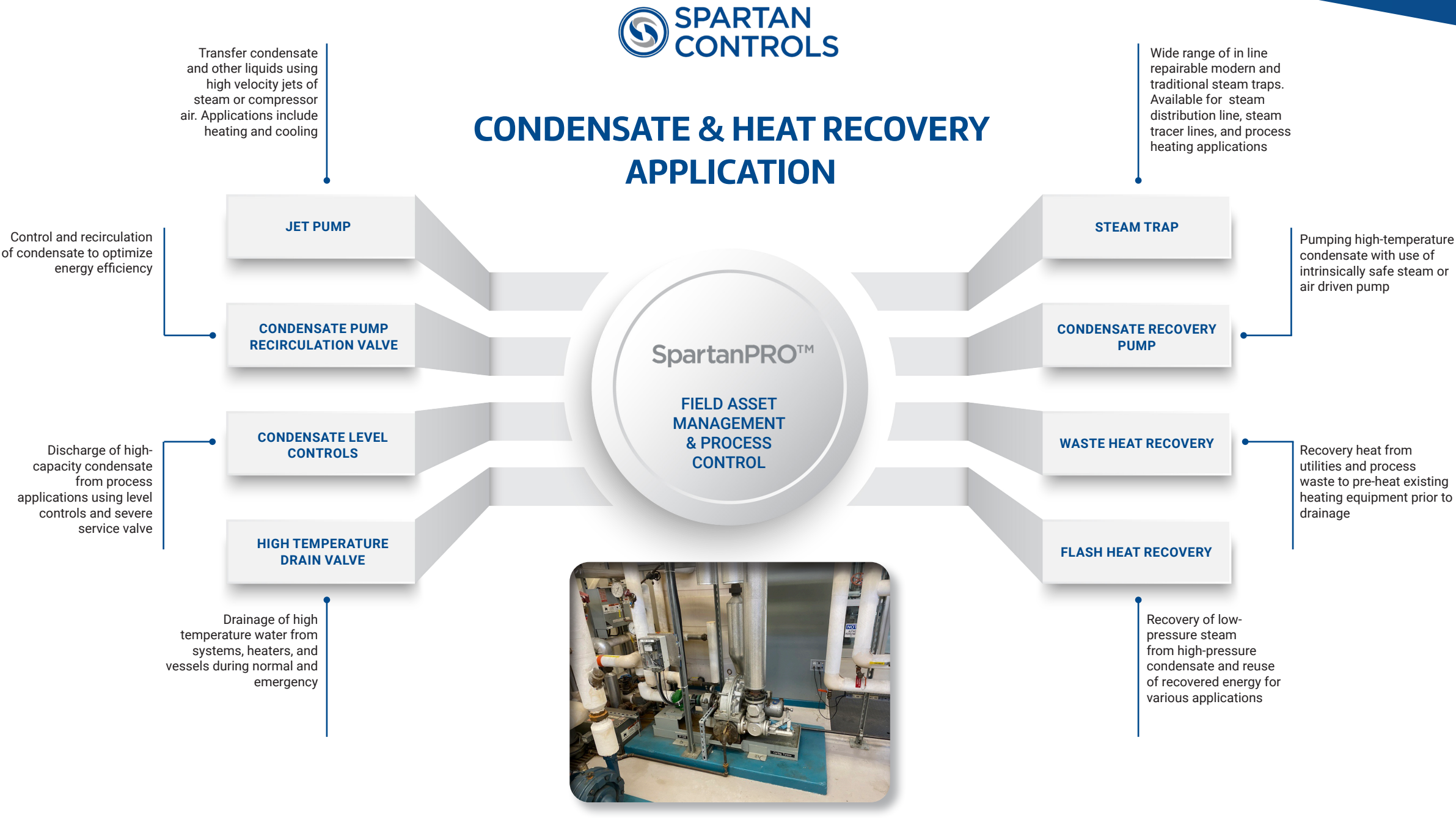


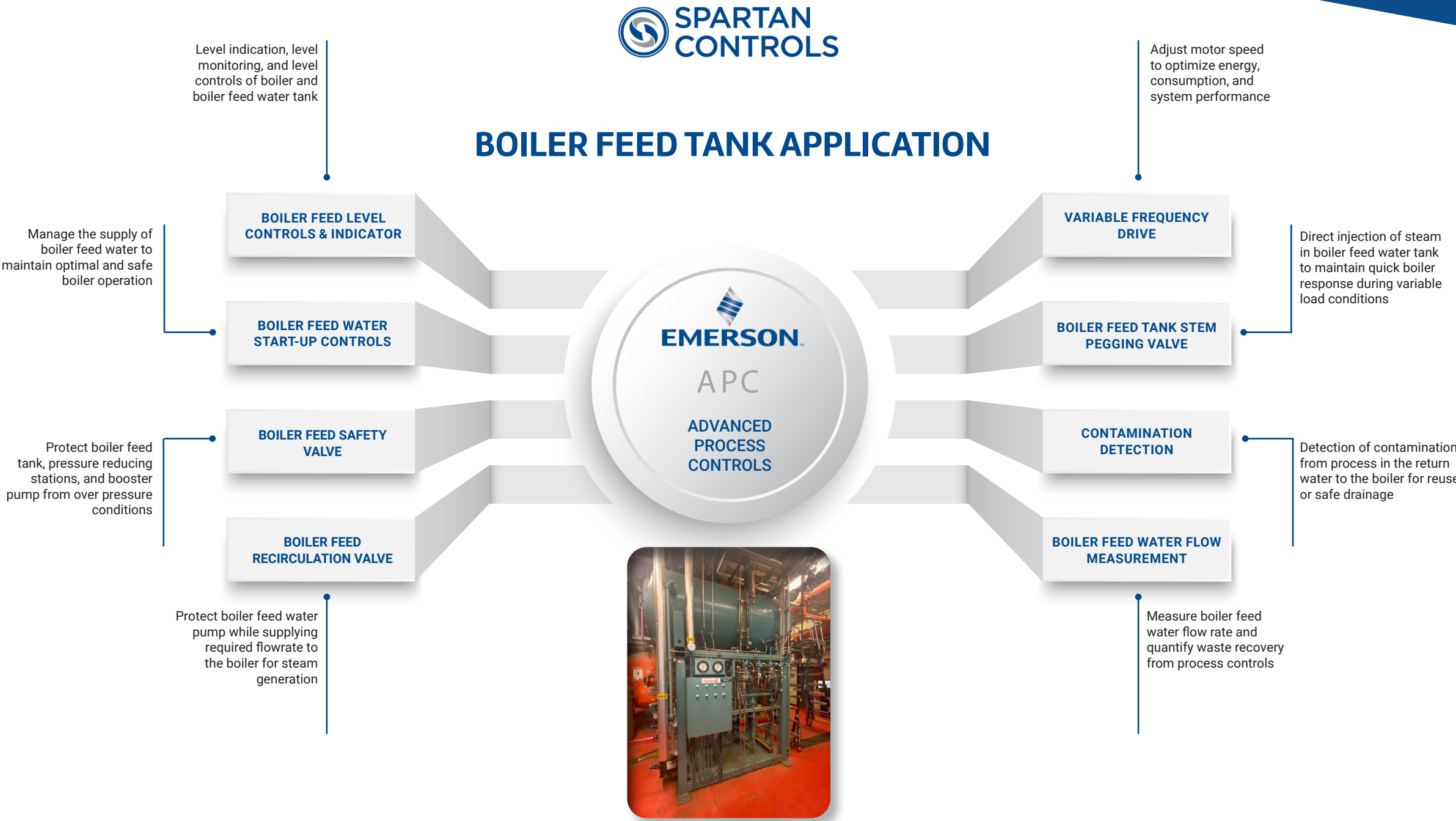
WIRELESS MONITORING SOLUTIONS



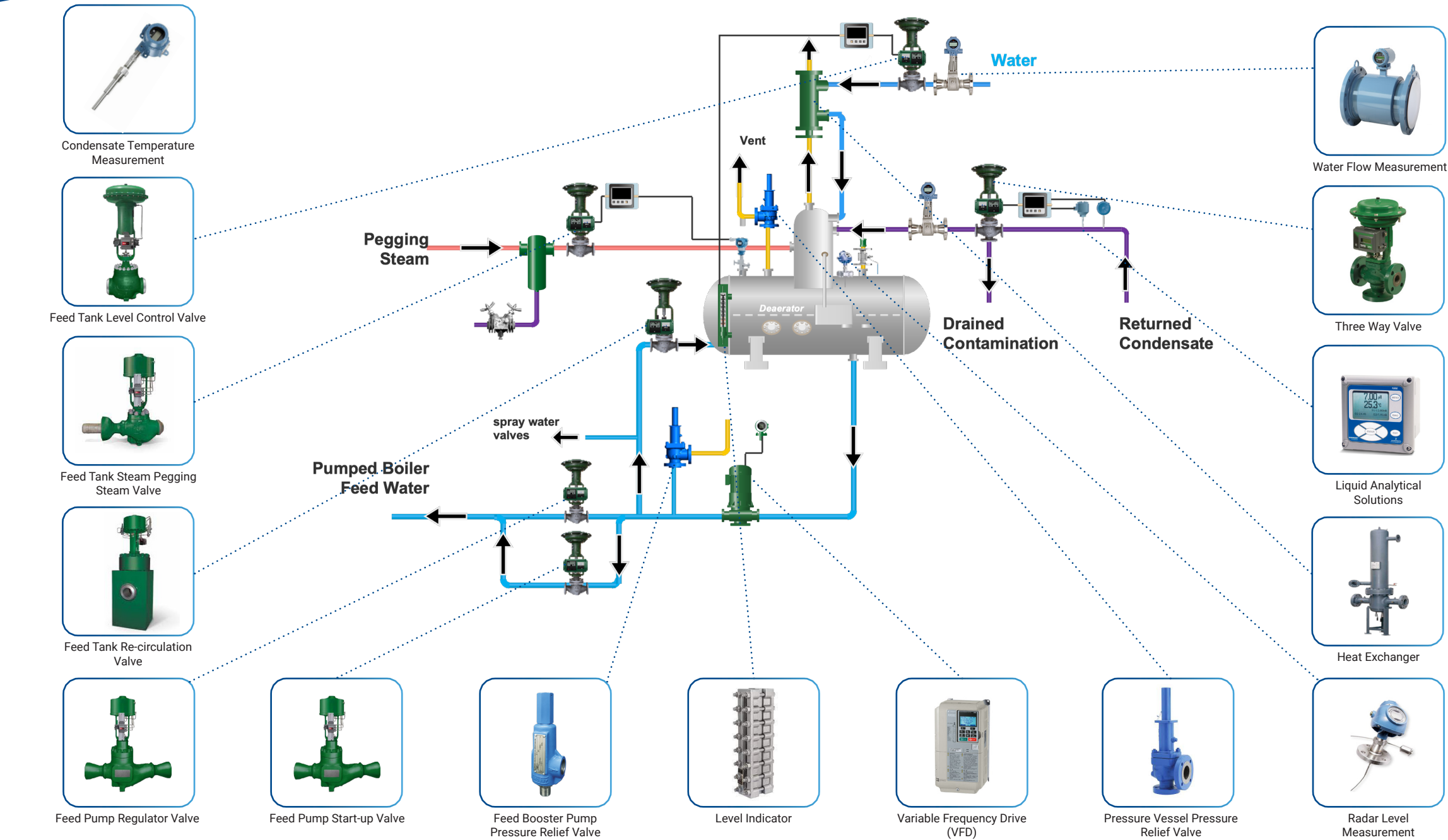
WIRELESS MONITORING SOLUTIONS







BOILER FEED TANK



EDUCATION



BOILER CONTROLS

- Steam Boilers
- Protect Boilers and processes from sudden load variations
- Maximize boiler feed water efficiency and longevity
- Enhance steam accumulators controls and header optimization
- Optimizing combustion controls and burner management systems
- Energy Management Information System (EMIS)

STEAM DISTRIBUTION

- Steam Introduction and Basics
- Fundamentals of steam engineering and design
- Optimize steam distribution quality
- Understanding of water hammer and its impact
- Precision flow measurement techniques
- Accurate level measurement and indication

PROCESS CONTROLS

- Control theory and reliable process temperature control
- Desuperheating an steam conditioning system design
- Secrets of steam regulators and pressure reduction
- Optimal isolation calves for steam services
- Steam trap introduction & operation
- Boiler, process, and system pressure relief valves
- Preventive maintenance for controls & regulators
- Advanced Process Control (APC)
- Wireless Monitoring Solutions (AMS Device Manager)
- Steam trap management program (SpartanPRO)
- Steam system assessment services (SpartanPRO)
- Steam trap sizing and selection
- Control valve sizing and selection



CONDENSATE & HEAT RECOVERY

- Innovative Steam Tracing Solutions
- Choosing the right condensate pumps
- Jet pumps applications for effective mixing
- Flash steam generation and recovery
- Applications of waste heat recovery
- Preventive maintenance for condensate systems

PROCESS HEATING

- Steam process heat exchangers
- Modern heat exchange solutions and design
- Accurate process load calculations
- Preventive Maintenance for Heat Exchange Application

INDUSTRIAL APPLICATIONS

- Steam Systems with:
 - Oil and Gas
 - Oil Sands
 - Chemical
 - Power Plant
 - Pulp andPaper
 - Solvent Extraction
 - Food Processing
 - Brewery
 - Dairy
 - Building and District Heating
 - Hospitals
 - Pharmaceuticals
 - Heat Recovery Applications
 - Steam Energy Efficiency

SERVICES

Spartan Controls provides on-site operational testing of installed assets and expert troubleshooting with root cause analysis from subject matter experts. Additionally, we offer management programs for installed assets, advanced monitoring solutions, and data analytics with integrated software solutions.

ASSET MANAGEMENT

- Steam Trap Operation Assessment
- Desuperheater Operation Assessment
- Control Valve Operation Assessment
- Pressure Relief Valve Operation Assessment
- Level Indication Assessment
- Condensate Pump Operation Assessment
- Combustion Controls Assessment
- Advanced Process Control Assessment

SYSTEM MANAGEMENT

- Boiler Controls Assessment
- Boiler Feed Tank Controls Assessment
- Process Heating Assessment
- Process Waste Heat Recovery Assessment
- Steam System Assessment

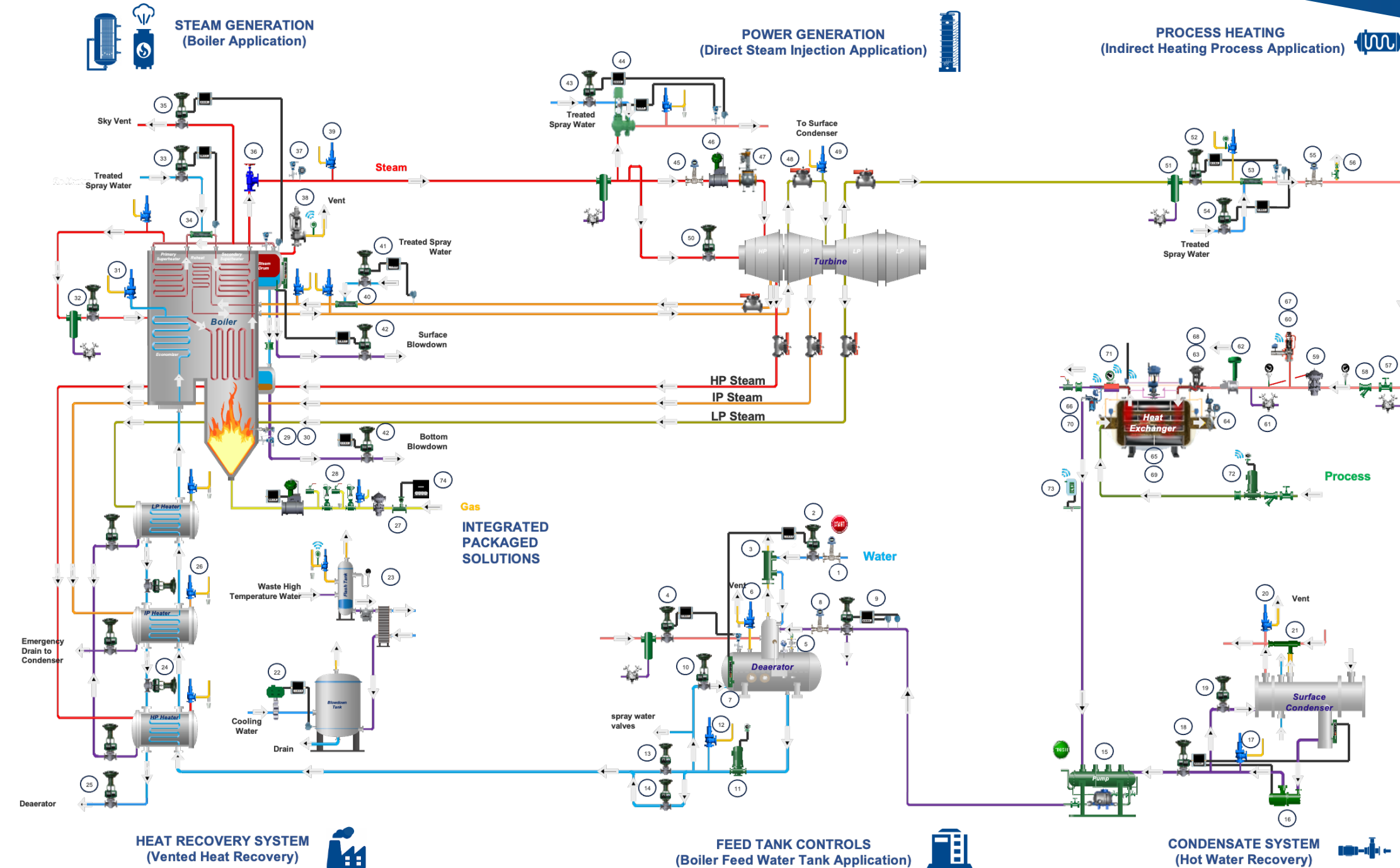


PROCESS MANAGEMENT

- Steam Trap Management Program
- Preventive Maintenance Assessment
- Shutdown/Turnaround Planning
- Process Modernization
- Valve Condition Monitoring

DATA ANALYTICS

- Energy Management Information System (EMIS)
- Advanced Process Control (APC)
- Asst Management Software Device Manager (AMS)
- Wireless Monitoring Solutions



SOFTWARE SOLUTIONS

APC: Advanced Process Control
DCS: Distributed Control System
EMIS: Energy Management Info Sys
AMS: Asset Management Software

BOILERS

Water Tube Boiler, Heat Recovery Steam Generator (HRSG), Waste Heat Recovery Boiler, Hot Water Boiler

FEED TANK CONTROLS

1. Water Flow Measurement
2. Boiler Feed Tank Level Control Valve
3. Boiler Feed Tank Heat Recovery
4. Boiler Feed Tank Pegging Steam Valve
5. Radar Tank Level Measurement
6. Boiler Feed Tank Pressure Relief Valve
7. Boiler Feed Tank Level Indication
8. Condensate Flow Measurement
9. Condensate Contamination System
10. Boiler Feed Pump Recirculation Valve
11. Boiler Feed VFD Pump
12. Boiler Feed Booster Pump Pressure Relief Valve
13. Boiler Feed Pump Regulator Valve
14. Boiler Feed Pump Startup Valve

CONDENSATE SYSTEM

15. Mechanical Condensate Pump
16. Electrical Condensate Pump
17. Condenser Pump Pressure Relief Valve
18. Condenser Level Pot Steam Trap
19. Condensate Recirculation Valve
20. Condenser Pressure Relief Valve
21. Steam Thermocompressor

HEAT RECOVERY SYSTEM

22. Cooling Water System
23. Boiler Blowdown Heat Recovery System
24. Boiler Feed Water Heater Normal Drain
25. Boiler Feed Water Heater Emergency Drain
26. Boiler Feed Water Heater Pressure Relief Valve

FUEL CONTROLS

27. Gas Flow Measurement
28. Combustion Controls
29. Air Flow Measurement
30. Furnace Temperature Measurement

BOILER CONTROLS

31. Economizer Pressure Relief Valve
32. Soot Blower Valve (if applicable)
33. Superheat Spray Water Valve
34. Superheat Attenuator
35. Sky Vent Valve
36. Boiler Non-Return Valve
37. Pressure/Temperature Transmitter
38. Steam Drum Pressure Relief Valve

LEGEND

- HP Superheated Steam
- IP Superheated Steam
- LP Superheated Steam
- LP Saturated Steam
- Condensate
- Water
- Gas
- Process

STEAM TURBINE

39. HP Superheat Pressure Relief Valve
40. Reheat Attenuator
41. Reheat Spray Water Valve
42. Boiler Blowdown Controls
43. HP Turbine By-pass Spray Water Valve
44. HP Turbine HP Turbine By-pass Valve
45. Superheated Steam Measurement
46. Trunion Ball Valve / Triple Offset Butterfly Valve
47. Turbine Trip & Throttle Valve
48. Turbine Steam Extraction Valve
49. LP Superheat Pressure Relief Valve
50. Steam Seal Regulator Valve

STEAM SYSTEM

51. Steam Moisture Separator
52. Desuperheating Pressure Reducing Valve
53. Desuperheater
54. Desuperheating Spray Water Valve
55. Saturated Steam Flow Measurement
56. Automatic Air Vent

PROCESS HEATING APPLICATION

57. Isolation Valve (Gate, Globe, Check, Ball, Butterfly)
58. Y-Type Strainer
59. Pressure Regulator
60. Process Pressure Relief Valve
61. Compact Steam Trap
62. Actuated Isolation Valves
63. Control Valves
64. Differential Pressure Transmitter
65. Heat Exchanger
66. Process Steam Trap

MONITORING SOLUTIONS

67. Pressure Relief Valve Monitoring
68. Control Valve Monitoring
69. Heat Exchanger Fouling Monitoring
70. Steam trap Monitoring
71. Pressure Monitoring
72. Pump Monitoring
73. Corrosion Monitoring
74. Boiler Efficiency Monitoring

RELIABILITY SERVICES



CHALLENGE

Ensure you spend most of your effort and budget on proactive and predictive efforts. This will allow you to unlock the full value of your systems.

SOLUTION

- Calibration, Repair, and Overhaul
- Maintenance Planning
- Predictive Analytics
- Start-Up, Shutdowns, Turnarounds, and Outages
- Valve Connected Services
- Equipment Lifecycle Strategy
- Preventative Diagnostics
- Technology Upgrades and Retrofit
- Valve Automation

BUSINESS RESULTS

- **Reduced time** spent in STO phases with expert support
- **Optimized process performance** with valve diagnostics
- **Reduced maintenance costs** with accurate resource planning resulting in tighter maintenance windows

MAINTENANCE SERVICES



CHALLENGE

Reactive maintenance strategies can result in declining operational performance, reduced production availability, and higher operating costs.

SOLUTION

- Emergency Onsite Support
- Scheduled Onsite Support
- Resident Engineer
- Parts
- Parts Management
- Repair
- Advanced Replace and Repair
- Technical Support
- Service Support Agreements

BUSINESS RESULTS

- **Get to the solution faster** with expert OEM support
- **Extended equipment service life** with genuine OEM part replacements
- **Global Strength and local expertise** for support, wherever your operations are
- **Free your personnel** to perform the work that delivers the most value

PERFORMANCE SERVICES



CHALLENGE

Knowing there are efficiencies to be gained and greater value extracted, but not knowing how, is one of the most agonizing realities of production.

SOLUTION

- Asset Performance Engineers
- Asset Management Strategy
- Performance Consulting
- Control Performance Audits
- Education and Training

BUSINESS RESULTS

- **Realize the benefits** of top quartile performance with the help of our power generation experts
- **Improve the efficiency, effectiveness, and safety** of your personnel with industry leading skill and knowledge improvement programs



Experience Industrial Innovation



Call us or request a quote online 24/7

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