**Overview**
Spartan’s steam header management solution is an advanced process control strategy designed to automate the coordinated operation of industrial powerhouse equipment, including boilers, turbines, pressure reducing valves, and vents. This solution ensures stable header pressure through a variety of loading & upset conditions, and also ensures that equipment is operated in the most efficient way possible when not responding to a major disturbance. Spartan’s solution is flexible to meet the wide variety of steam header systems and configurations; with features ranging from multi-fuel optimization to steam load shedding prioritization.

**Challenge**
Industrial powerhouse steam systems can be complex networks of interconnected equipment. Managing these systems in real time to prevent major upsets from tripping critical equipment while also minimize the costs of steam and electricity generation is challenging for even the most skilled operators. Typically, significant manual intervention is required as operations personnel continuously manage critical steam system functions including:

- Adjustment of steam supply to meet process demands at multiple pressures
- Selection of various fuels based on cost and availability
- Boiler load allocation based on unit capacity and efficiency
- Electricity import/export management based on varying site demand and market conditions
- Responses to major disruptions in steam supply and demand

**Solution**
To assist operators in managing these functions, Spartan has developed a packaged steam header management solution which actively manages the available steam header equipment ensuring stable operation at optimal economic conditions. Important features of the solution include:
Coordinated header pressure management maintains steam header pressures within specific limits during upset conditions. During major disturbances, designated low-priority header pressure setpoints are relaxed to maintain overall system stability.

Optimized disturbance responses are automatically triggered on major steam load losses in order to protect critical process equipment from failures and shutdown.

Automated boiler load allocation provides the lowest-cost steam generation across multi-fuel boilers based on unit availability and efficiency, steam demand, and fuel cost.

Optimized power generation functions ensure optimal steam loads are allocated to available power generation equipment. Features for the real-time tracking and management of import/export power per contract obligations are also provided.

Real-time energy cost calculations provide the cost of steam production and power generation on a per unit basis.

Spartan’s steam header management solution has been developed using standard Emerson DCS hardware and software components making it easy for trained personnel to troubleshoot, support and maintain the application.

Value
Spartan’s industry-proven steam header management solution provides the necessary control logic to effectively manage and optimize complex steam systems. The solution reduces the frequency of equipment trips and outages and mitigates variations in the steam supply to critical process equipment. The solution minimizes the cost of operating these systems by effectively managing multiple fuels, optimizing multiple boiler steam load allocation and ensuring site specific power contract obligations are managed. Spartan’s solution is tailor-fit to site-specific equipment configurations and is supported locally by process control experts to help ensure the commercial benefits associated with a stable, optimized steam system are sustained.