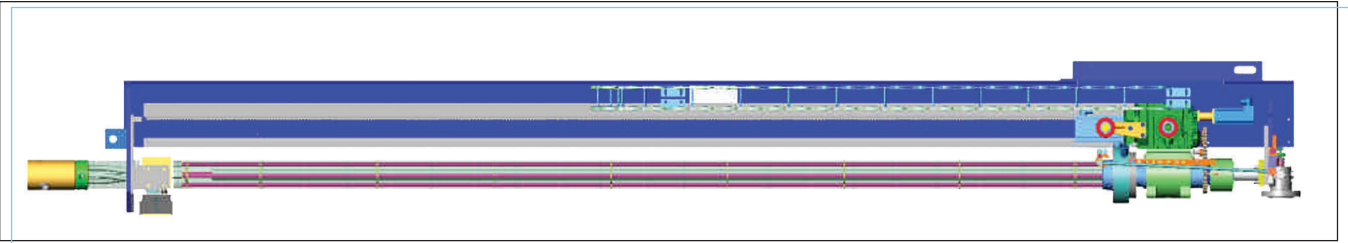
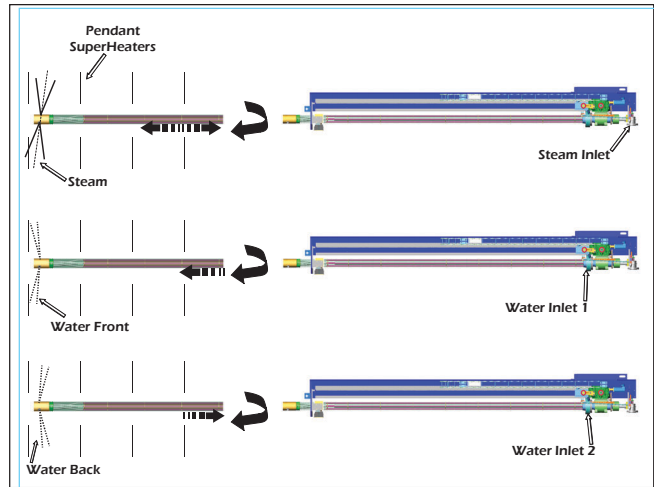


A **SmartClean™** Solution



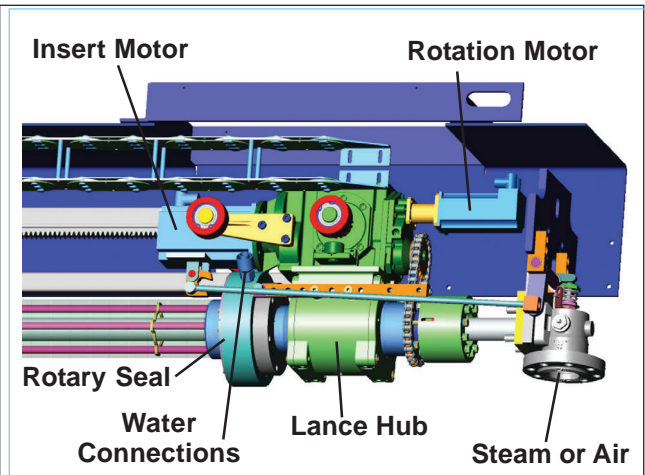
SmartLance™ Cleans with Steam or Water:

Many boiler operators firing heavy fouling fuels have trouble keeping super heater surfaces from forming sintered deposits. These often cannot be removed with regular retracts using steam or air as cleaning medium. On the other hand the regular use of water lances is prohibitive because they too often cause unacceptable levels of tube damage. Clyde Bergemann's Multi Media **SmartLance™** now offers a new solution: It is a retractable sootblower that normally cleans with steam, however, if and when necessary allows the operator to perform a special cleaning cycle during which water is blended into the cleaning stream in controlled amounts to remove any slag build up. When using water the Multi Media **SmartLance™** is designed to keep the thermal impact on the boiler tubes at a minimum by controlling the amount of water that is being applied to the heating surfaces.



Design and Function:

The design of the Multi Media **SmartLance™** is based on Clyde Bergemann's Model US dual rack-and-pinion retractable sootblower and uses most of its standard components. The steam is supplied via a mechanically or pneumatically operated valve and a feed tube to the lance tube that is equipped with two opposing lead/lag steam nozzles. Unlike other sootblowers, however, the lance tube of our Multi Media **SmartLance™** also has two or four water nozzles which are connected to a separate high pressure water supply system. Pneumatic controlled isolation valve(s), are actuated when a water cleaning cycle is performed. When supplied with four water nozzles the two lead nozzles are used during forward travel to clean the front of the tube pendants and the lag nozzles are used during the retraction to clean the back of the pendants. This way the **SmartLance™** is able to keep the jet progression velocity of the water jet on the heating surface constant which is essential for controlling the thermal impact on the boiler tubes. The design configuration of the **SmartLance™** such as nozzle configuration, travel, water pressure and jet progression velocity is adaptable to accommodate any specific application.



SmartLance™ - A SmartClean™ Product

The **SmartLance™** is offered as part of Clyde Bergemann's **SmartClean™** Boiler Cleaning Optimization System. **SmartClean™** will make the decision which cleaning medium is best to use based on the actual cleanliness of the heating surfaces. The Multi Media **SmartLance™** is the most effective **AND SAFEST** cleaning tool available for heavy-plugging super heaters.

Features:

- ❑ Cleaning Options:
Normal Cleaning: steam/air
Intense Cleaning: steam/air plus water through independent nozzles
- ❑ Water nozzles are air purged while on steam cycle.
- ❑ Single or dual motor, brushless DC drives provide constant dwell time on the super heater surfaces and controls thermal shock when operated with water.
- ❑ Patented indexing varies the position of the nozzles each time the blower is operated for complete cleaning coverage.
- ❑ No blow on return travel avoids double impingement of clean wall reducing the risk of tube damage (two water nozzle arrangement only).
- ❑ **SmartLance™** uses proven US dual rack-and-pinion drive components reducing the requirement of spare parts stock.
- ❑ Rugged assembly with maintenance friendly design concepts to improve access to all components such as gearbox and motor.

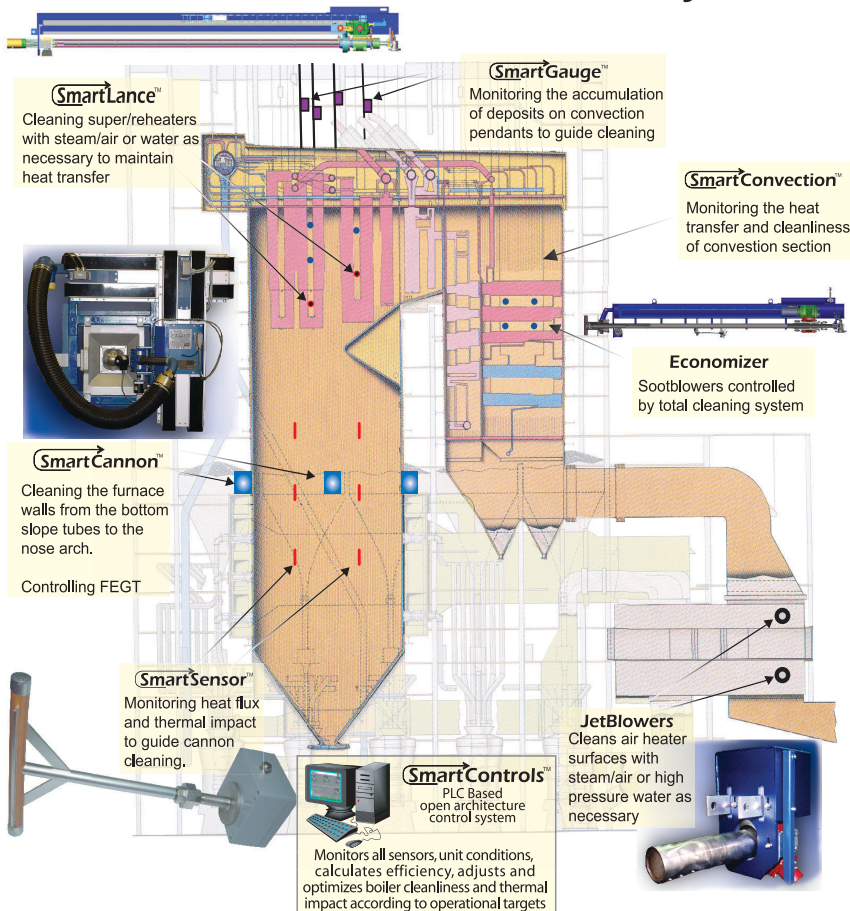
Specifications

Lance O.D.	6" O.D., 2 piece, 6330 HiTemp steel
Poppet Valve	Mechanically operated, 600#, WC6, ANSI flange with companion flange bolts, nuts, gasket
Feed Tube	2 ³ / ₄ " O.D., 304SS, ArmorGlide
Water Valve	COAX isolation valve(s) with pneumatic actuator/solenoid valve
Purge Air Valve	Ball valve with pneumatic actuator/solenoid valve
Water Strainer	Y-Type Strainer; 100 mesh insert
Limit Switches	Mechanical, internal wiring with SO cord
Terminal Box	NEMA 4 epoxy painted, push buttons
Housing	5/16 in thick canopy, hot dip galvanized or painted
Wallbox	Negative or positive pressure
Max. Travel	40 ft
Carriage Travel Speed	5 - 150 in/min
Lance Rotation Speed	3 to 75 rpm
Jet Progression	250 - 350 ft/min - water
Velocity of Water	

Custom Nozzle Specification

Steam Nozzles (2)	1" CFE	to	1 1/4" CFE
Steam Flow @ 300 psi	25 to 35,000 lbs/hr		
Water Nozzle Size	0.182 in		0.25 in
Water Flow @ 300 psi	33 GPM		66 GPM
Nozzle Pressure	250 - 350 psi		
Water/Steam			

SmartClean™ System Integration



Clyde Bergemann has developed a total boiler cleaning system incorporating sensors, sootblowers, water cannons and intelligent algorithms for interpreting and optimizing cleaning systems. The **SmartLance™** is one of the component pieces used to achieve maximum boiler performance in specific cases requiring superheater or reheater performance enhancement. In its recommended configuration, **SmartLances™** are integrated with a **SmartConvection™** System incorporating **SmartGauge™** and **SmartControls™** technology. The **SmartGauges™** and **SmartConvection™** obtain data and analyze cleaning requirements within each section of the superheater. The **SmartControls™** system then activates the best cleaning device for the job, defining an exact pressure, speed and *media mix* for each zone in question.

**SYSTEMS AND
SOLUTIONS
DIVISION**

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