

SmartSootblowers™

Targeted Sootblowing Technology



Tough Slag? Bring it On

Targeted

Clyde Bergemann SmartSootblowers™ provide an intelligent sootblowing solution for power generation, recovery and industrial boilers — remove slag where conventional sootblowers fail while minimizing tube erosion in areas with less fouling. SmartSootblowers are capable of targeting tenacious buildup to deliver unprecedented slag removal.

The unique dual-motor design of SmartSootblowers allows independent and variable traversing and rotational speeds. Multiple operational modes offer the ability to clean based on the severity of fouling in a given area. On-demand targeted cleaning increases boiler run-time by

controlling slagging and maintains a higher heat transfer rate. Customized cleaning modes also reduce media consumption and minimize erosion of tube surfaces.

SmartSootblowers are easily incorporated into existing systems, either as new additions or as replacements for existing blowers. Individual SmartSootblowers can be installed at problematic locations on the boiler with the controls seamlessly integrated into the current control system, resulting in lower capital outlay and less downtime.

Targeted sootblowing with SmartSootblowers is a more efficient and cost-effective method to address today's boiler cleaning demands.

Targeted Cleaning

The heart of the targeted sootblowing system is its zone-based cleaning. Depending on the severity of the slag, different locations in the boiler have different cleaning needs. By defining zones along the path of the lance, different modes and parameters can be used to specify where and how intensely the blower cleans.

This unique system allows "repeat" cleaning of an area without requiring the lance to be returned to its starting position and then re-extended. After a cleaning program is complete, the lance can optionally be retracted from the boiler at a much faster speed to avoid tube erosion.

For optimum performance, SmartSootblowers can automatically adapt mode and parameters utilizing real-time data from Super Heater Fouling Monitor SmartGauges to further target cleaning.

Variable Helix:

The traversing speed and rotational speed may both be set to define a helix that will provide appropriate cleaning for the fouling conditions in that zone.

Intensive Cleaning:

To remove tenacious slag normally left by traditional sootblowers, the SmartSootblower's lance can be virtually held in place while rotation continues. The step distance and the number of cleaning rotations are variable to customize the intensity.

Oscillation:

Blowing media is concentrated on the area to be cleaned by restricting its arc from a given starting angle through a specified angle of rotation. Additionally, the control system can vary the lance rotation speed, based on the nozzle position, to maintain a specified jet progression velocity (constant JPV).

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SmartSootblowing Technology

SmartSootblowers™ are built on a proven mechanical platform with thousands of units installed worldwide.

The housing is a heavy-duty formed galvanized steel canopy that provides rigid support and protection for blower components. The design intentionally gives easy access to all parts that may need repair or maintenance.

On the blower carriage, the spindle housing and the gear box are separated to avoid excessive heat-related damage commonly found on other sootblowers and to prevent lubricant leakage. The balanced dual rack-and-pinion drive carriage reduces wear, increasing the life span of gearing components. Lance rotation is provided via chain and sprocket. These robust features reduce overall maintenance costs.

Encoders, limit switches and proximity probes ensure precise nozzle position to pinpoint slag removal.

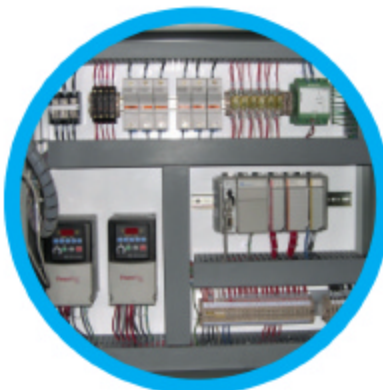
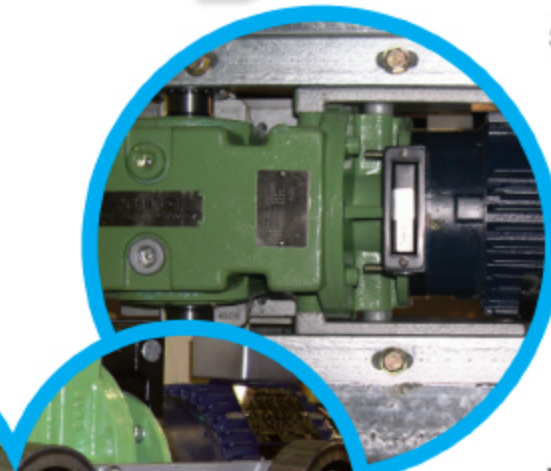
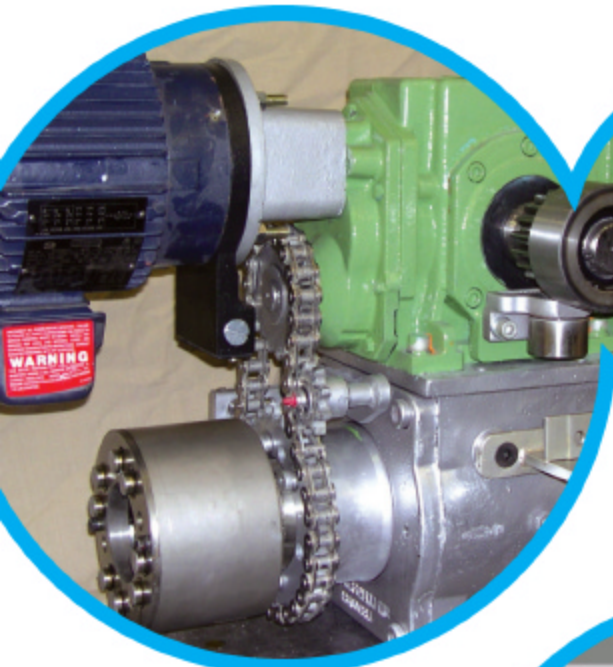
The SmartSootblower control application is a stand-alone module of SmartControls, an open-architecture system which uses industry-standard PLC and HMI. It integrates into the main control system for basic functionality, with a user-friendly operator interface to facilitate the setup of parameters for zone-based cleaning and zone geometry.

Targeted Sootblowing Zone Setup

Zone	Enable/Disable	Starting Position [PL]	End Position [PL]	Cleaning Intensity Level
1	●	1.0	6.0	5
2	●	6.0	10.0	5
3	●	10.0	15.0	5
4	●	15.0	20.5	5
5	●	20.5	25.0	5
6	●	25.0	30.2	5
7	●	30.2	35.0	5
8	○	35.0	40.0	5

Note:

Cleaning Intensity Level can be between 1 and 5. Level 5 provides setup for normal sootblowing. Higher Level number provides Intensity.





Model	Application
SmartUS™	Power Generation Boiler
SmartUSX™	Power Generation Boiler - Extended Travel
SmartRS™	Recovery Boiler

Technical Specifications

Housing	Rugged pre-formed carbon steel, galvanized for extreme corrosion protection
Rack	Bolt in and easily replaceable
Carriage Support Rails	2" square tube
Lance Drives	Dual motor gear box assembly with inverter duty motors Traverse Motor - 460V / 230V, 3 Ph, 2 HP Rotation Motor - 460V / 230V, 3 Ph, 1 HP
Position Feedback	Encoder and limit switches for traverse control Encoder and proximity switch for rotational control
Lance Tube	4" O.D., standard configured base on application (3½", 5" O.D. optional)
Nozzle Head	310 cast steel CFE III
Feed Tube	2¾" O.D. ASTM A269, 304 stainless steel, non-Insulated, ground and polished. Armor Glide available
Gear Reducer	Self-locking worm gear
Spindle Housing	Two oversized support bearings with Viton seals and specially formulated, synthetic, high-temperature grease
Traversing Carriage	Modular design with separate gearbox and spindle housing
Poppet Valve	ANSI 3" 600# Class, externally adjustable WC6 material complete with mating flange, studs, nuts and gasket
Packing	Seal Pack live-loaded packing cartridge equipped with graphite packing and braided end rings
Switches	NEMA 4 mechanical-type limit switches
Controls	Centralized PLC panel with VFDs and Electronic Operator Interface will integrate existing control signals. As an option, Distributed Controls available using local drive panel and remote interface panel. NEMA 4 carbon steel, epoxy painted
PLC	Allen Bradley's Compact Logix
HMI	Panel mount EOI (PanelView or equivalent). Integration available for SmartControls and DCS



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