



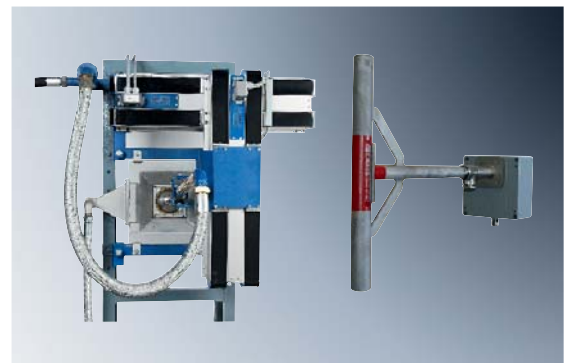
# HITACHI POWER EUROPE CONVOY

## BOXBERG/DATTELN/ MOORBURG/WALSUM/WILHELMSHAVEN/ MAASVLAKTE/ROTTERDAM POWER PLANT GERMANY & THE NETHERLANDS

- Application:** On-load boiler cleaning of furnace & convection area
- Customer:** Hitachi Power Europe GmbH, Germany
- Operator:** E.ON & Vattenfall, Germany
- Units:** 8 x 800-900 MW
- Project no.:** P-10565 to 10569, P-10575 & P-10576
- Delivery:** since 2008

### Project summary

Clyde Bergemann supplies SMART Cannons and the optimisation system SMART Furnace-FACOS for the combustion chamber as well as RK type sootblowers for the convection part. SMART Furnace-FACOS uses a sensor system to detect the position and intensity of deposits in the furnace. These data are linked with the boiler performance data to decide based on advanced algorithms which cleaning action needs to be taken and at what intensity. SMART Furnace-FACOS does not only regard the level of slagging but also the influence of the imminent cleaning operation on boiler performance.



SMART Cannon WLB CB100 & SMART Flux sensor

Technical data - Plant	
Fuel type	Lignite & hard coal
Boiler type	Tower type
Performance	8 x 800-900 MW
Technical data - Clyde Bergemann equipment	
Cleaning media	Water & steam
Cleaning equipment	SMART Cannon WLB CB100: 90° horizontal, 90° vertical RK-SL long retractable sootblower: up to 12.075 m travel RK-SB helical sootblower: travel acc. to boiler dimension RK-AT rake sootblower: travel acc. to boiler dimension

### ☐ Scope of supply

- 8 x 8-12 SMART Furnace-FACOS incl. 20-32 SMART Flux sensors
- 8 x 8-16 SMART Cannon WLB CB100
- 8 x control systems
- 8 x 40-58 RK-SL long retractable sootblower
- 8 x 7-20 RK-SB helical sootblower
- 8 x 14-30 RK-AT rake sootblower

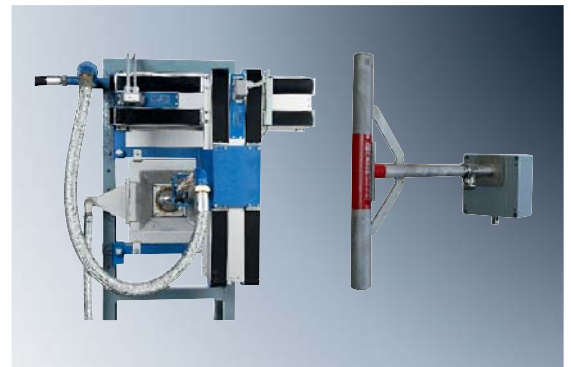


# MEDUPI & KUSILE POWER PLANT SOUTH AFRICA

- Application:** On-load boiler cleaning of furnace & convection area
- Customer:** Hitachi Power Europe GmbH, Germany
- Operator:** Eskom Holdings Limited, South Africa
- Units:** Medupi power plant – 6x800 MW | Kusile power plant – 6x800 MW
- Project No.:** P-10886
- Delivery:** 2009 - 2014

## Project summary

Clyde Bergemann supplies SMART Cannons and the optimisation system SMART Furnace-FACOS for the combustion chamber as well as RK type sootblowers for the convection part. SMART Furnace-FACOS uses a sensor system to detect the position and intensity of deposits in the furnace. These data are linked with the boiler performance data to decide based on advanced algorithms which cleaning action needs to be taken and at what intensity. SMART Furnace-FACOS does not only regard the level of slagging but also the influence of the imminent cleaning operation on boiler performance.



SMART Cannon & SMART Flux sensor

### Medupi power plant – 6 x 800 MW

- 6 x SMART Furnace-FACOS incl. 28 SMART Flux sensors
- 6 x 8 SMART Cannons incl. control, pump station, valves
- 6 x 40 RK-SL type sootblowers
- 6 x 8 RK-SB type sootblowers

### Kusile power plant – 6 x 800 MW

- 6 x SMART Furnace-FACOS incl. 28 SMART Flux sensors
- 6 x 8 SMART Cannons incl. control, pump station, valves
- 6 x 40 RK-SL type sootblowers
- 6x8 RK-SB type sootblowers

Technical data - Plant	
Fuel type	Hard coal
Boiler type	Tower type, supercritical
Performance	Medupi: 6x800 MW Kusile: 6x800 MW
Technical data - Clyde Bergemann equipment	
Cleaning media	Water & steam
Cleaning equipment	SMART Cannon: 90° horizontal, 90° vertical RK-SL sootblower: 11.560 m travel RK-SB sootblower: 1.110 m travel

### ☐ Scope of supply

- SMART Cannons incl. control, pump station, valves
- SMART Furnace-FACOS incl. SMART Flux sensors
- RK-SL type sootblowers
- RK-SB type sootblowers
- Spare parts
- Erection control
- Commissioning cold/hot
- Documentation



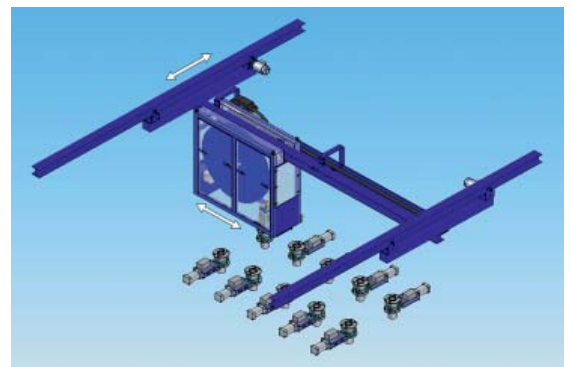
# RIVERSIDE WASTE-TO-ENERGY PLANT UK

- Application:** On-load boiler cleaning of open passes
- Customer:** Hitachi Zosen INOVA (formerly AE&E Inova von Roll), Switzerland
- Operator:** Eskom Holdings Limited, South Africa
- Units:** Cory Environmental Ltd, UK
- Project no.:** 3 combustion lines
- Delivery:** 2010

## Project summary

The scope of supply comprises turnkey SCS Shower Cleaning Systems for three combustion lines. The SCS systems for the Riverside plant are fully automated multiple-row units. The term "multiple-row" refers to the flange arrangement in multiple rows across the boiler roof. By using a crane runway, SCS enters these flanges to clean different sections of the boiler.

The SCS systems clean second and third open pass of all three combustion lines. Each combustion line processes 31.8 tonnes of municipal and commercial waste per hour to generate enough electricity to serve roughly 66,000 households.



SCS Shower Cleaning System as multiple-row unit

Technical data - WtE Plant	
Fuel type	Waste
Boiler manufacturer	Hitachi Zosen INOVA (formerly AE&E Inova von Roll), Switzerland
Performance	31.8 t/h, 72 MW
Technical data - Clyde Bergemann equipment	
Cleaning media	Water
Cleaning equipment	Multiple-row system, fully automated Number of flanges: 7 at each boiler Water throughput: max. 5 m <sup>3</sup> /h

## ☐ Scope of supply

- 3 x SCS Shower Cleaning System incl. control, instrumentation, pump station, fittings
- Erection
- All works for laying of pipes and cables
- Commissioning
- Operator training



# SOMA COAL-FIRED POWER PLANT TURKEY

**Application:** On-load boiler cleaning of furnace & convection area  
**Customer:** EFOR Machinery Industry and Foreign Trade Inc., Turkey  
**Operator:** Soma Ab Elektrik Uretim (SEAS), Turkey  
**Units:** 4x 165 MW  
**Project no.:** P-11124  
**Delivery:** 2010

## Project summary

The fifth largest coal-fired power plant in Turkey is equipped with a state-of-the-art on-load boiler cleaning system by Clyde Bergemann, consisting of 48 long retractable sootblowers and 32 water cannons. The new system replaces the legacy cleaning devices of the power plant units 3 to 6. The plant is operated by state-run company SEAS, whose goal it is to improve boiler availability and efficiency by means of a plant specific designed on-load boiler cleaning system.



SMART Cannon WLB CB100 & PS-SL long retractable sootblower

Technical data - Plant	
Fuel type	Lignite
Boiler type	Tower type
Performance	4 x 165 MW (total capacity: 6 x 165 MW)
Technical data - Clyde Bergemann equipment	
Cleaning media	Water & steam
Cleaning equipment	SMART Cannon WLB CB100: 90° horizontal, 90° vertical PS-SL sootblower: 6.200 m travel

## ☰ Scope of supply

- 32 x SMART Cannon WLB CB100
- 48 x PS-SL long retractable sootblower
- Control system
- Technical advice
- Engineering
- Erection
- Commissioning



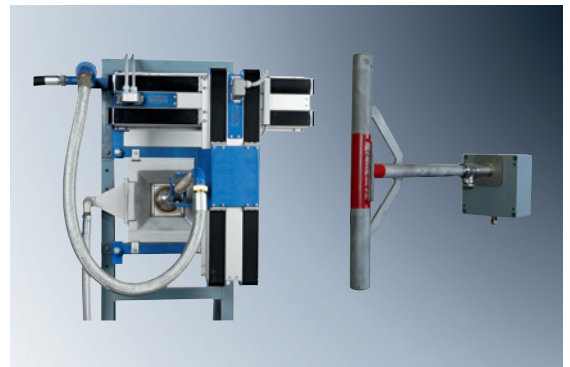
# ŠOŠTANJ COAL-FIRED POWER PLANT SLOVENIA

- Application:** On-load boiler cleaning of furnace, superheater, economiser, air heater & DeNOx
- Customer:** ALSTOM Power Systems, Germany
- Operator:** Termoelektrarna Šoštanj d.o.o. , Slovenia
- Units:** 6 units | 30-600 MW | 1,445 MW in total
- Project no.:** P-11200
- Delivery:** December 2011 – August 2012

## Project summary

EPC-contractor ALSTOM Power Systems GmbH, Stuttgart/ Germany awarded a contract to Clyde Bergemann as the sole supplier of the on-load boiler cleaning solution for unit 6 of the Šoštanj coal-fired power plant in Slovenia. With a net efficiency of 43 %, the new 1x600 MW ultra supercritical tower-type unit, whose construction is in progress, will make this station one of the most efficient and advanced in Slovenia.

The overall 128 sootblowers consist of the series water cannon, long retractable, helical, rake and rotating element. The furnace will be equipped additionally with the optimisation system SMART Furnace-FACOS. This system uses sensors to detect the position and intensity of slagging in the furnace area. This data will be linked with the current performance data of the steam generator to decide upon stored algorithms which cleaning action needs to be done and at what intensity.



SMART Cannon WLB CB100 & SMART Flux sensor

## Scope of supply

- 1x SMART Furnace-FACOS incl. 40 SMART Flux sensors
- 12x SMART Cannon WLB CB100
- 60x PS-SL long retractable sootblower
- 16x PS-SB helical sootblower
- 24x RK-AT rake sootblower
- 16x D92 rotating element sootblower
- Engineering
- Installation
- Commissioning

### Technical data - Plant

Fuel type	Lignite
Boiler type	Tower type
Performance	Unit 6 - 600 MW

### Technical data - Clyde Bergemann equipment

Cleaning media	Water & steam
Cleaning equipment	SMART Cannon WLB CB100: 90° horizontal, 90° vertical PS-SL long retractable sootblower: 9.500 m travel PS-SB helical sootblower: travel 3.200 m RK-AT rake sootblower: 10 cross-tubes, 122 nozzles D92 rotating element sootblower: 2.280 m blowing tube length