



Lucite International

Low NOx Cochran Boiler Replacement

ST28 Low NOx Boiler Case Study

Location: Lucite International, Newton Aycliffe, UK.

Challenge: To supply a replacement boiler compliant with new NOx regulations and tie in with existing utilities and pipework, delivering a solution that increases reliability and efficiency, whilst surpassing the latest MCPD emissions standards.

Solution: Installation of a highly efficient MCPD-compliant ST28 Low NOx boiler, complete with leading edge combustion and control equipment, including the associated mechanical and electrical integration to existing pipework and utilities.

Results: Increased efficiency, output and a safety compliant plant that meets increased steam demands in accordance with current safety legislation, whilst delivering benchmark sub-50 mg/Nm³ emissions figures.

Lucite International is the global leader in the design, development and manufacture of acrylic-based products. A well-respected pioneer within the industry, in fact ‘Lucite’ is one of the original brand names for acrylic, the widely used plastic that was launched under the Lucite name in the mid-1930s.

Project Background

Lucite International’s existing Cochran ‘Wee Chieftain’ boiler plant was manufactured way back in 1987. After more than 30 years’ solid service the Newton Aycliffe site had decided to replace it with the latest plant: A decision centred on reducing emissions in line with the MCPD’s stringent requirements, whilst increasing output.

Cochran installed a ST28 unit which achieves emissions of less than 100 mg/Nm³ as standard when firing natural gas. Nevertheless we didn’t stop there... Not satisfied with merely achieving the legally required levels, Cochran worked closely with the client to cut emissions still further.

Drawing on our own specially developed combustion tech, we rolled out our new low NOx gas register burner design with this unit. This reliably achieves sub-50mg/Nm³ levels - WITHOUT the costly need to fit flue gas recirculation.

Project Scope

A detailed review of the existing plant layout and boiler footprint was undertaken by Cochran and tie-in locations and requirements were determined.

Cochran’s site survey established that the installation and commissioning of a new 3,000 kg/hr ST28 Low NOx boiler and gas booster, fired using a Cochran Simplex burner, coupled with installation of the associated mechanical and electrical equipment required formed the ideal solution.

This detailed review was also utilised to fabricate the new pipework sections required to integrate the new plant into the existing system. This pipework was manufactured and tested offsite to minimise plant downtime during installation.



COCHRAN
Energy Solutions Worldwide

Lucite International Low NOx Boiler Replacement



Delivering on the Promise

Lucite International's new custom-built Cochran steam plant incorporates the highly efficient ST28 Low NOx boiler. This provides the following benefits:

- Upgraded combustion controls deliver increased fuel efficiency and reliability.
- High integrity self-checking control equipment maximise automation, simplifying operation and increasing overall plant efficiency.
- The new low NOx ST28 achieves full compliance with the stringent statutory requirements of the Medium Plant Combustion Directive, MCPD.
- Pre-installation surveying and offsite manufacture by Cochran delivered economic integration of the new system into existing pipework and utilities.

Project Debrief

Lucite International engaged with Cochran to replace their existing Wee Chieftain boiler, which had served them well for over three decades, with the latest ST28 unit to deliver reliable, highly efficient future proofed performance for the next 30 years. The proven longevity and reliability of the old boiler plant is testament to Cochran boiler know how and was a significant factor in selecting an ST28 unit as its replacement.

The Results That Matter

The benchmark NOx emissions figures achieved onsite have now been verified by an independent body. During a rigorous 120 minute test period, which saw the burner firing continuously, achieved exceptional emission levels of just 44.9 mg/Nm³ (+/- 3.3 mg/Nm³).

This 'real world' application amply demonstrates that Cochran's ST28 design, sub-50 mg/Nm³ NOx levels can be reliably achieved, even at full firing.

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