

Online boiler and furnace cleaning

Industrial operators are continually looking to integrate best-in-class cleaning technologies that minimize downtime, improve environmental performance and increase production efficiency. ProDecon's latest partnership with Polarchem provides a proprietary online boiler and furnace cleaning solution applicable to the waste-to-energy, power generation, biomass, process and refining sectors.

Key customer benefits include:

Operations & Maintenance

- Safe online cleaning, without shutdown or production modification
- Increase the overall energy efficiency
- Increase availability of the asset

Economical

- Improved heat transfer leading to reduced fuel usage
- Stop unscheduled shutdowns due to deposit build-up
- Reduction of cleaning costs and tube replacements
- Increase the proportion of recycled (class B) biomass = savings on biomass costs

Environment and safety

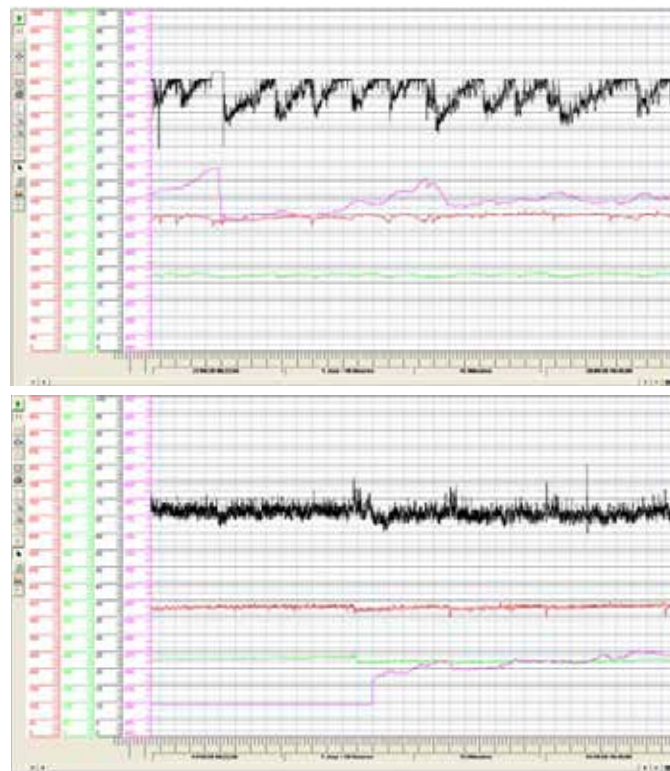
- Improved heat transfer leading to reduced fuel usage reducing overall emissions
- Decrease GHG and dust emissions
- Decrease consumption in exhaust gas treatment products

The process injects a non-hazardous, water soluble and environmentally safe chemical formulation consisting of oxidizing and neutralizing agents that are injected into the convection section to remove the buildup of fouling and slagging. The chemical acts to remove the fouling on the tubes and a dosing regimen can be developed as a preventative measure against scale build-up. The use of Polarchem significantly reduces SO₃ emissions by capturing and converting SO₃ into neutral, non-reactive salts. The deposits are chemically modified which then become dry, friable and easy to remove. Once the formulation has performed onto ash deposits and gases, the reaction products are recovered through the volatile ash filtration system.

Case study

The team's expertise was sought to support a trial at a waste-to-energy plant which drew air by utilizing a fan designed to operate at 65% power. A design issue led to the fan power rapidly rising to 80%, leading to the boiler shutting down for a total clean. This shutdown would happen every quarter, despite the use of micro-explosions twice a quarter. The team's remit was to inject the chemistry for one month when the boiler was already running at roughly 73% and getting worse. As per the below extract from the plants O&M data centre, the left images demonstrate the boiler in the run up to a full clean, which clearly

shows the boiler regularly peaking at 80%, almost all the time. The extract to the right demonstrates post cleaning with the fan power decreasing within days of cleaning.



Following this success, the trial was extended for six months without the plant needing to stop operations; running between 65-67% power as per the plant design, when the plant eventually stopped for a scheduled maintenance.

The team learnt that during the 6-month dosing period of the plant, the client decided to re-start micro-explosions which, prior to our involvement, would typically loosen around 2-300kgs of fouling. After six weeks of Polarchem injections, they made the first micro-explosion and dislodged six tonnes of fouling, providing the plant with great process efficiency and maximizing the plant uptime. This demonstrates how the chemical works to modify the fouling deposits, making them more friable.

The below pictures show the boiler prior to Polarchem injection, and the last picture shows the superheater after injection. The client commented that it was cleaner than they normally achieved on a full shut-down clean.



For further details email sales@prodecon.com