

CASE STUDY

MAINTENANCE CLEANING IN A SMALL BIOMASS PLANT

IMPROVING AVAILABILITY & PERFORMANCE WITH BANG&CLEAN®

Over time boilers become fouled as ash builds up on surfaces, this reduces the boiler efficiency and can lead to unplanned shutdowns. This is made worse by running above the maximum rating of the plant, variable feed stock, or plant breakdowns.

One way to prevent this is to clean the boiler tubes online, on a regular basis.

Cleans such as these are known as Maintenance cleans and are conducted on a regular basis as per the requirements of each plant.



The Problem

Over time, fouling builds up on tubes. This increases the pressure drop across the boiler, reduces the efficiency of the heat recovery, and reduces the maximum throughput of the boiler.

In the worst cases this can cause increased corrosion on boiler tubes and lead to unplanned plant shutdowns which can be very costly.

Quote from the manager of an Energy from Waste Plant in South East England —

“We experience excessive fouling in our boilers due to the compact design especially in the evaporator. KRR ProStream carry out regular maintenance cleans – every 6 to 8 weeks, which prevent downtime and reduce the time spent manually cleaning, during outage periods.”



Fouling after 12 weeks of running

The Solution

REGULAR MAINTENANCE CLEANS WITH BANG&CLEAN®

Regular cleaning improves the consistency of the boiler performance and allows the line to run longer between shutdowns. This in turn increases confidence in the boiler and allows the plant to increase its output and improve flue gas treatment performance.

ADVANTAGES OVER AD HOC CLEANING:

Scheduled cleans allow both KRR and the client to plan around cleaning operations; this leads to:

- Less disruption to plant running as cleaning is scheduled in advance.
- Reduced variation in plant performance as the boiler is always kept above a desired minimum performance.
- No emergency callout fees which reduces overall cleaning cost.
- Higher overall boiler efficiency.

CREATING A SCHEDULE

We work with plants to optimize the frequency of the cleans so that the boiler is kept clean with the fewest cleans possible. By setting a minimum desired performance level of the boiler, and cleaning every time the boiler hits this level, an initial schedule can be established. This is then refined after every clean until a regular schedule is established.



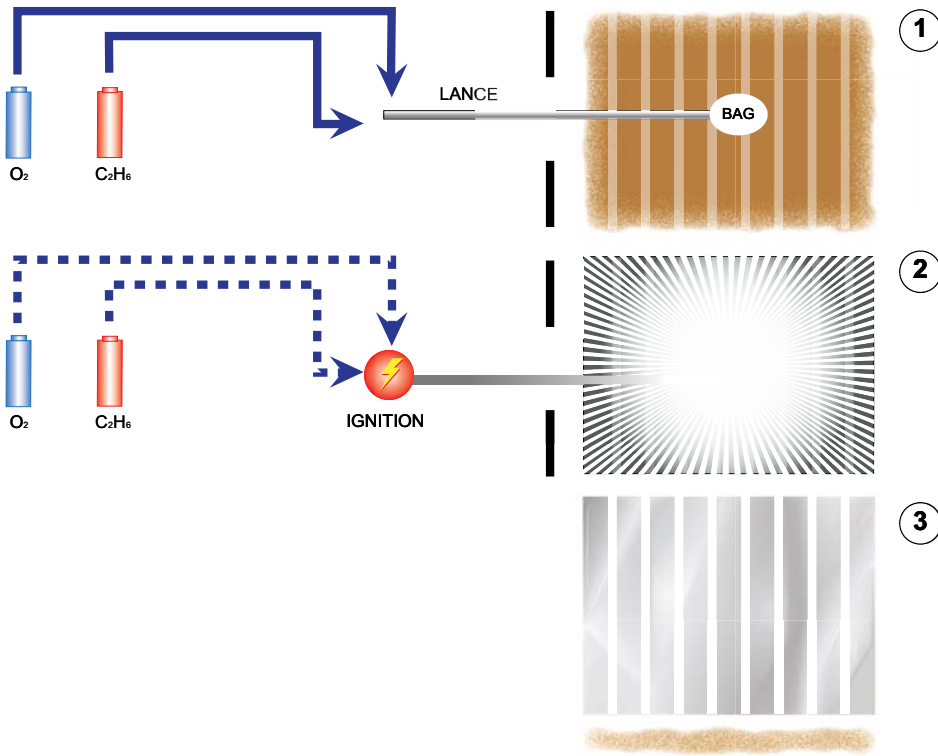
After a maintenance clean

BANG&CLEAN®

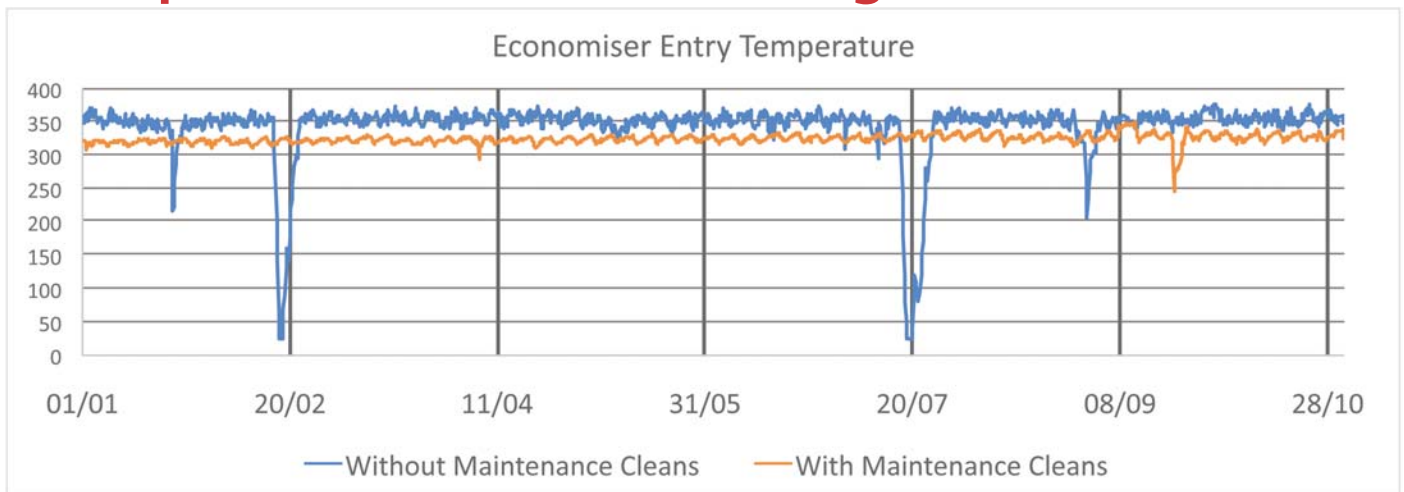
How it Works

1. A cooled lance with a bag on the end is brought near the tubes.
2. The bag is filled with an explosive mixture (O_2 / C_2H_6) and ignited using a remote control. The explosion results in a shockwave which shakes the tubes and walls.
3. The shockwave and vibrations removes the fouling build up from the tubes which falls into the ash transport system.

BANG&CLEAN® PROCESS



Example Maintenance Cleaning Schedule



Example of improved economiser entry temperature, with fewer unplanned outages. The boiler is kept cleaner, with more consistent performance.