

CASE STUDY

BOILER TUBE CLEANING

HOW A SHOCK PULSE GENERATOR SAVED THIS ENERGOS
TYPE 51 ENERGY FROM WASTE PLANT TIME AND MONEY



LOCATION:
Sarpsborg, Norway

This case study was produced by KRR
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Aims:

To keep tubes free of fouling between shutdowns.

The Problem:

Using only the original shot ball cleaning system, the water tube section (all evaporators) were completely clogged in under 12 weeks, resulting in a shutdown. The generator bundle had to be removed from the very compact plant using a 'bundle jack'. It was then cleaned by a specialist contractor who removed the fouling using high pressure water jetting, which is a very expensive process. With a design availability of 7,800 hours, this was unacceptable and needed a solution.

The Plant Manager commented —

“Without SPGs we wouldn't be able to run for 6 months – so it is much more efficient than only shot cleaning”



Before: Tubes removed from the boiler before installing the Shock Pulse Generator



After: Tubes removed from the boiler after installing a Shock Pulse Generator – much cleaner than tubes in photo to left of page

Plant details:

The Plant, started in 2010, burns shredded municipal solid waste up to a size of 300mm, including hazardous waste, impregnated wood and a variable amount of 'car fluff'. It has an average throughput of 5 tonnes an hour per line producing up to 25 tonnes of steam an hour.

KEY FACTS:

- 33MW Boiler
- Energy output 230 GWh a year
- One large industrial steam consumer
- Feedstock throughput 15,000 tonnes a year
- 8,000 tonnes of hazardous waste per year

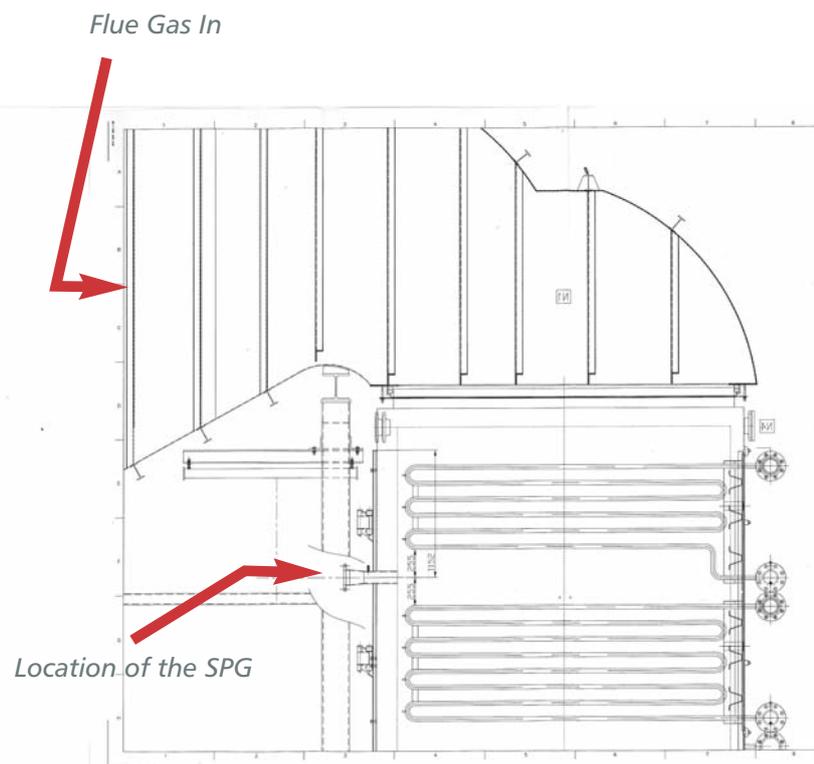


Shock Pulse Generator installed at Sarpsborg

The cost and operational benefits have been considerable:

Availability has been improved by 50% since installation of SPG unit. It has significantly reduced the number of unplanned shutdowns.

- Shutdowns have been reduced from 4 to 2 a year with the goal of having only 1 a year. There are several cost savings.
- Unplanned shutdowns are avoided resulting in increased availability and power production with less lost time cooling down.
- Health and Safety issues are addressed as when the tubes are removed they are lighter (less fouling) and so easier and safer to manoeuvre.
- The tubes are replaced less frequently due to reduced erosion.
- The tubes are now much cleaner and the final cleaning can be done inhouse using low-pressure water.



Following a trial in 2003 on Line 2, one SPG unit was purchased, having prevented buildup of over 10 tonnes of fouling from the top bundle.

In 2014 a second SPG was installed on Line 1 which has proved equally successful in keeping the tubes clean and reducing unplanned shutdowns.



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