

CASE STUDY

SHOCK PULSE GENERATOR (SPG) IN A SMALL BIOMASS PLANT



LOCATION:

Kils Biomass:

District heating plant, Sweden

This case study was produced by
KRR ProStream in cooperation with
Kils Energi and Delete

Aim:

To keep tubes free of fouling between shutdowns

Introduction:

Kils Biomass Plant was originally fitted with Infraphone sound vibration cleaning technology which failed to stop fouling. In fact, in order to remove the fouling manually, the plant had to shut down frequently and unexpectedly almost every week. Finally, a Shock Pulse Generator was installed in 2014.

Now, as the Plant Manager reports —

“The SPG has enabled us to reduce the number of off-line cleans per year by 80%. The SPGs allows a very high plant availability.”



Manual Cleaning



Before Shock Pulse Generator installed



After Shock Pulse Generator installed

Some details:

The plant runs on a mixture of imported Norwegian Recycled wood (not hazardous) and domestic wood that has impregnated residues, making this a hazardous waste.

The SPG is located just above the first horizontal tube packages, in the second pass (see drawing below). The SPG is detonated at various intervals depending on the plant load. The SPG is detonated at varying intervals: every 2, 4 or 8 hours, about 7,000 detonations over 4 years; maintenance and service costs are low (see below).

KEY FACTS:

- Fluidised bed 8MW Boiler
- Energy output 40 GWh a year
- 620 customers
- Feedstock throughput 15,000 tonnes a year

The cost and operational benefits have been considerable:

Availability has been improved dramatically from 92% before installation to 98% during the last winter and 99% for the whole year.

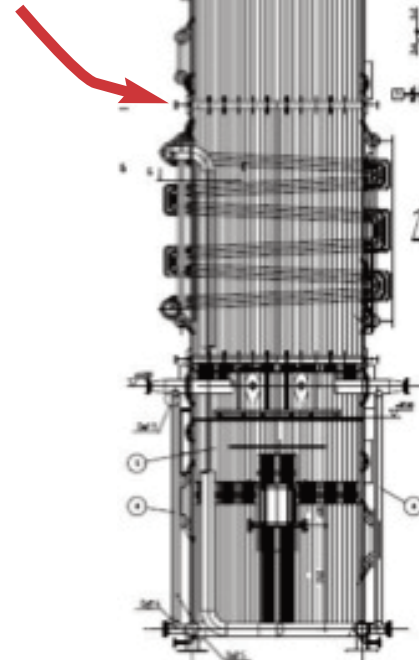
Forced shutdowns to clean manually have decreased from 21 a year to 3 a year, a reduction of 81%

The SPG's operating costs, including the cost of gas, max out at €5,000 per year.

Profits have improved by more than 10% with labour saving of some 500 hours a year as the tubes don't have to be cleaned manually.



Location of the SPG



Drawing of Second Pass

THE Shock Pulse Generator has improved efficiency and paid for itself in 2 years of operation.

