

Case Study Coal-fired Power & Heat Plant

Plant information

Offenbach, Germany

2 x 110 MW_{th}, Babcock-Hitachi fluidized bed boiler, built 1989

Fuel: Ruhr and South African coal

Cleaning areas:

2 x Tubular air preheater

2 x Economizer

2 x Superheater

Infrasound generators:	2 x AP1000 installed 1993 and 1994
	2 x AP1000 installed 1993 and 1994
	2 x AP1600 installed 1995 and 1996

INFRAFONE

Plant situation

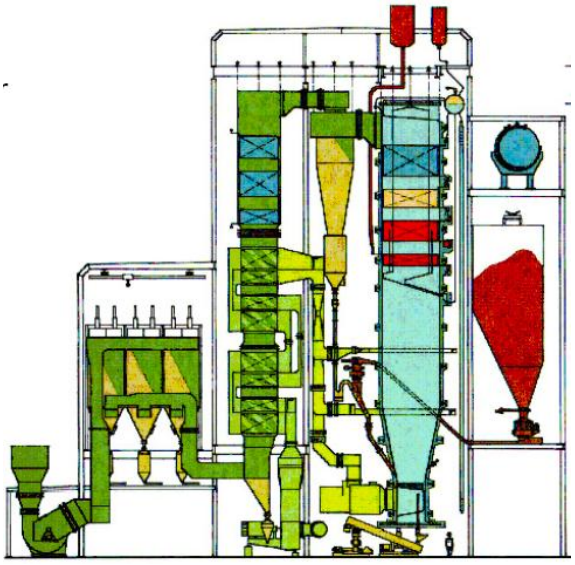
The plant has two 110 MW Babcock-Hitachi boilers installed in 1989 for district heating and power production.

These CFB-boilers were intended to be self-cleaning, consequently no soot-cleaning device was installed. However, the boiler did not stay clean and the heat transfer of the tube bundles was reduced considerably with time.

Problems occurred at load variations. This was caused by deposits released and clogged downstream. The customer tried different solutions but without success.

After a short period with one Infrasound generator cleaning the air preheater on boiler 12, a second unit was installed the same year, 1993, to clean the economizer. The results were compared with the identical boiler 11 and the difference was significant.

In 1994 two Infrasound generators were installed also in boiler 11. Based on the good results the customer decided to improve the situation in the superheaters, so Infrasound generators was installed in boiler 12 in 1995 and one in boiler 11 in 1996. Totally each boiler is cleaned by three Infrasound generators.



Boiler layout

Technical results

Thermal efficiency has increased by 1.5 % by eliminating the problem with reduced heat transfer of the tube bundles.

No blocking of tube bundles. The problems that earlier occurred at load changes are no longer a problem, resulting in more stable operation of the boiler.

Stable flue gas temperatures during the whole season. Graphs with operational data for both boilers are presented in figures 1-3 below.

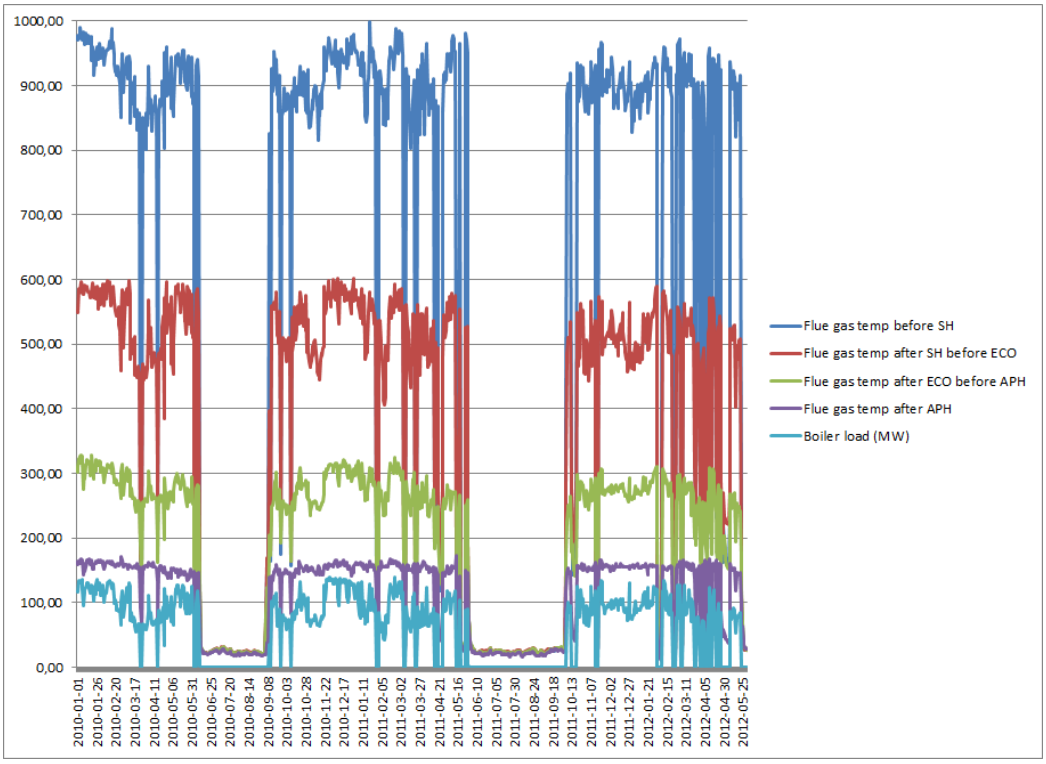


Fig 1. Flue gas temperatures and boiler load of boiler 11, during 2010-2012. The outlet temperatures of superheater (SH), economizer (ECO) and the tubular air preheater (APH) are all kept on a stable level.

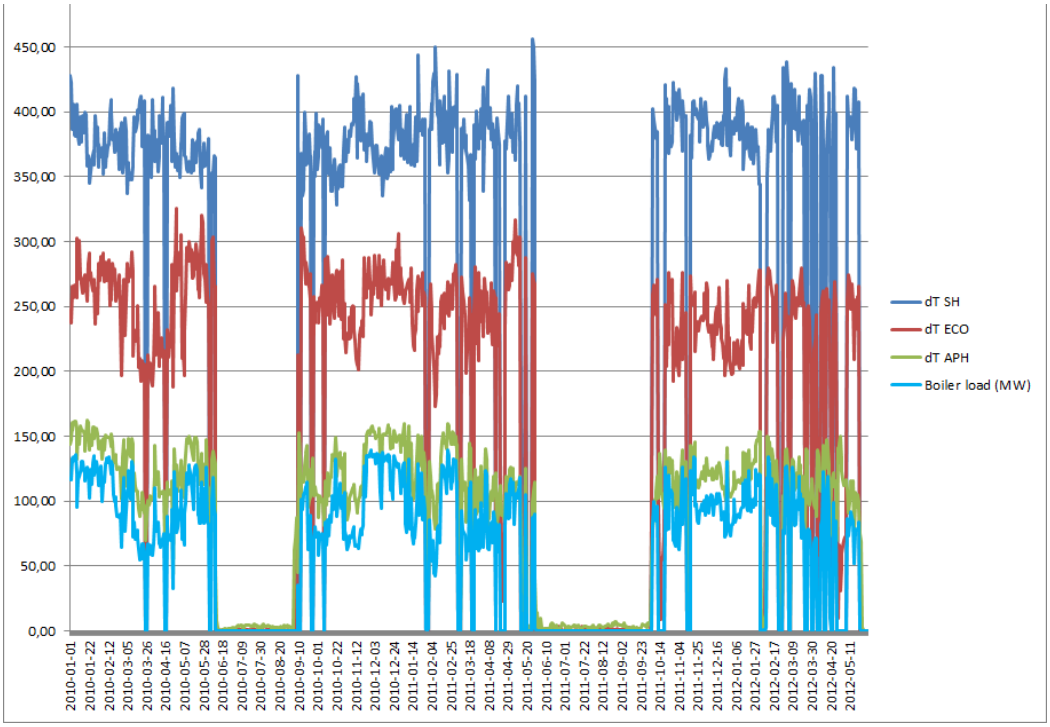


Fig 2. Flue gas differential temperatures and boiler load of boiler 11, during 2010-2012. The differential temperatures of each tube section are kept on a stable level the whole operational season.

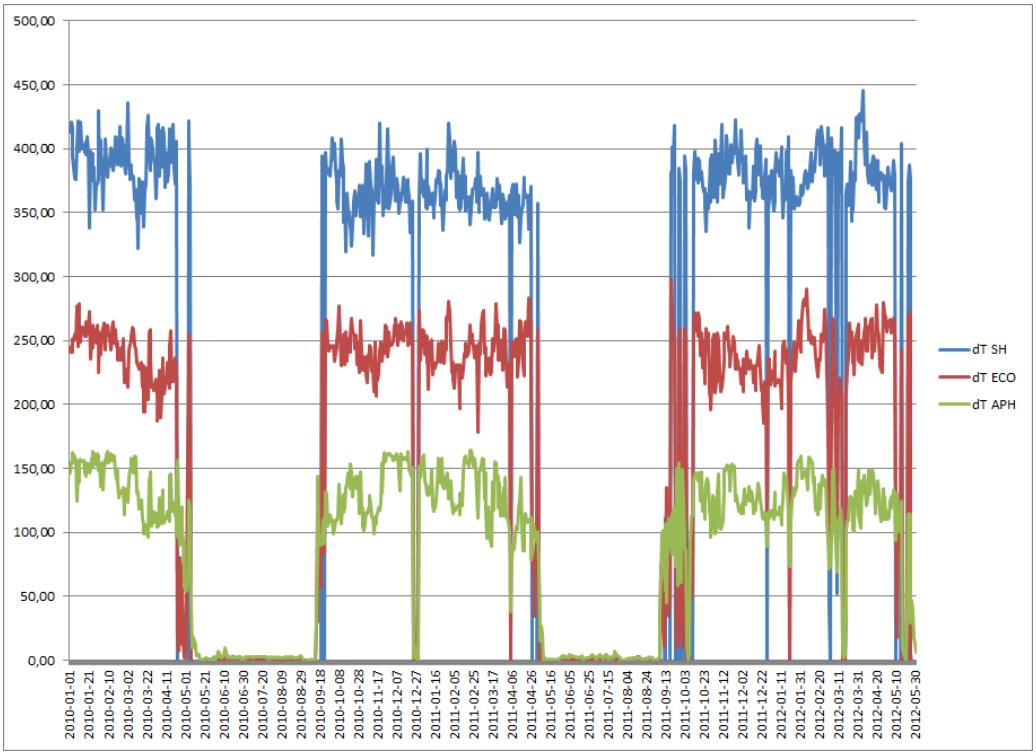


Fig 3. Flue gas differential temperatures of boiler 12, during 2010-2012. The differential temperatures of each tube section are kept on a stable level the whole operational season.

Under References, at www.infrafone.se, you can read about our technical and economical results for several heat and power plants.

We have also gathered our knowledge based on our long experience of infrasound technology compared to conventional methods as steam soot blowing, shot cleaning, compressed air soot blowing and audible sound (sonic or acoustic horns) in several "white papers" that are available under Knowledge Base at Infrafones homepage.

More information about the infrasound technology and its benefits as well as technical features and functions of the Infrasound System can be found in several brochures under Products at Infrafones homepage.