



**COST SAVING
ACOUSTIC CLEANERS**

***NIRAFON-250 SS ACOUSTIC CLEANER SOLVED THE PROBLEMS
CAUSED BY OIL SHALE***



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96 NIRAFON-250 SS ACOUSTIC CLEANERS FOR THE NEW POWER PLANTS IN NARVA, ESTONIA

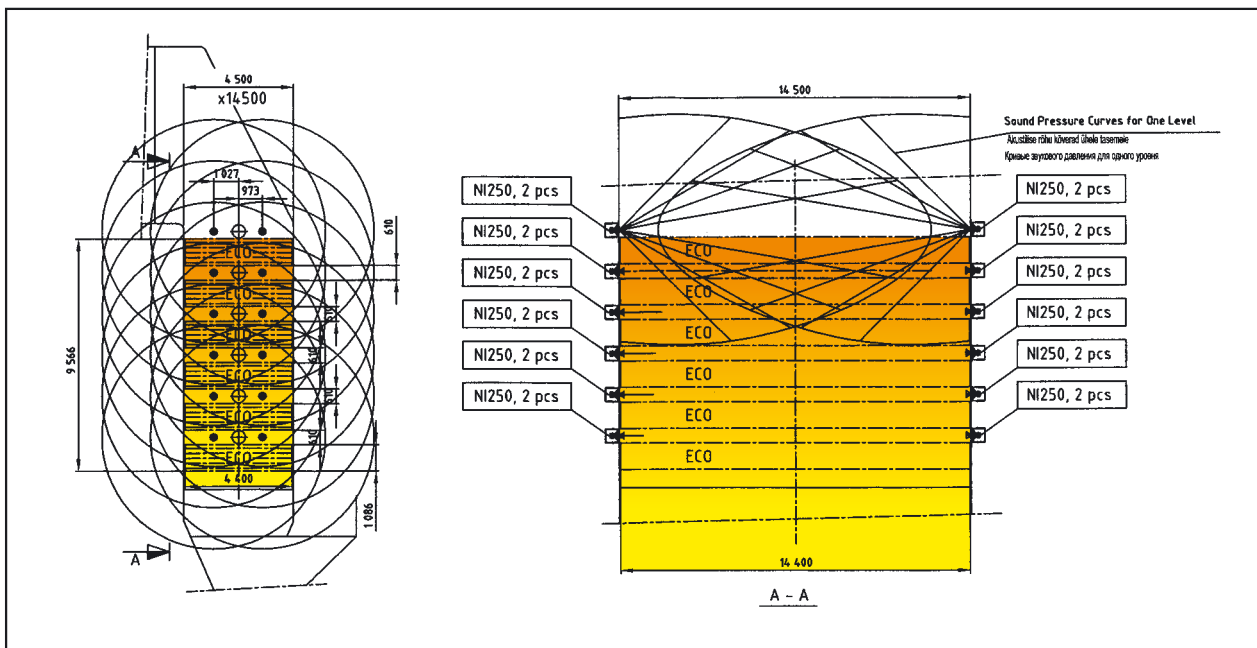
The region of Narva in Estonia is one of the largest ranges of oil shale in the world. That is why the area is a concentration of a considerable number of power plants fuelled by oil shale. During 2002-2004, Foster Wheeler Energia Oy has provided Balti Elektriijaam and Eesti Elektriijaam, the two largest power plants in the area, with two new 215 MW CFB boilers each. Pneumatic Nirafon - 250 SS acoustic cleaners were chosen as cleaners for the economisers of the boilers. Each boiler was provided with 24 cleaners, for a total of 96 in all.

Puzzling Fuel

The special feature of oil shale is its great percentage of incombustible matter: about 50 % of its constituents turn into cinder and 10 % of them are incombustible. This causes particular problems in regard to keeping the heat transfer surfaces clean. The cinder of oil shale is strongly contaminating and forms an insulating layer on the heat transfer surfaces, quickly reducing the operating efficiency of the plant. As for the old plants in Narva, the problem is dealt with by shutting down the boilers at about two weeks' intervals and spraying them with water and cleaning them mechanically.

A practical solution that reduces costs

A year after the introduction of the new plants we can establish that the Nirafon acoustic cleaning system has proved to be a most practicable solution even in intractable conditions of this extent. The cleaning systems integrated with the operating systems of the plants have fully met the objectives set. The sound pressure shocks programmed into continuous cleaning cycles keep the economisers free from cinder and there has been no need for expensive shut-downs, nor for manual cleaning. The acoustic cleaners have not damaged the structures of the plants, nor are there observations of erosion or corrosion.



ACOUSTIC CLEANING SYSTEM

CUTTING COSTS

The NIRAFON acoustic cleaning system keeps the superheaters, economisers, air preheaters, flues, filters and fans of the boiler plants clean and prevents vaulting of particles in the silos and cyclones.

By means of acoustic cleaning, particles in dry form, such as cinder and soot, powder and flour, can be removed from places where they are not desired.

Sound travels conically in space; consequently, the Nirafon acoustic cleaning system is also effective in fringe areas and around corners, enabling the cleaning of surfaces that are inaccessible by other means.

The advantages of the Nirafon system:

Heat transfer and other surfaces to be cleaned stay permanently clean and the process can continue without interruptions, rendering expensive shut-downs unnecessary.

Acoustic cleaning drastically reduces the use of water at the plant, without causing corrosion or erosion.

The acoustic cleaners require little space, the maintenance and operating costs are low. The refund time of the system is short.

A tailor-made plan is always drawn up by Nirafon Oy according to the buyer's need and application.



Technical Data on the Nirafon 250-SS Cleaner:

Frequency	250 Hz
Acoustic Pressure	approx. 150 dB
Material:	SS 2343 (DIN 17445)
Supply of Compressed Air	min. NS25
Air control equipment	R ½": <ul style="list-style-type: none">- ball valve- filter-water separator- pressure regulator with manometer- solenoid valve (230V/50Hz/8W)- regulator valve for cooling air- hose R3/4"x1,5 m- back pressure valve R1/8"

Compressed Air

Quality: normal working air

Pressure: 6 bar

Quantity: approx. 20 l/s air for cleaning (free passage)
2 l/s air for cooling "

Automatic functions For fully automatic functions of the cleaning system,

applications case by case:

- adjustable timers
- programmable timers
- programmable logics

Rights to modifications reserved.



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