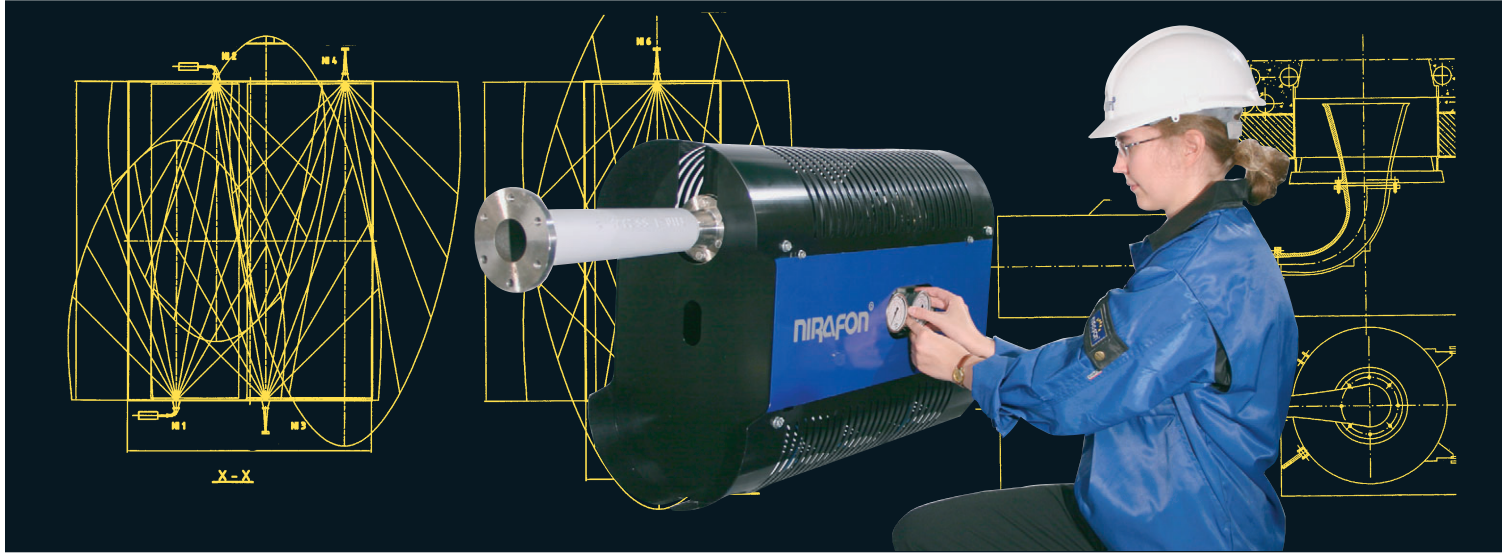


NIRAFON[®]

**COST SAVING
ACOUSTIC CLEANERS**



**Nirafon Cleaning Sound Device.
NEW THIRD GENERATION ACOUSTIC CLEANER.
Cleaning Effect up to 1500 °C.**

Nirafon Cleaning Sound Device is an innovation for the acoustic cleaning of the high temperature areas of boiler plants. The method enables the acoustic cleaning of both the combustion chamber and the superheater area without stopping the process.

The NCS cleaner is the newest achievement of the goal oriented product development carried out at Nirafon Oy. Thanks to the design of the firing chamber, the new ignition and valve system, it is possible to create 1 – 15 effectively cleaning pulses per second and the cleaner is more dependable than ever before.

This third generation acoustic cleaner keeps the heat transfer surfaces clean even at spots where ashes are present in both molten and solid forms.

Cleaning Effect up to 1500 °C

During the cleaning pulse, the NCS reaches an acoustic pressure level of over 170 dB. The device cleans the surfaces of combustion chambers and superheaters up to 1500 °C.



- cleaning during the process
- fewer down times
- improves operating efficiency
- no damage to structures
- low operating costs
- short refund time

OBJECTS OF APPLICATION IN ENERGY AND PROCESS INDUSTRY

superheaters – economisers – air preheaters - flues

NCSO Operating Principle

The acoustic cleaning effect of the NCSO is obtained by quickly burning a small amount of LP gas in the firing chamber of the device and leading an acoustic pressure shock through a horn into the space to be cleaned. LP gas is used to fuel the device, obtainable e.g. out of the LP gas network for the ignition burner.

The NCSO cleaner produces 1 to 15 cleaning pulses per second. One cleaning pulse consumes about 0.4 g of gas. Additionally, the device uses approx. 80 Ndm³/s of compressed air as combustion air.

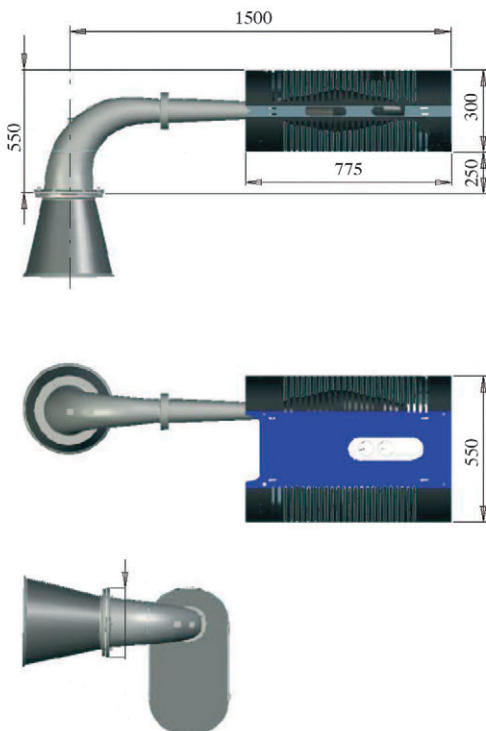
The particles soiling the surfaces stick to each other as well as adhering to the surfaces of the structures. The change in the speed of the gas flow brought about by the NCSO detaches the particles as the force it exerts on the particle is greater than the adhesive force retaining it. Once the particles have been detached, the pulses of the cleaner quickly following each other prevent them from clinking again onto the structures. Instead, they continue their passage in the flue, propelled by the stream of exhaust gases.

The advantages of the Nirafon system:

The new NCSO enables acoustic cleaning of the entire boiler plant. When the new NCSO cleaner is used at temperatures exceeding 800 °C and traditional pneumatic Nirafon acoustic cleaning in areas of lower temperatures, the advantages of acoustic cleaning are achieved in the entire plant:

- heat transfer and other surfaces to be cleaned stay permanently clean and the process can continue without interruptions
- 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

Limited need of space:



NCSO Technical Data:

Pulses per sec.

1...15/s

Acoustic Pressure

over 170 dB

Material

G-X15-CrNiSi229, SS 2343 and Fe 52

Supply of Compressed Air min NS 25

Air handling equipment R1/2"

- ball valve
- pressure regulator with manometer
- solenoid valve
- back pressure valve
- hose R3/4" x 1.5 m

Compressed Air

Quality: normal working air
Pressure: 6 bar
Quantity: approx. 80 Ndm³ /s when running

Supply of Gas

Gas control equipment R1/4"

- ball valve
- manometer
- back pressure valve
- solenoid valve group
- needle valve
- gas filter
- gas hose R1/2" x 1,5 m

Gas

Quality LP gas
Pressure 2...4 bar
Quantity approx. 0.4g/pulse

Rights to modifications reserved.
Internationally patented device.



ACOUSTIC CLEANING SYSTEMS

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