



*Cost Saving
Acoustic Cleaners*

NCSD®

Specially designed for cleaning of high temperature areas,
up to 1500°C flue gas temperatures



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Specially designed for cleaning of high temperature areas, up to 1500 °C flue gas temperatures Nirafon Cleaning Sound Device is an innovation for 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 NCSD® cleaner is the achievement of the product development carried out at Nirafon® Oy. The device produces a very high, over 170 dB, sound pressure pulse, which makes it very effective. In addition to this the device is very reliable in use.

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

NCSD® Operating Principle

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

The NCSD® cleaner produces 4 to 10 cleaning pulses per second and the cleaning will be operated for a few seconds with a few minute intervals. 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 NCSD® 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 by the pulses of the cleaner quickly following each other, they either fall down by the gravity or continue their passage in the flue, propelled by the stream of flue gases.

The advantages of the Nirafon® system:

The new NCSD® enables acoustic cleaning of the entire boiler plant. When the new NCSD® 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:

- *cleaning during process*
- *heat transfer and other surfaces to be cleaned stay permanently clean and the process can continue without interruptions, rendering expensive shut-downs unnecessary.*
- *also cleans the shadow areas and around the corners*
- *acoustic cleaning drastically reduces the use of water at the plant*
- *doesn't cause any harm to structures*
- *no mechanical wear, no corrosion or erosion*
- *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:	NCSD®	
Operation Frequency	4 –10/s	
Sound Pressure	over 170 dB	
Material:		
Actuator	AISI316/Fe52	
Horn	AISI316/SS2343/G-X15-CrNiSi229	
Compressed air consumption	max. 80 Ndm3/s	
Gas consumption	c. 0.4g/pulse, 4g/s	
Operation temperature (flue gas temperature)	1500 °C asti	