BANDELIN

SONOREX CNp 28-2

High-performance ultrasonic bath with pulsed vacuum

Compact CNp cleaning system

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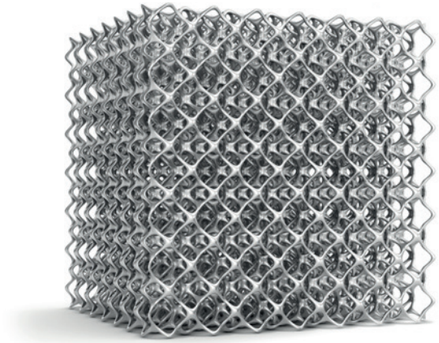
Ultrasonic OR pulsed vacuum cleaning?

Nowadays, cleaning with ultrasound or pulsed vacuum is used for cleaning components efficiently.
Which technique achieves the best result depends on the material to be cleaned and the adhering contamination.
Until now, equipping our systems with both cleaning technologies has only been economical in large-scale systems produced in high volumes.
For this reason, specialists from the two areas joined forces in 2018 to combine the advantages of the two technologies into one compact device – and the SONOREX CNp 28-2 was born.



BANDELIN
Ultraschall seit 1955

For generations, BANDELIN has been the leading manufacturer of high-performance ultrasonic devices for use in medicine, industry and laboratories. In professional circles, the SONOREX, SONOPULS, SONOMIC and TRISON names are synonymous with ultrasound.
Seventy-nine patents and registered designs testify to the company's outstanding innovative power. The great depth of production and multiply-certified quality management system ensure the highest levels of reliability and durability in the products. Manufacturing, service and repairs are performed in Germany and also guarantee first-class quality.

BANDELIN – Ultrasound since 1955

LPW

LPW Reinigungssysteme GmbH is one of the leading suppliers of high-quality systems and process technologies for the cleaning of industrial components with aqueous media. It has been manufacturing solutions that meet the highest requirements for component cleanliness for more than 25 years. As a medium-sized company in southern Germany, LPW stands for flexibility and high innovative power in all markets and in all sectors.
The systems are used in the automotive industry, general industry, and high-purity sectors such as medical technology and the optical and semiconductor supply industries.

LPW - More than cleaning

Ultrasonic AND pulsed vacuum cleaning!

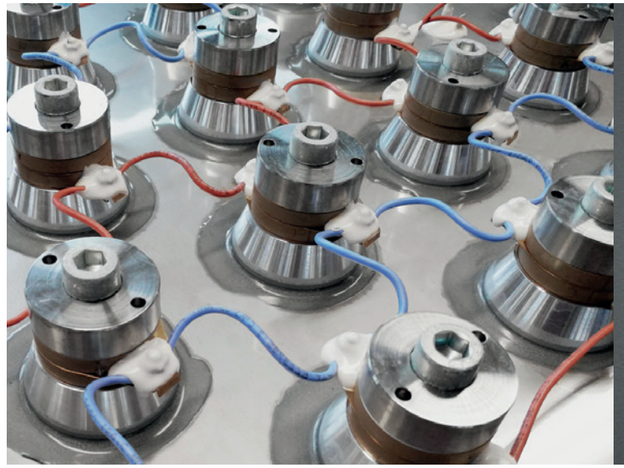
After almost three years of development, BANDELIN and LPW have created the first mass-produced cleaning device that combines the advantages of ultrasonic and pulsed vacuum cleaning in one compact design. It allows for highly effective cleaning processes to be performed economically, even at low throughput rates.
The uncomplicated set-up, low-maintenance operation and user-friendly controls make the universal compact device even more efficient – with outstanding cleaning results even for complex components, capillary cavities, hoses and bulk solids.

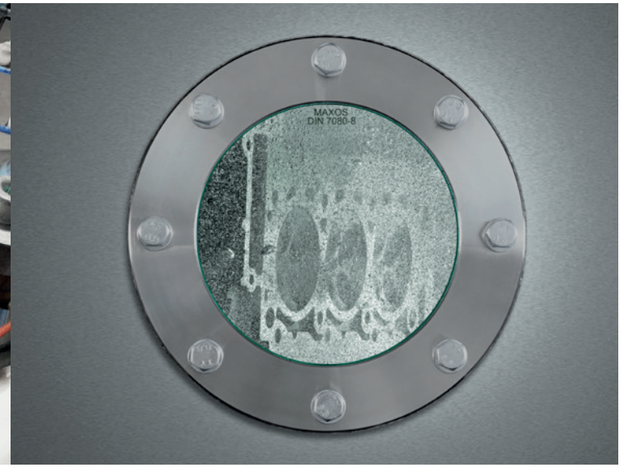
The CNp process: Ultrasound + pulsed vacuum

CNp is the most effective combination of two mechanical cleaning processes: powerful loosening of dirt through ultrasound and removal of particles from the smallest interstices through pulsed vacuum. The CNp process guarantees absolutely thorough cleanliness in the shortest period of time.

Ultrasonic cleaning

Powerful piezoelectric transducers are supplied with high-frequency power by an ultrasonic generator. The vibration generated is transferred to an aqueous solution, where tiny cavitation bubbles are formed and implode.
Ultrasonic cleaning effectively removes contamination adhering to the objects to be cleaned, guaranteeing a gentle cleaning process.

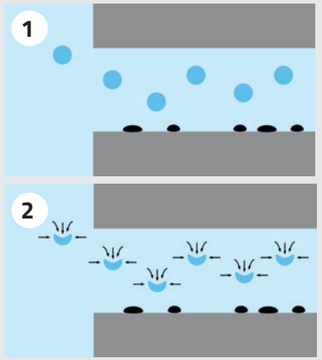




Pulsed vacuum cleaning

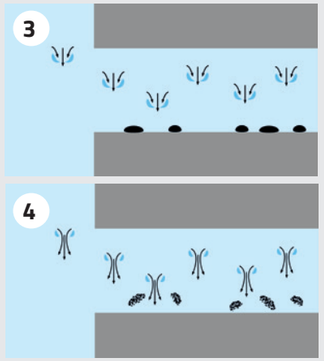
In an aqueous solution, the static pressure is reduced and water vapor bubbles are generated (boiling temperature bubble effect). These even form in capillary structures. Thanks to the spatial expansion of the clearly visible bubbles, the liquid is displaced from the smallest cavities and the dirt particles loosened inside them are effectively removed. As the bubbles implode, unused cleaning fluid is flushed into the cavities. Even capillaries that were previously difficult to wet are reached by the cleaning solution using this method and flushed out in the subsequent CNp rinsing process, leaving no residue.

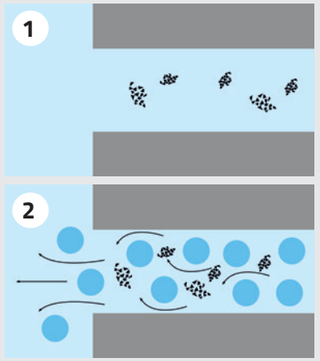
"CNp – the new standard in cleaning technology."



Cavitation

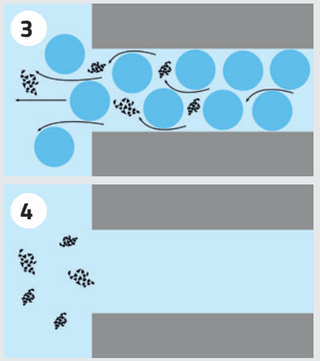
Ultrasound generates an intensive compression-tension alternation in the water, creating tiny cavitation bubbles that grow over several cycles and then implode at high intensities. The high shear forces and micro jets resulting from the implosions quickly blast off all contamination adhering to the surface.





Boiling temperature bubble effect

Lowering the static pressure in the liquid moves the boiling point of the water down to a lower temperature. The water in the bath begins to boil at a temperature range of 50– 60 °C and tiny vapor bubbles form on solid surfaces. When the pressure is increased again, the vapor bubbles implode.



SONOREX CNp 28-2

High-performance ultrasonic bath with pulsed vacuum

With the SONOREX CNp 28-2, BANDELIN and LPW have reached the next stage of evolution for two cleaning procedures that have proved their worth millions of times. The machine combines gentle surface cleaning using ultrasound with the residue-free rinsing of a pulsed vacuum (CNp) – in the first and only compact CNp cleaning device.

This process can be used to clean a wide variety of complex shapes such as boreholes, blind holes, 3D printing parts, hoses or medical instruments, at high intensity and speed. At the same time, the process is gentle and suitable for most materials.

Important factors for an optimal cleaning result

Five interacting factors are of fundamental importance for cleaning a wide range of components made of a wide variety of materials with complex surface structures:

Ultrasound
The ultrasound generates tiny cavitation bubbles in liquids, which implode immediately (cavitation). The forces generated cause the intensive but gentle detachment of dirt particles from the item being cleaned.

Pulsed vacuum
The combined use of pulsed vacuum and ultrasound allows for the flushing of complex components, something that could not be achieved with previous methods.

Temperature
Many detergents are only fully effective at higher bath temperatures.
The cleaning fluid is brought to its optimum temperature by the internal heating system.

Time
Depending on the contamination, cleaning will take anywhere from a few seconds to a few minutes. Compared to other procedures, the combined use of chemicals and ultrasound reduces the cleaning time by up to 90 %.

Detergents
A carefully matched cleaning concentrate encourages cavitation, reduces the surface tension of the water, and loosens and binds dirt particles. Depending on the type of contamination, different cleaning preparations will be used.

SONOREX CNp 28-2

Simple setup
Plug in the mains plug (three-phase current), attach the wastewater connection, device is ready for operation

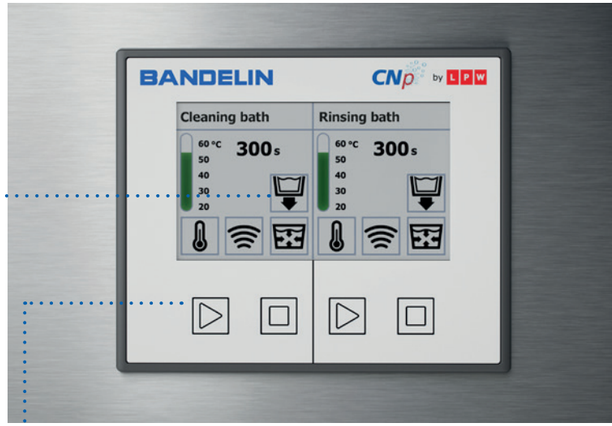
Double-tank design
Intensive cleaning and rinsing at the same time or 2 x cleaning cycles or 2 x rinsing cycles

Safe and defined operation
Automatic temperature control, time program and fill level monitoring

Low maintenance
Ultrasonic system and control unit are maintenance-free

Economical
Even for small cleaning volumes, space-saving

Hinged lid with glass window
for process observation, easy to operate



Keys
Fast process start thanks to intuitive Start/Stop buttons for each tank

Emptying
Safe emptying of the cleaning solution via the touchscreen

Touchscreen
Function selection, temperature display and program runtime

Castor feet
Rubber-coated castors for safe transportation and installation

Technical data

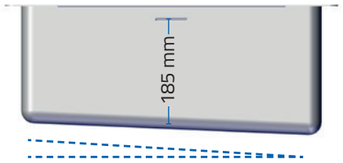
SONOREX CNp 28-2

Ready-to-use set consisting of SONOREX CNp 28-2,
two inset baskets and two basket holders
Code No. 7200

Main switch with emergency stop function

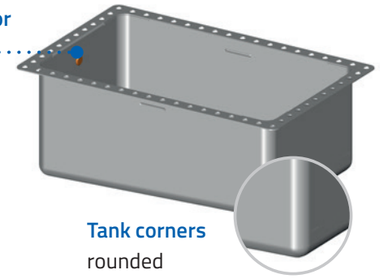
Castor feet
lockable

Contents:
40 l
Operating volume:
28 L
per tank



Tank bottom inclined

Fill level sensor



Tank corners
rounded

35 kHz
Ultrasonic frequency

300 W
Ultrasonic nominal power

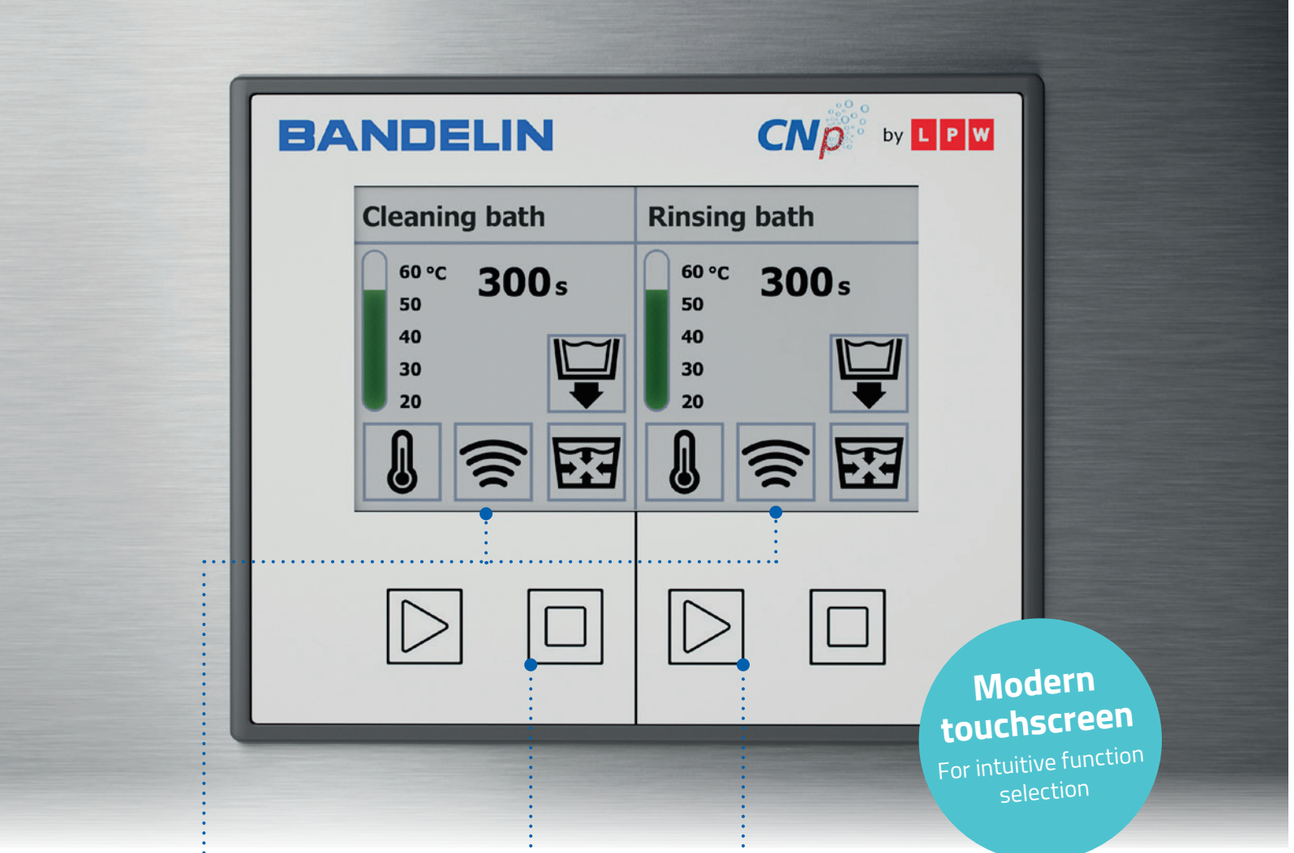
High-performance ultrasound
8 oscillating systems on the bottom of each tank

Ultrasound generator 1
TG 300 CNp

Electrical cabinet

Vacuum pump
BUSCH MINK MV 40
Pump capacity: 1,300 W

Ultrasound generator 2
TG 300 CNp



Ultrasound
ON/OFF

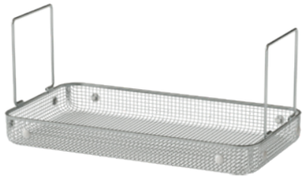
Time setting
countdown operation (1 - 999 sec.), pre-adjustable

Vacuum
ON/OFF

Emptying
START/STOP

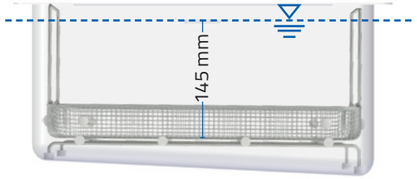
Temperature
adjustable from 50 – 65 °C, temperature display, heating output: 3,000 W per tank

Power supply	
Mains supply	400 V 3N~ (± 10 %), 50/60 Hz
Power consumption	7.9 kW
Current consumption	max. 15.7 A per phase
Fuse	16 A
Mains cable	3 m, connected to the device, with 3-phase power plug CEKON 16 A
Protection class	I



K 28 EM inset basket
Inner dimensions 455 × 245 × 50 mm
Mesh size 5 mm

KT 28 basket holder



Basket holder with inset basket in the tank

Biologically degradable

Optimum cleaning result with TICKOPUR R 36

Especially developed for ultrasonic applications and with cavitation-promoting properties, the TICKOPUR R 36 cleaning concentrate supports the cleaning process and is also gentle on materials.
TICKOPUR R 36 removes distillation residue, organic and inorganic residue, oily and greasy impurities from cuvettes, parts and devices made of metal, and also in light metal, glass, ceramic, plastic and rubber.
Surfactant-free, non-foaming, pH 10 (1%).

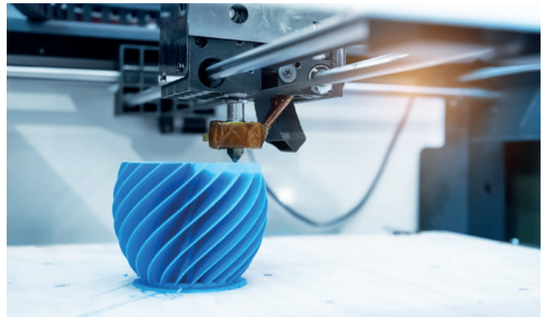
Products tried and tested over many years: Special preparations by **DR. H. STAMM GmbH**

Areas of application

Medicine
The most delicate structures in medical device manufacturing, such as stents or lumens, can be optimally cleaned of contamination and residue.

Laboratories
Complex equipment, analysers and difficult-to-clean accessories can be cleaned easily, quickly and thoroughly – both externally and in the smallest interior areas.

Industry
Particularly in production and maintenance, the highest cleanliness standards can be met. The new compact device offers a space-saving and economical solution for every requirement.

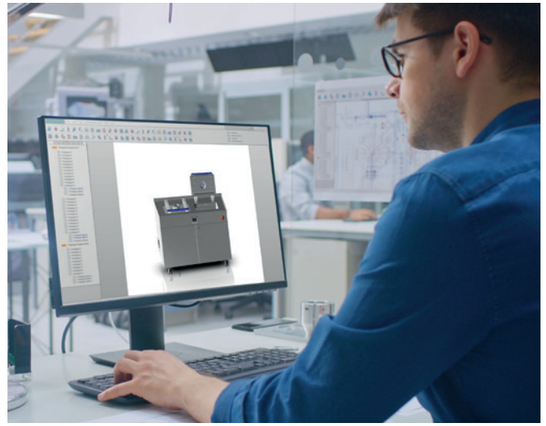


Additive manufacturing
The SONOREX CNp 28-2 is the ideal addition to the manufacturing process in the area of rapid prototyping. Sintered structures can also be reliably freed from deposits, even in their smallest interstices.

BANDELIN and LPW - Innovation and quality from Germany

These two globally successful cleaning specialists carry out their development and manufacturing in Germany, and are continuously at work on opening up new application areas and further developing existing technologies and devices.
With their many years of experience, BANDELIN and LPW offer both standard solutions and customized systems that address specific cleaning needs. Customers benefit not only from individual consultations, trouble-free maintenance and repair, as well as unique service, but also from the long service life of the products and a broad portfolio of accessories.

MADE IN
GERMANY



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