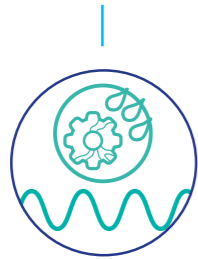


# BRIO) Advantages

## BRIO) ULTRASONICS ADAPTED TO EACH APPLICATION

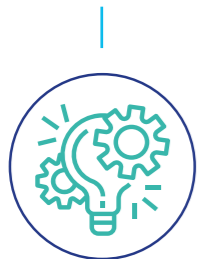


High power  
for tough dirt  
20-30 kHz

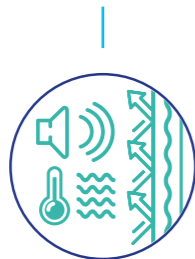


Low power  
for mild dirt  
30-60 kHz

## BRIO) DESIGN & MANUFACTURING RELIABLE AND RUGGED EQUIPMENT



Optimised  
design



Maximum  
insulation



Superior  
durability



Adapted  
to the client

## BRCLEAN CHEMICALS SPECIFIC FOR EACH APPLICATION

## UNIQUE BRIO) ULTRASONIC EMITTERS SYSTEM



Maximum  
performance



Superior  
cleaning



Maximum  
energy efficiency



Reduced  
cleaning times



Longer  
service life



More resistant  
emitters



Modular emitter  
system



Optimised electrical  
installation

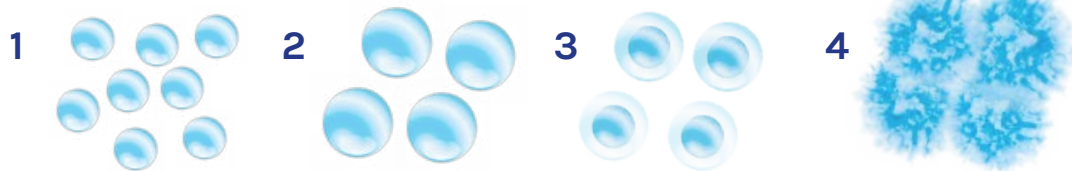
# BRICO

# Advantages

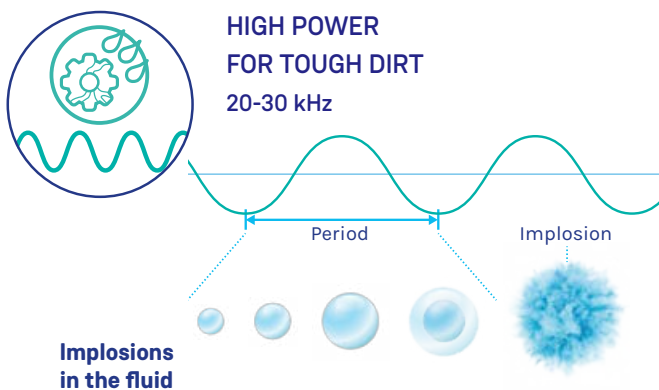
## ULTRASONIC TECHNOLOGY ADAPTED TO EACH APPLICATION

We are experts in determining the most suitable ultrasonic frequency and power for each application, achieving the best results in terms of cleaning, disinfection and hygiene. Ultrasounds produce a micro-brushing of the parts, which varies according to the applied frequency and power. Below we will explain how this effect is produced as well as provide a general view of the most suitable frequency ranges for each application.

### ULTRASONIC PROPAGATION PRINCIPLE (CAVITATION)



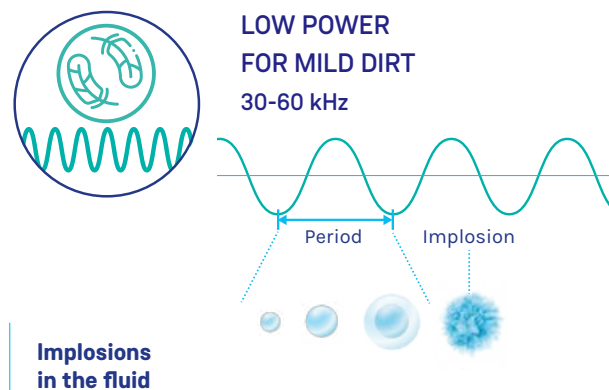
1. The pressure decreases and a large amount of bubbles are generated.
2. The bubbles grow in a greater or lesser measure and power according to the frequency.
3. The pressure increases and the bubbles are compressed.
4. The temperature is increased until the bubbles implode, producing the micro-brushing.



- A lower number of large size bubbles are generated.
- The bubbles implode with high power.

Suitable frequency range to remove tough dirt, incrustations, carbon deposits, etc.

For mechanical components, injection moulds and all types of parts that are heavily soiled or that require high power treatments.



- A greater number of small size bubbles are generated.
- The bubbles implode with low power.

Suitable frequency range for mild cleaning processes, in clean rooms, final finishes, etc.

For medical, surgical, pharmaceutical, optical, prosthetic equipment and all types of parts that require a mild treatment.

# BRIO) Advantages |

## UNIQUE SYSTEM OF ULTRASONIC EMITTERS

BRIO emitters are comprised of high power piezoelectric transducers. They are the result of 30 years of research where we have been able to develop an optimised design and a unique manufacturing process. Our exclusive technology provides multiple advantages, cost savings and superior cleaning in minimal time.



### MAXIMUM PERFORMANCE

In the paragraphs below we explain how our technology produces a superior cleaning with maximum energy efficiency and reduced cleaning times. With less consumption we are able to produce optimum results in minimal times, generating a great cost savings in all the processes.



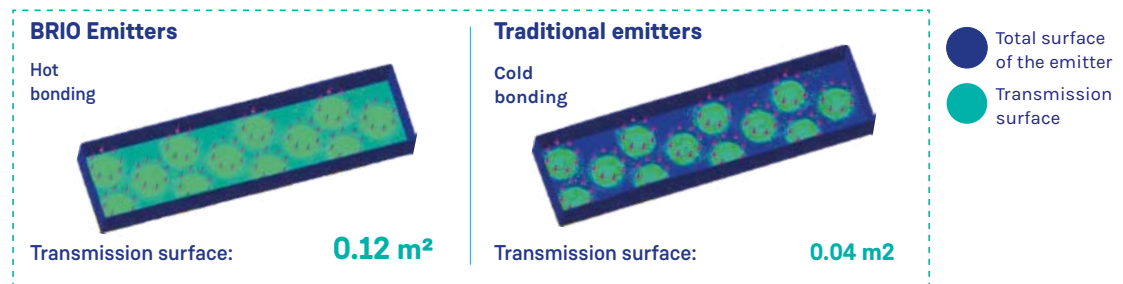
### BETTER CLEANING WITH MINIMUM CONSUMPTION

Our unique process for manufacturing emitters guarantees that 100% of the ultrasonic energy dissipated by the emitter will be transmitted to the bath, maximising its performance and cleaning effect. To accomplish this, the transducers are fixed to the emitter by means of an elastic laminate of special resins using an exclusive hot bonding process.

BRIO emitters are standardised, of a size adapted to the model to ensure an optimum transmission of the ultrasonic energy. Depending on the application, we will position the emitters at strategic locations to achieve the greatest possible homogeneity.

### COMPARISON OF ULTRASONIC ENERGY TRANSMISSION SURFACES

Emitters with 12 transducers with different bonding processes. Size: 700x180 mm



Our hot bonding system provides a transmission surface that is three times larger than the traditional. In the comparison we see how the transmission surface is not reduced to the circular surface of the transducers; instead, it is extended to the entire transmission surface of the emitter.



### REDUCTION OF THE TRANSMISSION TIMES

Our equipment is at least 20% faster than the rest of equipment that is available on the market. This reduction is achieved thanks to the homogeneous transmission of 100% of the ultrasonic energy to the bath. Our ultrasonic equipment reach every corner of the part at all times and with the maximum power, regardless of its size, shape or location in the fluid.



### MAXIMUM ENERGY EFFICIENCY

BRIO ultrasonic emitters require less amount of energy for the same amount of fluid, achieving better cleaning finishes. Additionally, our exclusive closed cell elastomer lagging system allows maintaining the operating temperatures with a minimal energy consumption.



### LONGER SERVICE LIFE

The exclusive BRIO emitters technology includes our unique hot bonding system for transducers, an optimised electrical installation and a modular emitter distribution system. These advances ensure a stronger mechanical strength as well as a greater durability.



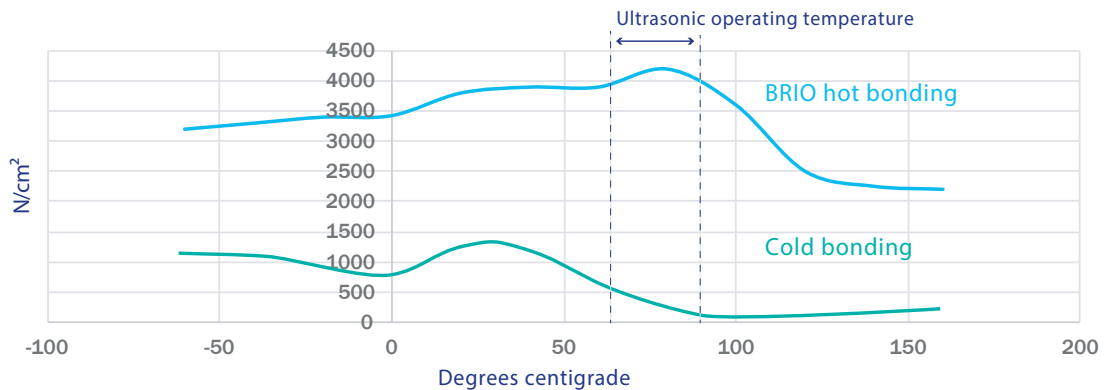
### MORE RESISTANT EMITTERS

The mechanical strength of our BRIO emitters is greater under ultrasonic operating conditions (65-90 °C). Our unique hot bonding process provides a notable increase in the mechanical strength compared to traditional bonding systems that use cold resins. Thanks to this increased strength we are able to achieve a longer service life of the ultrasonic emitter with the machine experiencing minimal technical stoppages.

The data and conclusions of our mechanical strength tests are provided below:

#### MECHANICAL STRENGTH OF TRANSDUCER BONDING SYSTEMS COMPARISON

Bonding of aluminium (transducers) to stainless steel (surface of the emitter).



Operating temperature with the largest range of mechanical strength:

- Hot bonding: 75-85 °C
- Cold bonding: 28-30 °C

Average mechanical strength under ultrasonic operating conditions (65-90 °C):

- Hot bonding: 3815 N/cm²
- Cold bonding: 498 N/cm²

Mechanical strength after 2000 hours of ultrasonic operation at 80 °C:

- Hot bonding: Hour 1000 - 3520 N/cm²      Hour 2000 - 3508 N/cm²
- Cold bonding: Hour 1000 - 340 N/cm²      Hour 2000 - 281 N/cm²

Our hot bonding system has an average of 3300 N/cm² more of mechanical strength at the operating temperature of the ultrasonic equipment. Therefore our emitters are more rugged as a result of the mechanical wear produced by the ultrasonic transmission.

In time, the constant vibration the emitters are subjected to affect the mechanical strength of the bonding. After 2000 hours of operation, our system maintains a durability that is much longer, with minimal deterioration and 12 times more mechanical strength. When the rest of emitters fail due to wear, ours will continue operating like the first day.

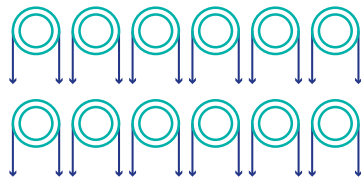


### OPTIMISED CABLING OF THE EMITTERS

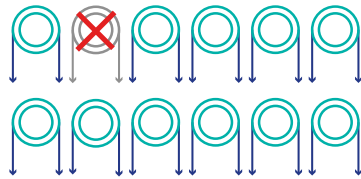
#### INDEPENDENT ELECTRICAL INSTALLATION (BRIO)

At BRIO we have developed a wiring system that ensures each transducer is electrically independent. If a problem occurs in any transducer, the BRIO ultrasonic emitter will continue operating with a minimum loss of performance.

#### Proper operation



#### Effect on transducer

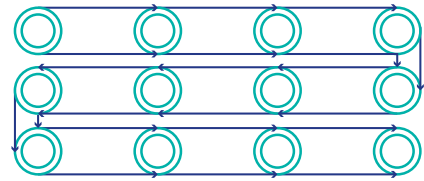


Just one transducer stops working. The emitter continues operating.

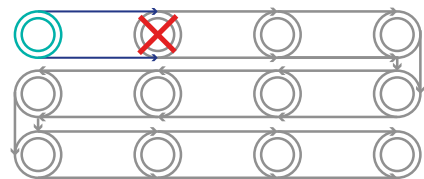
#### ELECTRICAL INSTALLATION IN PARALLEL

The wiring of traditional emitters on the market is installed in parallel. Consequently, all the transducers are dependent on each other. If a problem occurs in one of the transducers, the other transducers will stop working as well and the emitter will be inoperative.

#### Proper operation



#### Effect on transducer



All the other transducers stop working. The emitter will be inoperative.

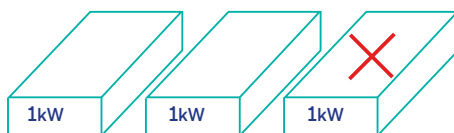


### MODULAR SYSTEM OF EMITTERS

At BRIO we have developed a modular system which we use to install standardised emitters of a variable size and distribution that is dependent on the unit. The modular distribution provides the best possible performance and if a failure occurs, the machine will continue operating without needing to stop the production.

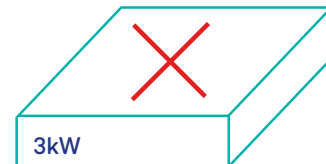
#### MACHINE EQUIPPED WITH 3 KW OF ULTRASONIC POWER COMPARATIVE

#### Modular system of BRIO emitters



- The 2kW continue operating.
- One of the 1 kW emitters must be replaced.

#### Traditional 3kW ultrasonic emitter



- The machine stops.
- The 3kW must be replaced.

In the case of a 3kW unit, the 2kW units would continue operating and therefore the system would maintain a good cleaning performance without needing to stop production. Also, the repair costs would be much lower since only one of the 1kW emitters would need to be replaced instead of a 3 kW emitter.

# BRIO) Advantages |

## DESIGN & MANUFACTURING

### RELIABLE AND RUGGED EQUIPMENT

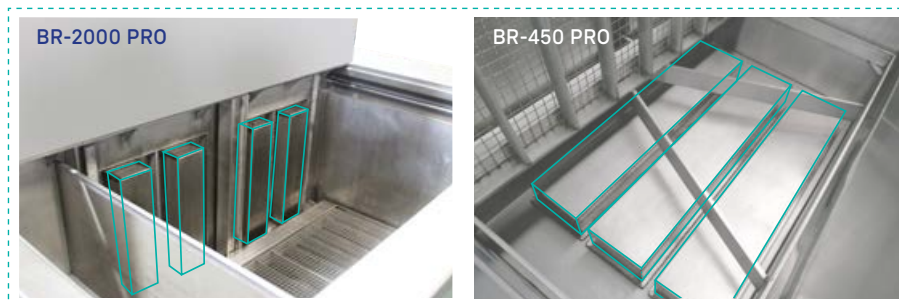
Our ultrasound cleaning equipment is designed to achieve maximum durability and ruggedness and is ready to be used in any industrial environment. We use the best materials and our designs are optimised to achieve maximum performance as well as a higher service life.



## OPTIMISED DESIGN

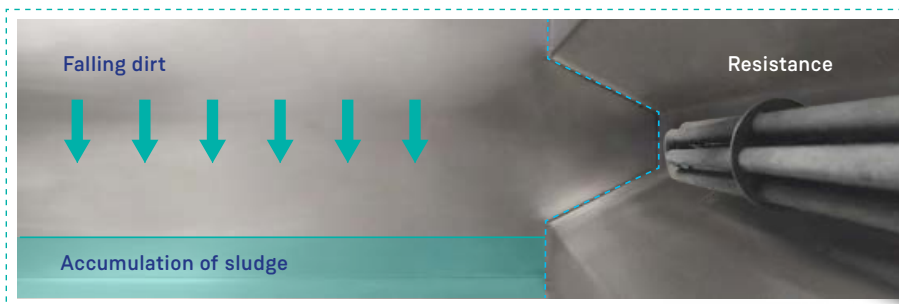
### LOCATION OF THE ULTRASONIC EMITTERS

We position our emitters at the location that provides the best performance for each unit. Also, our design and manufacturing allows easy access for conducting maintenance or replacing the emitters. There is no need to cut sheet metal, dissolving adhesives or ship the machine to the factory.



### LOCATION OF THE HEATING ELEMENTS

The heating elements are protected against dirt and saturation of the fluid. We prevent them from being covered by the accumulated dirt by installing them in a place that is located at a certain distance from the bottom. We also avoid contact with the detached dirt by ensuring it is not below the part.



### LOCATION OF THE ELECTRICAL PANEL AND GENERATORS

BRIO equipment incorporate spaces in the chassis to install the electrical panel and the ultrasonic generators. This way they are protected from spills, splashing and corrosive environments, ensuring a proper ventilation.





## MAXIMUM THERMAL-ACOUSTIC INSULATION

Our exclusive thermal-acoustic insulation system is comprised of an elastomer with a closed cell structure. This material provides a superior thermal insulation and a lower noise level in all our equipment, which results in a large cost savings and a quieter environment.

The elastomer is a highly insulating material given that its thermal conductivity coefficient is minimal at operating temperature (0.04 W/mK) and the closed cell structure provides it with great durability as it prevents vapours and bacteria from penetrating through it and also reduces the noise by 35 dB.



## GREATER DURABILITY

BRIO ultrasonic vats are built using AISI-304/316, which is a stainless steel with an excellent resistance to corrosion and an extreme tolerance to high and low temperatures. Its durability is ensured with a material thickness ranging between 2 and 4 mm depending on the model. The chassis is designed to withstand the operation of the machine and is manufactured using construction profiles with a material thickness ranging between 1.5 and 3 mm (STAINLESS). The exterior panelling of the machine is rugged, easy to disassemble in order to access the equipment that is installed inside it.



## TOTAL ADAPTATION TO EACH APPLICATION

At BRIO we are experts in tailor-made projects, providing the best turnkey solutions. Our machines are adapted to each application according to the established rules and standards in each sector. We carry out the cleaning process together with the client and in compliance with all the quality finishes as required.

# BRICLEAN CHEMICALS SPECIFIC FOR EACH APPLICATION

It is strictly required for the ultrasonic action to be supplemented with an efficient chemical action. Otherwise it is impossible to achieve the desired effect for each application.

This is the reason why at BRIO Ultrasonics we develop our own chemicals, with varieties specifically developed for each material and type of dirt. All in compliance with the environmental regulations applicable to the worker and the working environment.

Do not hesitate to contact us and we will advise you without compromise about the machine and chemical that best suits your needs.

