



**Ultrawave**

*Precision ultrasonic cleaning equipment*

# Precision Ultrasonic Cleaning Equipment



## Buyers' Guide

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## **Introduction**

Ultrasonic cleaning has long been recognised as one of the most effective methods of deep cleaning for a diverse range of applications. Few cleaning technologies are as fast or efficient at cleaning hard substrates or intricate parts while also being environmentally friendly. It's cost effective, energy efficient and flexible.

Therefore, it is no surprise that your business has decided to buy an Ultrawave ultrasonic cleaning system - but what next? It is important to have a good understanding of the features that are available to make sure you find the perfect ultrasonic cleaning system for your business. After reading our guide you should have a better idea of what you need and how to set out to buy an ultrasonic cleaning system feeling prepared.



## **Size**

Ultrasonic cleaners come in a wide range of dimensions and capacities. You need to consider how large the items are that will be cleaned and how many items on average will be cleaned during one cycle. Ultrawave manufacture ultrasonic baths that range in size from less than a litre to over 2000 litres.



## **Tank Specification**

The specification and thickness of the tanks in ultrasonic cleaners can vary. For light and infrequent use, Benchtop ultrasonic baths have a pressed tank of 0.6-0.8mm thick stainless steel. For applications where the machine is to be used more regularly, an Industrial grade tank of 2mm thick stainless steel is always recommended.

Ultrawave tanks are low carbon stainless steel type 1.4301 (also known as grades 304) as standard. However for critical cleaning applications in pharmaceutical and medical device manufacturing, Ultrawave will specify stainless steel type 1.4404 (also known as 316L) with the option of radius corner.



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## Control

Entry level ultrasonic baths have an analogue dial for simple time and/or temperature control. For more advanced applications, ultrasonic systems incorporate a menu-driven digital control allowing more accurate and precise programming of the system functions.



## Transducer Efficiency

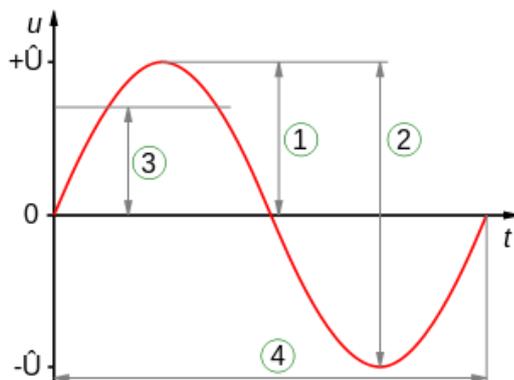
The efficiency of the transducer used in your ultrasonic cleaning tank will affect both the cleaning time and efficiency achieved during the cycle. A poor quality transducer will use more power and take longer to clean items than an advanced transducer. Ultrawave have invested a significant amount of time and money into the design and development of our transducers, providing you superior cavitation performance.

## Ultrasonic Power

The level of ultrasonic power is commonly referred to in ultrasonic watts per litre capacity. For example a 25 litre tank with 250W of ultrasonics will give 10W/litre.

In general, the level of ultrasonic power should not be less than 8W/litre.

Ultrawave measure the power of our ultrasonic systems in RMS. This gives the total power of the transducers. Some companies measure the ultrasonic power in peak to peak which doubles this value so it is important to compare the same measurements when purchasing an ultrasonic system.



A [sinusoidal](#) curve

1 = Peak amplitude ( $\hat{U}$ ),

2 = [Peak-to-peak](#) amplitude ( $2\hat{U}$ ),

3 = [RMS](#) amplitude ( $\hat{U}/\sqrt{2}$ ),

4 = [Wave period](#) (not an amplitude)

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## Temperature

Ultrasonic cleaning is commonly most effective at temperatures between 50 and 65°C. Heat acts as a catalyst for all cleaning applications but the level of ultrasonic activity will actually begin to decrease above 80°C.

In some applications, such as healthcare, it is important not to clean above certain temperatures due to the nature of the organic contamination.



## Timer

Different applications will require different cycle times. Each of Ultrawave's ultrasonic cleaners incorporate a timer which allows the cycle time to be programmed to within one minute.



## Basket

It is essential that items being processed in the ultrasonic cleaner do not rest on the base of the tank. Components should be placed in the supplied basket or if necessary, suspended within the cleaning fluid.

When an item is in contact with the base of the tank, damage will be caused and the efficiency of the ultrasonics will be significantly reduced.



## Lid

The lid will help to minimise evaporation, aid in the heating of the cleaning fluid and reduce the noise levels of the ultrasonic cleaner.



## Drain valve

The fluid in ultrasonic cleaners needs to be changed on a periodic basis. Most ultrasonic baths incorporate an easy access drain valve to allow easy emptying of the tank.



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## Level Protection

Operating an ultrasonic cleaner without liquid in the tank will cause damage to the heaters, transducers and tank. More advanced ultrasonic baths incorporate a level sensor or float switch to ensure that the system cannot be operated without fluids in the tank.

## Maintenance

It is essential to regularly clean your ultrasonic system to ensure longevity of the tank. It is also recommended that the cleaning fluid is changed on a regular basis, depending on your application.



## Performance Testing

It is recommended that ultrasonic cleaning systems are tested and validated regularly. This ensures that they operate at optimum efficiency and planned preventative maintenance to take place.

There are a number of different periodic tests that can be conducted both by the operator and also by trained engineers which ensure that the ultrasonic cleaner is cleaning to the high standards demanded by you.



## Detergents

The detergent is an essential component in the overall cleaning process. Different detergents will provide different results depending on the item to be cleaned and the contamination to be removed.

In addition to their cleaning properties, ultrasonic detergents optimise ultrasonic activity by reducing the surface tension of the fluid.



## Frequency Leap Technology

This new technology reduces dead spots and promotes homogenous cavitation activity within the tank. This provides a more consistent scrubbing action for highly effective cleaning results.

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## **What should I look for in my ultrasonic system?**

Different Industries and Sectors will require different features and benefits from their ultrasonic cleaning systems. The level of cleaning results can vary from visual examination to measurement by particle analysis machines. In addition different industries will be governed by different regulations and guidelines.



### **Industrial/ Manufacturing**

Ultrasonic cleaning is used in many different Industrial and manufacturing applications. Depending on the specific requirements of the process, a wide variety of different features can be incorporated into the machine.

### **Industrial Grade Tanks**

Industrial and manufacturing cleaning is characterised by the frequency and length of time that the machines are in operation each day. Any machines used in this way, should incorporate a high grade, 2mm thick stainless steel tank.



### **Customised Ultrasonic Systems**

For more complex cleaning requirements, Ultrawave can specify, design and manufacture customised machines, incorporating many different technologies according to your specific process demands.

Customised ultrasonic systems are specifying designed and manufactured to suit customers' individual cleaning and processing demands.

### **Multi –stage Cleaning Systems**

As well as the ultrasonic wash tank, multi-stage systems can also include a number of rinse and drying stages to provide a total cleaning solution in one single process. This gives you peace of mind that your components are cleaned to the highest standard time after time.



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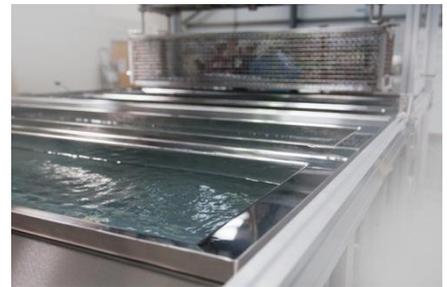


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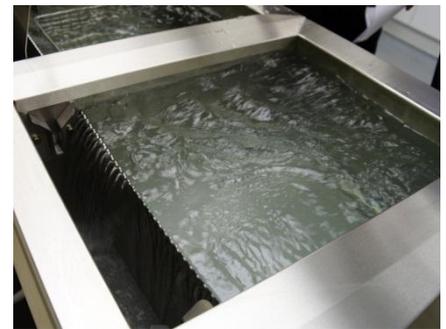
## Automatic Handling System

Automatic handling systems are included on multi-stage systems as a means to reduce the labour involved in the process. A robotic handling system will transfer the basket load from stage to stage providing a complete and consistent process with minimal operator intervention.



## Overflow weir and jetting systems

Incorporating a weir and jetting system into the ultrasonic tank will help reduce surface grease and contamination. By improving water turbulence and skimming the fluid, surface drag through factors that can be associated with ultrasonic cleaning are reduced.



## Pump and Filtration Systems

A pump and filter system can be installed to maintain the cleanliness level of the cleaning fluid, thus saving costs in water usage, detergent dosing and heating.



## Irrigation Systems

An irrigation system allows hollow instruments and tubes to be connected to a manifold, thus ensuring both the internal and external surfaces are cleaned thoroughly.



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## Healthcare

Ultrasonic cleaners are used in the decontamination process of surgical instruments. From dental and chiropody to operating theatre procedures in hospitals, ultrasonic cleaner is an essential stage in ensuring safe processes.

## Compliance with regulations

Guidelines for decontamination are set out by the Department of Health and it is important to make sure that the ultrasonic cleaner complies with the relevant standards. If you are purchasing a cleaning system for a primary care facility such as a dental practice, podiatry or general practice then ensure that it's HTM compliant.

Some machines such as Ultrawave's Hygea range are specifically designed for primary care facilities and therefore meet the HTM01-05 and HTM2030 guidelines for ultrasonic baths.



## Validation

Traceability and validation of each cleaning cycle is essential when using an ultrasonic cleaner in the healthcare environment.

A number of ultrasonic cleaners incorporate integral validation systems such as a memory card port and/or printer which track the set parameters and results of every cycle.

## Locking lid

HTM guidelines require ultrasonic cleaners to have a locking lid. This prevents cycle interruption and ensures that each set of instruments processed are subject to the same high level of cleaning.



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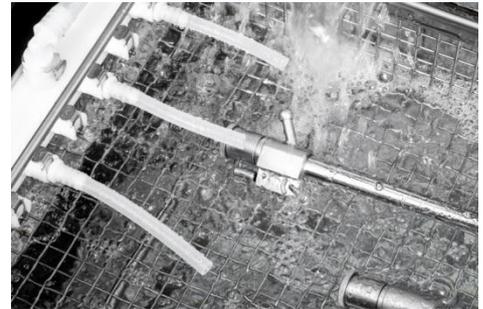


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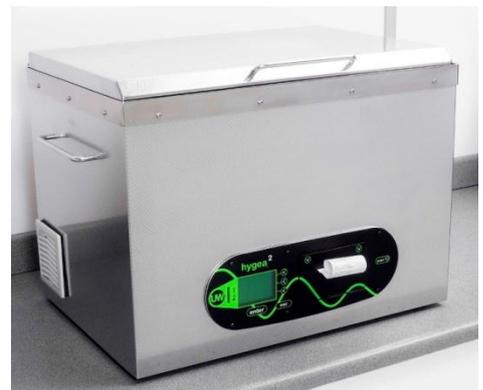
## Pump & Irrigation

Hollow and cannulated surgical instruments used in operating theatre procedures need to be connected to an irrigation port to ensure that both the internal and external surfaces are cleaned thoroughly.



## Anti-microbial technology

Due to the nature of the healthcare industry, it is a recognised benefit to incorporate anti-microbial surface technology on the control panel. This prevents cross-contamination of MRSA and other diseases, enhancing operator safety.



## Over-temperature cut-out

Ultrasonic cleaning of surgical instruments should not be carried out at temperatures above 40°C. Cleaning at higher temperatures can cause proteins and bio burden to coagulate and bake onto the instruments.

Ultrawave's Hygea range of ultrasonic cleaners has a maximum temperature setting which aborts the cycle if the temperature rises above this level.



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## **About Ultrawave**

Ultrawave have over twenty years of experience in the design and manufacture of precision ultrasonic cleaning equipment, our in-house design team work constantly to push the boundaries of ultrasonic technology in order to provide all of our clients large and small with the very best ultrasonic cleaning equipment available today.

We have manufactured and sold over 45,000 ultrasonic cleaning systems to customers throughout the world. The Ultrawave team of engineers, designers and production technicians are able to interpret your demands and deliver top quality products to meet any cleaning and processing requirements.

By maintaining complete control over all of our design and production processes, we can offer the flexibility to meet each individual customer's requirements and provide the appropriate cleaning solution for many different markets and applications.

We are accredited to ISO13485 (Medical Device Manufacturing) and ISO9001 standards, and are committed to ensuring that our products and technological developments continue to meet the rigorous demands laid out by these regulations.

On-going investment in research and design ensure that Ultrawave remains at the head of the pack when it comes to designing and producing the most effective ultrasonic cleaning equipment available. Our in-house demonstration suite is at your service to carry out sample testing ensure that the products which we supply to you are tailored to meet your own individual requirements.

For more information or a free no obligation initial consultation:

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