

Tips on Maintaining your Ultrasonic Cleaner Tank

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You've made an investment in an ultrasonic cleaning system because you know how efficiently ultrasonic cavitation removes contaminants from most any wettable surface. Here we present some tips on protecting your investment in the equipment, specifically the cleaning solution tank. We'll cover the consequences of improper operating procedures (not that you would do that, of course) and how to spot signs of potential problems.



Proper use and maintenance prolong the life of an ultrasonic cleaner tank

Ultrasonic Cleaning Tank Construction

Stainless steel is the preferred material of construction for ultrasonic cleaning tanks. That's because of its high resistance to cavitation action and chemical attack by ultrasonic cleaning solutions. That said, highly acidic cleaning solution chemistry should only be used in acid-resistant containers that can be immersed in a water solution to which a surfactant is added. Ultrasonic waves pass through the acid resistant container to act on objects being cleaned in the acidic solution.

Takeaway: Do not use aqueous cleaning media with pH values in the acid range ($\text{pH} < 7$) directly in the ultrasonic tank if fluoride, chloride or bromide ions are present or can be released from parts being cleaned. These can quickly destroy stainless steel by crevice corrosion within a very short period of ultrasonic operation.

Ultrasonic Cleaning Tank Signals

Cavitation erosion and pinholes occur in any tank but can be slowed or minimized through proper use, regular tank cleaning and filtration of the cleaning solution. Cavitation erosion is the normal wearing of the tank surface during use. It can be accelerated by dirt particles that settle on the tank bottom as they fall from parts being cleaned and abrade the surface. Acting as ultrasonically driven "drills" the particles can penetrate the metal and eventually cause leaks that require tank replacement. Erosion is also caused if parts are placed directly on the bottom of the tank instead of in baskets.

Rust films occur as deposits from metal or other particles from parts being cleaned, or from tap water used to dilute cleaning solution concentrates. During regular tank cleaning procedures these films can be removed with a suitable cleaning chemical such as elma tec clean S1. Stubborn rust stains should be removed by filling the tank with water plus a cleaning concentrate and operating it at an elevated temperature per concentrate instructions.

Furring, also described as calcium deposits, is caused by highly calciferous water in contact with hot surfaces. It can occur in areas around ultrasonic tank heating elements. It is minimized by turning on the ultrasonic power to circulate the solution in the tank. Removal procedures are the same as for rust films.

Common Sense Maintenance Tips

1. Skimming solution surfaces. Contaminants that rise to the surface of the cleaning solution should be skimmed off and set aside for proper disposal. Industrial-sized ultrasonic cleaners can be equipped with bath skimmers as well as filters to remove hard

contaminants that otherwise fall to the bottom and cause damage as described above.

2. Regardless of bath maintenance procedures ultrasonic cleaning solutions eventually need to be replaced as cleaning time extends and results become unsatisfactory. At this time the tank should be drained and contents along with any skimmed residues discarded following local regulations.
3. Before adding a fresh cleaning solution the tank should be thoroughly rinsed. Do not dry the surface with towels, which may leave residues that contaminate fresh solutions.

4. Above all, NEVER use scouring media on a cleaning tank for any reason.

Contact the professionals at Tovatech for advice on selecting, operating and maintaining an ultrasonic cleaning system best suited for your operations.

