

## ULTRASONIC TANKS: FREQUENTLY ASKED QUESTIONS

### 1. Can Ultrasonic-cleaning damage my Anilox rollers?

If the ultrasonic system is not specifically designed and proven for cleaning Anilox rollers the damage may occur. The Flexsonic™ system is specifically designed and proven over the last 10 years for the safe effective cleaning of laser engraved ceramic rollers using a patented frequency SWEEP ultrasonic generator that automatically sweeps the frequency 100 times a second to prevent damage that can occur from a fixed frequency unit. With over a 1000 systems worldwide Cheshire guarantees the safe cleaning of the anilox roller.

### 2. Do you have to use strong chemicals or solvents in the cleaning system?

Cheshire Anilox Technology LTD provides a complete process that will guarantee the performance of your cleaning system. A full range of detergents are available to suit all requirements, all of which are biodegradable and only require mixing at 3% by volume with water regardless of your ink and coating type. Although the general-purpose detergents are alkaline, because they are mixed in low concentrations the diluted product is relatively low hazard.

### 3. How often do you have to change the cleaning solutions?

This depends on usage and the amount of contamination removed. On average most printers change the solutions every 2 - 4 weeks.

### 4. How many rollers can we clean at a time and do we need to remove bearings and gears?

As all Cheshire Anilox Technology LTD equipment is purpose built you can have a single roller unit to a multi roller unit. All FLEXSONIC™ systems are based on rotating the Anilox such that only a segment of the engraved face is in the liquid at any one time and the journal ends are outside the liquid, hence, in, most cases the bearings and gears do not require removing. The FLEXSONIC™ offers great versatility for the printer.

### 5. Why chose Ultrasonic over any other type of cleaning system?

Ultrasonic cleaning of engraved rollers and parts has been proven over the last 10 years as being the most successful and cost effective method of cleaning with major benefits such as lower capital costs than other systems. Listed below are the main benefits:

- Flexibility in cleaning multi rollers and parts in the same system
- Low running costs & No Mess.
- Environmentally friendly and no major Health & Safety concerns.

### 6. What else can we clean using Ultrasonics?

Ultrasonic cleaning is an extremely efficient way of cleaning most items. In the print industry, as well as engraved roller cleaning, many units have been provided for ancillary component cleaning and wash up, i.e. for trays, doctor blade chambers, ink tanks, pumps and splashguard. Other applications include flat and rotary screen cleaning and stripping, polymer plate cleaning and rubber roll cleaning.

### 7. What do we do with the dirty water generated?

FLEXSONIC™ units are offered with a pump and filter system as an option. Not only will they keep the cleaning liquid cleaner and prolong the time before changes but also remove the majority of solids prior to disposal. The cleaning chemicals are biodegradable and where

necessary, neutralisers can be provided and hence on consultation with your local water authority, most printers are allowed to discharge the waste into the foul water drains.

### FLEXONIC, A SAFE WAY OF CLEANING YOUR ANILOX ROLLERS:

As ultrasonic cleaning of ceramic laser engraved Anilox and gravure rollers gains increasing acceptance as the preferred method of frequent, reliable cleaning, still some fears of possible damage questions the safety of their use.

It must be admitted that conventional ultrasonic tanks - even those that claim to feature a frequency modulation system - can prove unsuitable for the safe cleaning of complex ceramic Anilox rollers. The danger lies in damage that may be caused by the creation of hot spots and dead spots within the cleaning liquid - known as nodes and anti-nodes. These occur when sound waves generated at the transducers, travel to the top of the liquid and, on returning, collide with the next wave. This creates a hot spot of intense cavitation, below and above which there is formed an area of less cavitation - a dead spot. These hot spots are potentially harmful to ceramic Anilox roller cells.

In the early days it was common practice to mechanically move sensitive components up and down the tank - or by rotating a roller in the tank - and thus attempting to avoid damage. As the frequency of operation dictates where the hot spot would be, some ultrasonic cleaning equipment producers tried to design ways of varying the frequency.

The most common method was to use the incoming mains cycle to influence the inductance of the frequency control coil - a system in widespread use today. However, this approach is not entirely acceptable in that frequency may be affected by main fluctuation and power surges, leading to lack of stability.

To eradicate this entire problem of hot spots, Cheshire Anilox Technology Ltd bases all its FLEXSONIC™ ultrasonic cleaning systems on the incorporation of an FMG 600 generator of a patented design. The patented design provides a pre-determined frequency sweep circuit, operated by its own, independent, low voltage supply, which maintains uniform distribution divorced from line fluctuations. This results in the hot spot being moved up and down 100 times a second, thus preventing damage occurring due to a power concentration in one point of the roller.

A further benefit of pre-determined frequency sweep is that it makes the ultrasonic tank totally uniform in cavitation terms throughout the liquid, giving a consistent clean to all rollers.

Another important factor in ensuring successful and safe ultrasonic cleaning relates to the need for the centre frequency to remain constant during changes in transducer temperature or the effect of a heavy roller being placed in the tank Cheshire Anilox Technology Ltd has ensured this stability by designing and installing an auto tracking circuit, which compensates for external changes and maintains the centre frequency.

This auto tracking circuit also prevents the transducer elements hitting their resonance and drawing an unequal amount of power - possibly leading to overdrive. In such cases, the power drawn by an individual device could double, which would further add to damage the cell walls of the roller.

It is also essential to ensure that the transducers do not run hot internally as this could lead to uneven distribution and components failure. Again, our designers have solved this potential hazard by commissioning high quality bronze conductors, purpose-built to a registered design, and employs special assembly methods, which prevent internal heating problems.

All FLEXSONIC™ cleaning systems provide frequency of operation of 40 kHz +/- 2, with secondary bar frequencies 10 - 100 kHz.

If simple precautions are taken to study the technical characteristics of an ultrasonic cleaning system and to insist on the provision of pre-determined frequency sweep circuit, then no more effective or safer means of ceramic Anilox roller maintenance can be found. Cell damage - which quite rightly concerns both printers and roller manufacturers like ourselves - can be considered a risk of the past and this cost efficient, safe and successful method may be chosen with complete confidence.