

## an ultrasonic cleaning VIEWSLETTER from Garry ☺WEN ( the Ultrasonic Cleaning Innovator)

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An invitation for the Timber Processing Industries to share with me some of the things I have gleaned from over sixteen years experience and involvement in ultrasonic cleaning.

### What does an ultrasonic bath actually do ?

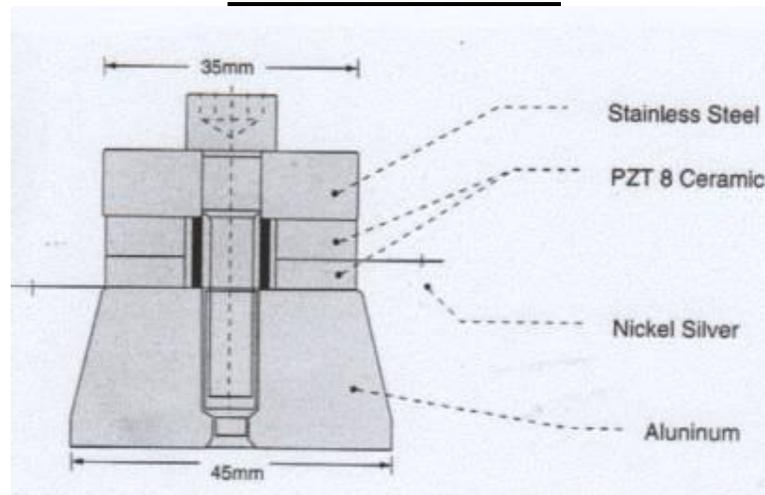
Ultrasonic cleaning ***“makes difficult cleaning jobs easy and safe”***.

Ultrasonic activity (*cavitation*), provides the necessary scrubbing action to thoroughly and efficiently loosen and dislodge contaminants and impurities from both visible and hidden surfaces once they have been broken down by an appropriate cleaning fluid.

This ultrasonic “scrubbing brush” is so effective that it enhances the performance of standard cleaning fluids by many times the norm and permits the use of ‘safe’ chemicals rather than acids and such like that are of danger to both operator and the environment..

Originally developed for jewellers and watchmakers, ultrasonic cleaning is now universally accepted by many other industries including Timber Processing, that range from Healthcare to Manufacturing, Commercial Cleaning, to Machine and Auto Maintenance.

### The Transducers



These devices convert high frequency electrical energy into mechanical motion, physically oscillating at the transducer’s resonant frequency.

There are two basic types, magnetostrictive and piezoelectric. Magnetostrictive transducers are metallic, while Piezoelectric transducers, the type generally now used in ultrasonic cleaning baths, are composed of man-made crystals.

The transducers are mounted to a radiating plate in various ways, the most common being epoxy bonding. The life of this bonding is not timeless however, and to a great extent will depend on the integrity of the bonding process and the adhesive used by the bath manufacturer. (*“WOODpro’ baths have additional ‘bondability’ achieved through use of a welded screw stud in addition to the epoxy bonding.”*)

## What does the ultrasonic Generator do?

The generator converts low frequency single phase line power at 50-60 cycles per second to high frequency power (20-120 kHz) that matches the resonant frequency of the transducers.

## What is meant by the “Power Output” of a bath”?

Some ultrasonic manufacturers calculate in terms of Watt density per area of radiating surface. Others recommend power levels in terms of volume.

Because the displacement of the transducer is a mass relationship, a volumetric determination seems more realistic, and this is the calculation **I use** when describing the power level, as so many **Watts per litre** of solution in a filled bath. Generally each Transducer operates at 50W, hence six Transducers for example, can be assumed as having a 300W output.

## **⊘STOP losing money replacing grinding fluids prematurely!!**

Expensive grinding fluid that has become contaminated by saturated resin, ‘gunk’ or solvents, & kerosene, etc, left on tooling after inadequate cleaning, need replacing more often.

## The importance of regularly CLEANING ultrasonic baths.

It is very important to regularly clean out the tank and replace, or filter, soiled cleaning solution. Many faults which occur with ultrasonic cleaning baths are due more to use (*or abuse*) of the bath, rather than any inherent component or manufacturing fault within the unit.

Any debris in the bottom of the tank needs to be removed on each emptying and not allowed to build up. Left unattended, a layer of silt will not only abrade the bottom of the tank, but reduce the overall efficiency and effectiveness of the bath. Build-ups of removed matter will also cause base mounted transducers to overheat and fail.

**REMEMBER WHEN EMPTYING** to allow about five minutes for the heaters to cool down before removing the fluid to help prevent premature ‘burn out’ of exposed heating elements.

## How fast was your father?

Three little boys were boasting how good their fathers were. The first boy said “My father is so fast he can fire an arrow and reach the target before it does” The second boy responded “My father is so fast he can fire a gun and reach the target before the bullet”

“That’s nothing” boasted the third boy. “My father is a Council Worker and he is so fast that he can knock off work at 5 o’clock and be home by 4:30”

*Available FREE on application*

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