

Ultrasonic Cleaning in the Plating Line

Ultrasonic cleaning prior to plating can provide significant cost savings in time and labor by minimizing or eliminating manual scrubbing and lengthy soak times. Ultrasonic agitation thoroughly and quickly removes buffing compound, shop dirt, and other soils from a variety of metal and plastic items. Ultrasonics reaches crevices, blind holes, and other hard-to-reach places of the workpiece,

resulting in a cleaner part. This means better adhesion, which improves the appearance and quality of the finished product.

The following applications describe two typical cleaning processes in the plating industry; one uses an aqueous system and the other process uses a new environmentally safer solvent.

APPLICATION: Belt Buckles

Description:

Ornate brass buckles to be silver plated.

Problem:

Poor adhesion in crevices of buckle.

Soils:

Buffing compound, dirt.

Previous Method:

Manually scrub each buckle with caustic solution for 30 minutes.

Ultrasonic Process:

Immerse rack of 10 belt buckles in heated 25 kHz ultrasonic bath with alkaline solution pH 9-10 at 165°F for 5 minutes. Rinse thoroughly in tap water for 2 minutes in a three-stage cascade rinse station. Dry parts in a forced hot air recirculating dryer at 250°F for 8 minutes.

Ultrasonic System:

Heated ultrasonic cleaning tank and ultrasonic generator, heated rinse tank.



Advantages:

- Reduce cleaning time from 30 minutes for one buckle, to seven minutes for 10 belt buckles.
- Improve productivity with ability to clean 10 buckles at once instead of one at a time.
- Eliminate manual scrubbing.
- Improve plating adhesion.
- Reduce exposure to hazardous chemicals.

APPLICATION: Medical Forceps

Description:

Forceps used in the medical industry need to be nickel/chrome plated.

Problem:

Plating defects due to inconsistent cleaning.

Soils:

Buffing compounds, machining oils.

Previous Method:

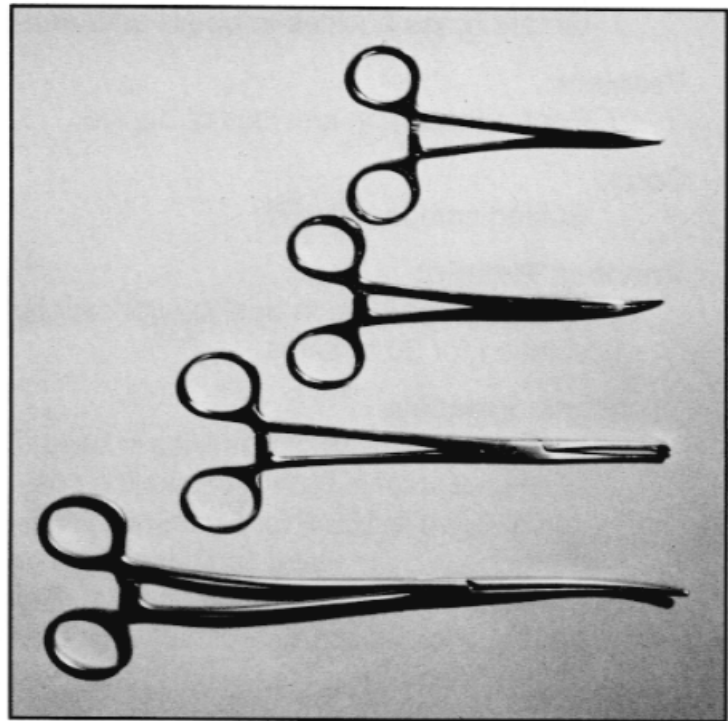
Solvent cleaning for 20 minutes in an ultrasonic vapor degreaser using 1,1,1, Trichloroethane.

Ultrasonic Process:

1. Two minute 40 kHz ultrasonic immersion clean in an alkaline detergent at 160°F for 2 minutes.
2. Hot water spray rinse followed by hot deionized water two-stage, four-way overflow rinses with ultrasonic agitation in the first immersion rinse stage.
3. Forced hot air recirculating dryer at 230°F for 7 minutes.

Advantages:

- Reduce number of plating rejects through improved cleaning of medical instruments.
- Reduce cleaning time from 20 minutes to 7 minutes.
- Replace hazardous solvents with a true water-based cleaning system.
- Increase throughput.
- Achieve consistent and repeatable cleaning results.
- Avoids need to seek alternatives to proven effective machining oils and buffing compounds.



For application assistance, contact your nearest Branson office or the Branson Cleaning Applications Laboratory at (203) 796-0522.



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