

ULTRASONIC NOZZLE CLEANER EVALUATION – DEC. 2005

PURPOSE:

Case study of a new product for robotic nozzle cleaning.

EQUIPMENT:

Ultrasonic nozzle cleaner and Tregaskiss anti spatter solution.

SCOPE:

Comparison of advantages and disadvantages of the mention equipment and the current nozzle reamers.

My first impression is how an inactive non moving device free spatter from a nozzle? The Ultrasonic principle of operation is based on sonic waves producing vibration in a solution to free debris from metal objects. I call it a large scale jewelry cleaner. The solution is your choice whatever works for you as an anti spatter solution. I'm using the Tregaskiss anti spatter solution Tough Guard.

The operation is simple enough, the demo I had was equipped with an activation trip switch. Instead of using the robot I/O the robot it self trips the switch to activate the unit. Robot I/O is also applicable. There is a pump and level switch with a reservoir for the solution for replenishment.



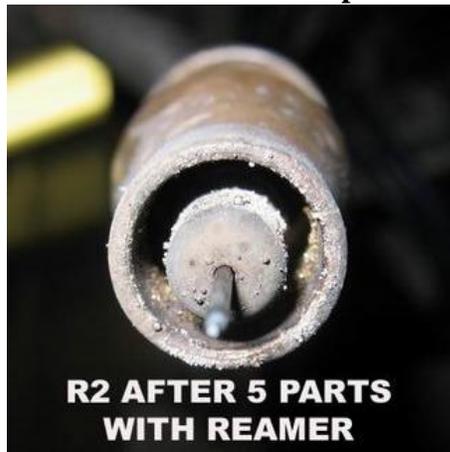
- I based my evaluation on production parts produced and frequency of nozzle cleaning.
- R1 performs 65cm of welding R2 90cm of welding
- R1 is equipped with the Ultra cleaner and R2 current blade reamer.
- The frequency of cleaning is set at 5 completed parts.
- Pictures were taken after the 5th part was completed.
- Pictures taken after 100th piece was completed.

It's very important to initially start off with a new gas diffuser, nozzle, and contact tips. This will assure optimum performance of the Ultrasonic cleaner with new components. The pictures below will indicate my results.

Robot 1 after 5 pcs



Robot 2 after 5 pcs

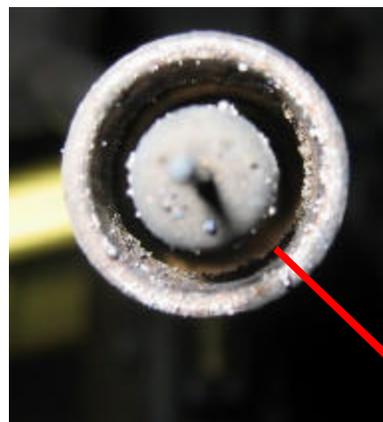


The Ultra cleaner keeps the components clean with no weld residue. The cleaning procedures for the Ultra is very simple just dip the nozzle and activate the unit then air blast after. If air blast is an option it would be to your advantage to make use of this feature if you using the Ultra cleaner. The solution also cools the components and prolongs its life.

Robot 1 after 100pcs cleaning frequency 5 pcs.



Robot 2 after 100 pcs cleaning 5pcs



Weld spatter up inside the nozzle

COMPARISON:

REAMERS:

- Require blades and may jam causing downtime.
- Many moving parts.
- Anti spatter spray nozzles may clog.
- Blade replacement costs \$80.00-\$100.00US ea.
- Some cases the spatter may move up inside the nozzle caused by the blade blocking gas diffuser passages.
- Individual moving parts are costly to replace.
- Blades wear the nozzles and contact tips shorting the life of the components.

ULTRA SONIC CLEANER:

- No porosity from the solution at weld start.
- No blade contacting any of the welding components.
- No moving parts.
- Cleaning of the nozzle is performed by dipping the nozzle in anti spatter solution.
- Inexpensive components.
- Easily maintained.
- Prolong weld component life.

CONCLUSION:

I was very pleased to demo the unit and I concluded there is something better than reamers. This unit performed well and kept the welding components very clean to my surprise. ** One minor issue is a need for a reservoir to hold the excess blow off solution. When I performed the blow off of the solution I monitored weld starts for evidence of porosity, and there was no signs of any porosity. I could not find any other issues of concern during my evaluation. I fully recommend this unit for nozzle cleaning applications.

*** Note from IWE: The minor issue of the need to catch the excess blow off of the anti-spatter solution has been resolved, with a new reservoir tank design.*

Robotic Programmer
End User

*Confidential End User information is available upon request.