



Micro Bubble Washing System

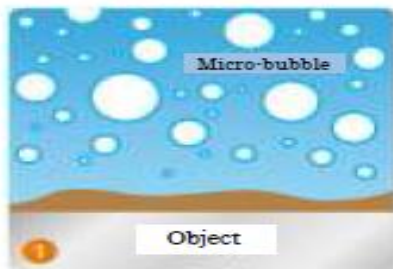
Sysmatic Global Pte Ltd

Introduction

- Washing process which removes oil stain or foreign material adhered at machinery processing is very important process in order to keep reliability and quality for post-process surface treatment or assembly.
- In any manufacturing industry, washing process does not give a added value to their products
- Moreover, washing process is environmentally hazardous process. Due to these reason, we shall select a method which imposes lesser burden on environmental pollution and a method that is less costly as possible.
- It is our objective to eliminate excessive washing process and promote a cost-effective and simple washing technology. Especially, most in case of degreasing which occupied 50% of industrial washing process is excessive washing.
- Therefor, it cause loss of cleaning solution and loss of energy. And also, because of the high environment burden, we must consider deeply about it.
- Together with NITTO SEIKO, we offer new technology "MICRO-BUBBLE PARTS WASHER" which does not use chemical substance such as solvent or Acid/ Alkali solutions, but only water and air, as a solution of this purpose.

The mechanism MBW technology

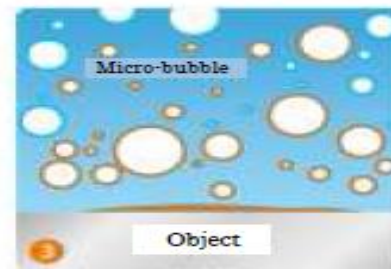
- Micro-Bubble means a very small bubble of which size is less than $50\mu\text{m}$ of diameter. This micro-bubble has different characteristic from normal size bubble.
- Micro-Bubble has small buoyancy and negative electric charge. Because of its negative electric charge, it is difficult to combine each bubbles. And because of small buoyancy, bubbles spread and stay in the water.
- This micro-bubble contacts to the adhered oil on the washed objects, and adsorb to the surface (gas-liquid interface) of bubble. By means of this, more micro-bubble can get a bigger adsorb area (gas-liquid interface area) and this means high effect of washing. Nitto Seiko establish the technology that generate continuously high density micro-bubble water as 2 million of bubble per 1 cc.
- Based on this technology, we offer the high effective washing system.



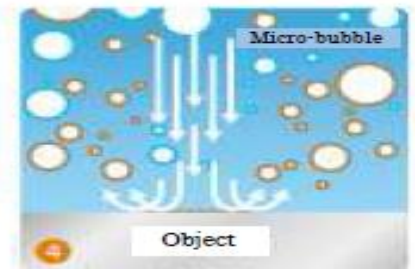
Put the object into the water with high-density micro-bubble.



Micro-bubble contacts to the oil stain, and adsorb the oil to the bubble's surface.



The micro-bubble adsorbes oil stain and separates from the object.



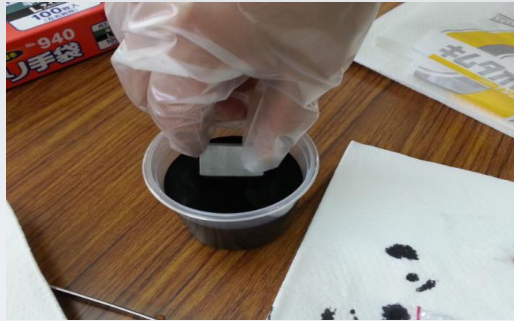
In addition, attack by water stream enhances the washing effect physically.

Experimental results

Before MBW
washing



- Aluminum Dummy with stamping oil (wet)



- Aluminum Dummy with stamping oil (wet) dipped in Indian Ink



- Aluminum Dummy with stamping oil (wet) dipped in Indian Ink, no ink stain

After MBW
washing



- Same aluminum dummy after MBW cleaning

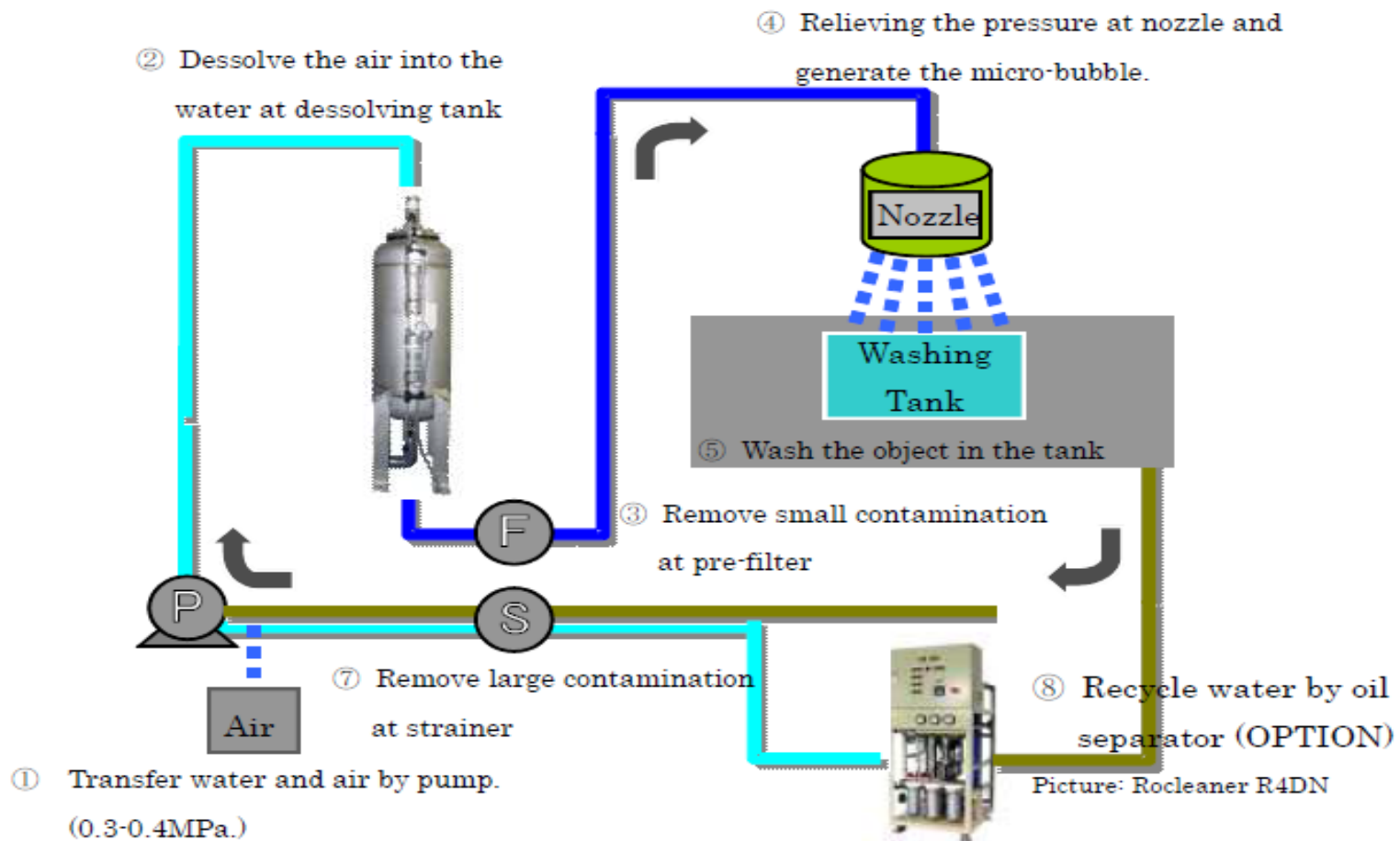


- Same aluminum dummy after MBW cleaning dipped in Indian Ink



- Same aluminum dummy after MBW cleaning dipped in Indian Ink with even stain of Ink.

Typical schematic of a MBW



Common Application

Example

Degreasing

- Mechanical processed parts
- Spring / Washer
- Precision parts
- Reusable carton / Container
- Cold forging parts
- Tool



Removal of dust or foreign body

- Plastic / Rubber products / etc



Cost Saving in Cleaning Operation

Throughput	Approx. 7.5 million/day Approx 1.8 billion/year
Alukali detergent	¥525/L 5% dilution by tap water 2,340L/year ¥1.23 million/annual
Tap water (Industrial water)	¥20/? (Standard price) 44,460L/year ¥880/year
Waste liquid	¥25/L 46,800L/year ¥1.17million/year

Total **¥2.4 million/year** (※Cost for washing liquid only)



Throughput	Approx. 7.5 million/day Approx 1.8 billion/year
Alkali detergent	¥525/L 5% dilution by tap water 2,340L/year Unnecessary ¥1.23 million/annual
Tap water (Industrial water)	¥20/? (Standard price) 46,800L/year ¥920/year
Waste liquid	¥25/L 46,800L/year (In case of waste all water) ¥1.17million/year

Total **¥1.17 million/year** (※Cost for washing liquid only)

Realize 51% reduction of cost (1.23 million /year)

If waste liquid can be reduced to 50% by using oil separator and by recycling water, further reduction of cost is available. (Totally 75% reduction)

Versatile in configuration

Multi Purpose Micro Bubble Parts Washer



Micro Bubble Parts Washer (Multi-function type)

Select from
Jet stream or Shower

Drying function
is included

Oil recovery function
is included

Touch panel operation

Specifications

Flushing water	Tap water, Pure water, Electrolyzed alkaline water, etc
Temperature up	Max: 80°C (Available for setting each 5°C)
Size	Device: W800 × D830 × H1515 mm ※minimum size
	Work table height: 870mm
	Tank size: Dia. 400 × Height 300mm Item or object size shall be within this tank size.
Weight	Approx. 150kg
Power consumption	6.5Kw ※at minimum component

*Available for setting the Washing time, Drying time,
and Flushing method by touch panel.

Versatile in Configuration

Multi Purpose Micro Bubble Washer



- Automatic cleaning and drying
- Ideal for batch cleaning
- Jet Stream or Shower Flushing system available
- Drying function included
- Water filtering function included
- Touch screen control with programmable settings
- Choose type of water input (Tap Water, DI water, Electrolyzed Alkaline Water, etc)
- Adjustable water temperature and controller (Max 80° C)
- Please check with us for different system capacity and sizes

Typical Application (Before/ After)



- Screws are deliberately soaked with red dyed oil
- Cleaned in Micro Bubble Washer with Shower function
- 5mins of washing time at 70° C pure water
- Red dyed oil removed and ready for next process

Versatile in Configuration

Space Saving Micro Bubble Parts Washer (Manual)



- Manual operation
- Ideal for single work piece cleaning
- Adjustable shower flow rate and pressure
- Low cost stand alone system
- Water filtering function optional
- Choose type of water input (Tap Water, DI water, Electrolyzed Alkaline Water, etc)
- Blow dry function included



Foot Peddle Activation



Typical Application

- Degreasing and cleaning of mold and die inserts after machining especially in hard to reach areas
- Degreasing and cleaning of optical mold inserts after diamond cutting.



No Chemical and Non abrasive
jet stream or shower

Versatile in configuration

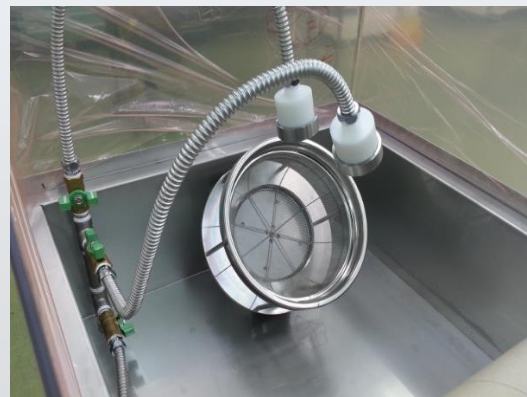
Simple Standalone Micro Bubble Washer



- Ideal for degreasing of small volume parts manually by operator
- Rotary system for even washing
- No need ultrasonic
- No need degreasing solution
- Simple operation with high performance
- Cost effective



➤ Micro Bubble Washing with shower function



➤ Configure up to 2 shower head for higher performance

Versatile in configuration

Fully Auto In-Line Micro Bubble Parts Washer



Typical Application



- Mass production Metal Injection Molding Parts
- Mass production cold forged parts
- Mass production CNC metal Parts
- Mass production plastic injection or rubber molded parts cleaning

- Customized design and build automatic inline washer
 - Ideal for high volume, mass production washing
 - Immersion, pull and shower function or rotary and shower function
 - Multiple function configuration available
 - Drying function included
 - Water recycling function included
 - Touch screen control with multiple settings
- Please discuss with us for more system configuration requirements

Summary

- Environmental sustainability cleaning technology.
- Extensive cost savings in consummable material (cleaning chemical).
- Cost savings in chemical waste disposal.
- Free up factory space, replace long inline ultrasonic cleaning line with stand alone system for degreasing components.

Contact us to know more...

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