Precision physical surface modification



It's Coarse But Not Rough!

Adhesion strength is increased 2.5 times without any transmission loss.

Wet blasting treatment that improves the adhesion strength of difficult-to-adhere resin materials. Damageless processing enabled by fine particles. PCB Manufacturing Process Examples



Adhesion strength for difficult-to-adhere resin materials is increased up to

2.5 times.

Dense submicron anchors are formed with low dielectric loss.

Test Data

Direct pattern plating was performed on the film using a primer, and 90° peel measurement was performed. Data provided by EEJA Co., Ltd

Copper plating adhesion performance for LCP



Copper plating adhesion performance for PI films



Processing Features

✓ No Chemicals! **V**No Heat! **V** No Damage! **Only Wet Blasting!**

Applicable Equipment



Automated machine for large parts PFE



Automated machine for narrow parts miniPFE

Wet blasting's unique damage-free processing

Application examples of the precision physical "wet blasting" method

Do you have any of these problems?

- Processing causes scratches, distortion, and warpage.
- Only want to remove solid foreign matter.
- Gaps in complex parts are difficult to process.
- Processing causes heat discoloration and deterioration.

If Wet Blasting

Heavy cleaning and fine processing can be performed without causing damage such as scratches and warpage to the base material.

Processing Examples

Fine deburring of molded resin parts



Cleaning of film formation jigs





Lens Surface Cleaning







Processing Features

- Fine particles make it possible to do processing without damaging the surface.
- ✓ Possible to remove only foreign matter without deformation or warpage.
- Capable of processing gaps and flow paths in complex-shaped parts.
- V No discoloration or deterioration caused by heat

Processing cell with X-axis

Applicable Equipment



Wet blasting equipment for testing equipped with a 6-axis robot

Lambda Type II

Robot Blast

Actual examples of wet blasting used in

the PCB manufacturing process

Precision processing even for fine wiring patterns



What is Wet Blasting?

Wet blasting is a technology that uses compressed air to spray a mixture of water and abrasive material at high speed to clean, process, and modify the surfaces of metals, plastics, ceramics, etc.



Basic System

- 1. It can reduce waste and wastewater by recycling the slurry, and it can also operate as a closed system.
- 2. Only slurry concentration (abrasive volume) control is required on a daily basis, and automatic control of it is also possible.
- 3. Wastewater treatment is performed by separating and removing floating solids (worn particles + scraped debris).
- 4. No dust is generated due to the wet processing and equipment structure.
- 5. This system uses many Macoho-produced urethane rubber parts which provide high durability.
- 6. Secondary treatment is possible by adding a rust-proofing agent* or a degreaser.

*Wet blasting using a slurry with a rust-proofing agent is Macoho's patented technology.



Features of this Technology

- 1. The processing force can be flexibly controlled.
- 2. The high reproducibility of the processed surface ensures stable quality.
- 3. Fine particles of several microns in size can be used, resulting in more precise processing.
- 4. Compatible with any material since it is a physical processing method.

Equipment Features

- 1. Easy daily equipment management = Slurry concentration control only.
- 2. No heat or static electricity is generated.
- 3. No dust is generated.
- 4. Excellent equipment durability.



Scan here for details

https://www.macoho.com/wetblast.html



Various usages in a wide variety of industries Main Usages of Wet Blasting

Automobiles

Pre-adhesion treatment for

anti-vibration rubber and metal parts. • Increases adhesion strength and is a surface

- treatment for rust-prevention coatings. · Creates a fine and uniform phosphating layer.
- Removes oil, cleans and roughens the surface all in one process.

Automobiles

Pretreatment for plastic formed parts.

- · Removes scale as a pre-forging treatment.
- Optimal base formation for a single lubricant application.
- Removes scale, roughens and lubricates the surface all in one process.

Tools

Honing the cutting edges of carbide inserts.

- Deburring and blade honing to prevent chipping.
- Removes foreign substances to improve coating adhesion.
- Improves slipperiness of coating.

Electronic Parts

Physical etching of substrates.

- · Resin is scraped away to expose internal components and contact points.
- · Removes the bedding powder and forms a surface suitable for metallization.
- · Improves plating adhesion and underfill filling performance.

Aircraft

Turbine blade peening. [improved fatigue strength]

- · Applies stress to improve fatigue strength.
- Uniform stress application with our original wide gun.
- · More efficient and less costly than conventional methods.

Glass

Surface roughening of display glass.

- Reduces reflectance while maintaining transparency.
- Precise control of the size and amount of traces.
- Improved coating adhesion.

Automotive Restoration

Cleaning and surface finishing of automobile and motorcycle parts.

- Removes grime such as oil, rust and carbon to restore parts.
- Simultaneous cleaning and finishing. • A clean and shiny surface like new.





After



Before

SUSTAINABLE G ALS

Environmental improvement through "wet blasting"

Contributes to reduction of environmental impact, energy conservation, and cost reductions.

Since its founding, Macoho has been working to protect the global environment by developing environmentally friendly technologies that reduce waste and wastewater, save labor, and curtail energy consumption. Here, we introduce our achievements in reducing environmental impact and energy conservation that we deliver to our customers.

Equipment Processing Technology

- · Technology that simultaneously performs blasting and degreasing cleaning without using any organic solvents.
- Single-liquid lubricant application without pickling or bonderizing prior to cold forging.
- Nano-level processing as a chemical treatment alternative.
- Blasting technology that does not use compressed air.
- · Equipment that can be used outdoors without absorbing or scattering the slurry.

Fundamental System Technology

- Wet environment ensures dust-free equipment.
- · Recycling the slurry reduces waste and wastewater.
- Automated equipment helps reduce manpower.
- · Cyclone water-classification system ensures effective use of water.
- · Long-life replacement parts made of highly durable materials.
- Wastewater is reduced by collecting the coagulated sludge.
- · Macoho's proprietary exhaust system ensures a cleaner exhaust.
- Water quality improvement system Reduction of water consumption (under development).

Abrasive Development

- · Supply of abrasives that can be recycled as valuable resources after being used in blasting.
- Reduction of waste by using water-soluble materials (under development).
- · Longer life thanks to high-hardness abrasives with extremely low crushing levels.
- General waste recycling using plant-derived materials (under development).
- Dust prevention by supplying a fine-abrasive slurry (under development).
- Recycling of used abrasives (under development).



Before

Before

After













Specifications are subject to change without notice. The figures and photos in this catalog may differ from the actual product.