

Abrasive Flow Machining

HSI HWA
INTERNATIONAL



the inside edge ' deburring ' polishing

HSI HWA

precision deburring and polishing

History

1990 Engaged in sales of Abrasive Flow Machining in Asia and Japanese grinding Tools in Taiwan

2000 Entered PC industry with massive manpower and capital in production of panel cleaning machine and associated consumables and successfully exported to Mainland China, Southeast Asia, Europe and Russia markets. Cooperate with Printprocess AG, the Swiss Exposing Machine in design of Exposing Machine for marketing in the world market.

2005 Developed Semiconductor package and optical cutting market and handle Adams Precision blade of Japan into Taiwan and Mainland China in all directions.

2007 Developed abrasive media production techniques and new models for full-automatic function

Company Profile

Develop and manufacture independently polishing equipment to cope with the independently developed media to reach perfect match of machinery and media in full-automatic process, without relying on supplies of media imported from other countries and free of worry of miss match between the equipment and the consumables.

Specialized in the manufacturing of polishing, surface treatment and de-burr equipment, the company has comprehensively experienced and technique-rich R & D Team, also cooperate with advance countries plus the precision parts, in production of special equipment with high quality, automatic at reasonable price. The Company provides different customized product, machinery and consumables to help customers in overcoming technical problems of customers, so that every work piece will have the best processing effects in polishing, surface treatment and / or de-burr



Our techniques are suitable for inner surface polishing, de-burr and chamfering or edge of work pieces made of metal, tungsten carbide, steel and ceramic. They are also employed in Aerospace, Semiconductor, Medical, Engine, Auto Parts and other precision parts and related process. The techniques improve quality effectively and promote production capacity.

Mold:

- Mirror polishing of Tungsten Carbide dies
- Inner hole polishing of lead fram dies
- Extrusion dies
- Inner hole precision wire EDM polish (from Ra 0.2 μm before polishing and Ra 0.05 μm after polishing)



Aerospace/ Medical and Auto Parts:

- Transmission and engine parts of automobile
- Hydraulic and Nozzle parts
- Polishing of aerospace turbo blade and related parts
- Polishing of medical stainless steel parts

Irregular shape micro hold and semi-conductor pipe fitting

- Smallest polishing hole dimension <math><0.1\text{ mm}</math>
- Polishing of fittings used by semi-conductor industry
- All kinds of inner shape work piece
- The Polishing of stainless steel elbows and ceramic work piece



Effects

Abrasive Flow Polishing Machine, different from conventional processing mode, applies extrusion-flow method to perform mirror polishing and burr removing on irregular surface and inner hole, seam and micro hole work-pieces.

Techniques

Abrasive Flow Machining adopts the latest grinding-polishing method, which allows detail grinding processing depends on the technical requirements, and it can attain mirror effect polishing, or solving attachment difficulty in surface treatment depends on characteristics of materials and pre-processing conditions.

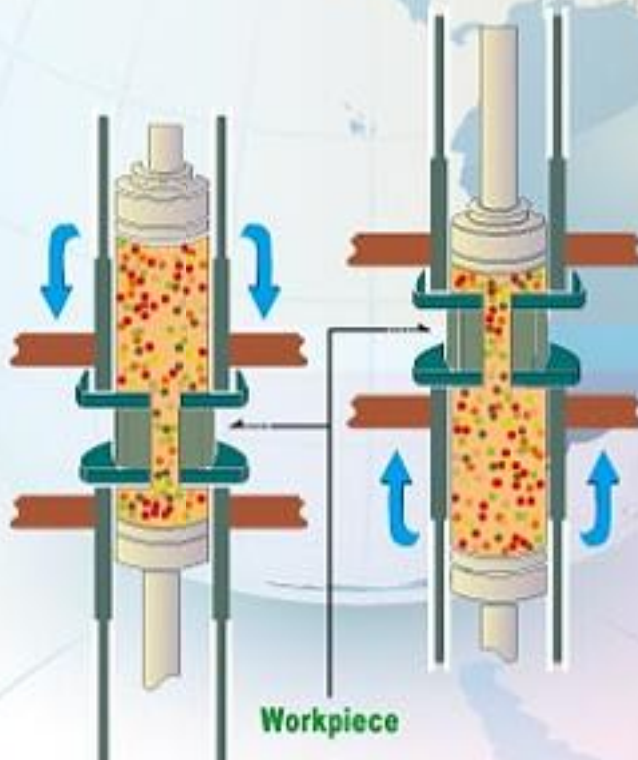


Principle

Abrasive Flow Polishing is achieved with media which is made of special resin plus high fluidity colloid and added with abrasive grit based on the grinding or polishing needs. The special soft, flow media has high fluidity and contains high concentration of abrasive and it is arranged to pass through the surface of work pieces in up-down movement.

Method

In AMF Polishing, the work piece is placed on machine working table and held with tooling. The media tank at the upper side of machine and fixing seat fix the work piece from upside down with hydraulic cylinder. When the upper and lower media tank are filled with media, it moves to push the media upward to the top point then downward to the lowest point. In such up/down movement, the polishing effect is achieved with set cycle times and quantity of media in the flow.



New HH Standard Machine Serials

1 All-New Control System The machine is completed use Console of Germany and is meeting high rigidity and European Safety Standard. Operation teach screen and PLC uses Japan system maker, high sensitivity, best reaction and multiple functions, allowing more than 10 sets parameters setting

2 Automatic Pressure Setting System The unit is equipped with touch-control pressure setting system with high pressure stability than ordinary manual pressure adjustment model. It allows for setting or locking pressure parameters to avoid mechanical trouble resulted from excessive pressure.

3 Multi-Function Setting Mode The conventional AFM machine is in single operation mode setting and is unable to meet with the polishing needs of different works. HSIHWA's design is one machine with 4-mode operation selecting functions, incl. time mode, flow mode, one-way polishing and full automatic mode.

Full-automatic mode:

The pioneer full-automatic polishing mode of HSIHWA: This mode is suitable for large volume mass-production and small quantities of different models. It is equipped with fail-safe device to avoid error operation in production lines. The operation method is very simple. When the work piece code is entered, the machine will polish work piece automatically in accordance with the work piece code. Pressure, time and repetition of polishing are determined automatically. It frees repeated setting and testing and less experienced operator can operate the machine at ease and it helps to increase the automatic capacity of machine.



4 Safety Optical Barrier AFM equipment is high pressure-clamp continuous operation. During placing work piece and in operation, the Mold Closing Pressure is between 1200 psi and 2500 psi. Therefore, the working area must have safety light barrier to avoid intrusion of hand or foreign matters. The Safety Fiber Optical Barrier conformed international standard as far as protective device is concerned.

5 Stainless Steel Working Table This is for preventing rusting or attachment of foreign matters in working area. The Stainless Steel Working Table designed by HSIHWA is much better than ordinary plastic or bake painted table. It is easy to clean the grinding media without any leftover.

6 Intelligent Hydraulic System The machine is equipped with variable pump and high efficiency, low noise cooling fan. High efficiency hydraulic system design allows selection of low pressure (lower than 10 kgs) and high pressure polishing (more than 150 kgs), so it is suitable for all kinds of special applications.

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MEDIA

Hsihwa developed independently and produces special grinding / polishing material: The materials of media are produce in Taiwan with features of high fluidity, even surface grinding/ polishing effect, good coagulation and mirror-processing effect.

1 Excellent Coagulation Effect

Media is produced with high precision equipment with 100% coagulation. Depends on the needs of application, the abrasive concentration may be as high as 90%, which featured with cost saving and fast polishing effect. It is far different from conventional low abrasive concentration resin.

High concentration can accelerate cutting and is much faster than ordinary media polishing.

Good coagulation gives longer service to the media and it is less likely to sediment.

2 High Fluidity

Subject to hole dimension and size of work piece (between 0.1 mm to 500 mm), flow media of different hardness may be selected:

Hard No.5: About 80 degree (rubber hardness) suitable for cast mold and auto parts with large hole.

Medium Hard No.4: About 60 degree (Rubber Hardness) suitable for Pressing machine, Punching machine working piece of large mold.

Medium No.3: About 40 degree (Rubber Hardness) Tungsten Carbide die, Knitting Machine parts

Soft No.2: About 10-15 degree (Rubber Hardness) for burr removing , inner hole polishing.

Ultra Soft No.1: (Liquid) special for micro hole, nozzle and semi-conductor industry parts.

3 Even grinding of polishing surface

Abrasive can be silicon carbide, Boron Carbide and diamond with good cutting effect to attain high speed effect in grinding, polishing, burr removing and chamfering.

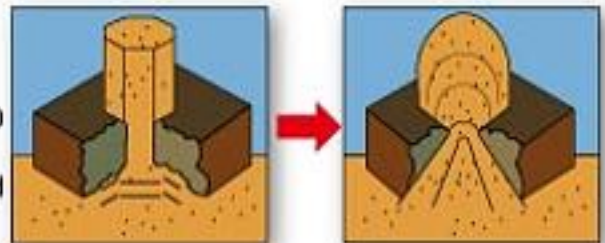
Particle size: Abrasive particles are available between #8 mesh (average 4.82 mm) to #1200 mesh (0.015 mm) for different application / effect.

4 Mirror Surface Polishing

With extra grade diamond particles and special polishing powder, HSIHWA's product can polish special work piece and reach mirror effect.

M03> is designed for polish of Tungsten Carbide work piece with removal of 25-40 um and surface roughness of Ra 0.08 um.

F02> for work piece requires high precision like precision dies and lead fram mode, with polished surface roughness of Ra 0.04 um with removal of 10 um.



Specification

MACHINE SPECIFICATIONS	HH080	HH100	HH150	HH200	HH250
Height/open	2150mm	2420mm	2420mm	2800mm	2800mm
Height/closed	1950mm	2130mm	2130mm	2300mm	2300mm
Worktable height	1000mm	1100mm	1100mm	1200mm	1200mm
Depth	900mm	1300mm	1300mm	1250mm	1250mm
Weight	800kg	1250kg	1400kg	2200kg	2200kg

HYDRAULIC SYSTEM	HH080	HH100	HH150	HH200	HH250
Power unit Dimension(mm)	650x400x700	630x520x650	710x580x860	1000x730x520	1000x730x520
Tank capacity	45L	65L	140L	200L	250L
Pump Flow Rate	9 liter/min	10 liter/min	18 liter/min	38 liter/min	38 liter/min
Weight	75kgs	155kgs	340kgs	500kgs	500kgs
Motor	2P	3P	5P	10P	10P

MEDIA CYLINDER SYSTEM	HH080	HH100	HH150	HH200	HH250
Media Cylinder Diameter mm	3.15inch/80mm	4inch/100mm	6inch/150mm	8inch/200mm	10inch/254mm
Media Extrusion Pressure	2.5-8Mpa	2.5-10Mpa	2.5-10Mpa	2.5-8Mpa	2.5-8Mpa
Media minimum volume	3.15inch/2.5liter	4inch/3liter	6inch/5liter	8inch/12liter	10inch/18liter

ELECTRICAL SYSTEM	HH080	HH100	HH150	HH200	HH250
Program Controller	PLC	PLC	PLC	PLC/PC	PLC/PC
Control panel	Touch screen	Touch screen	Touch screen	Touch screen	Touch screen
Voltage	220V/380V/3PH	220V/380V/3PH	220V/380V/3PH	220V/380V/3PH	220V/380V/3PH



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