

適用加工材料

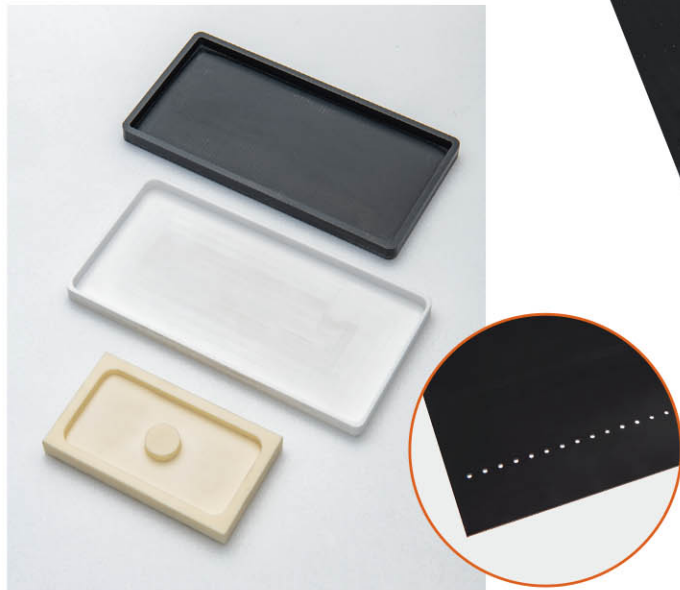
脆硬材料：矽、石英、氧化鋁、玻璃、石墨、氧化鈮錫合金、化合物半導體組件、高硬度鋼材。

加工材質：鋁碳化矽、二氧化鋯、藍寶石、不鏽鋼。

APPLICABLE MACHINING MATERIALS

Brittle Hard Materials: Silicon, quartz, aluminum oxide, glass, graphite, oxidized indium tin alloy steel, compound semiconductor parts and high hardness steels.

Machining Materials: Aluminum silicon carbide, zirconium dioxide, sapphire and stainless steel.



硬脆材料加工利器

硬脆材料(例如：陶瓷、石英、碳化矽及面板玻璃)

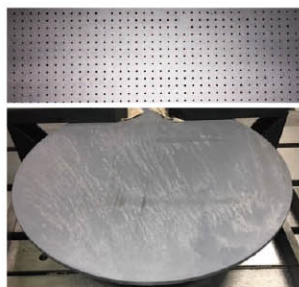
之加工目前以研磨為主，

導致良率太低問題，且加工效率有待提升

超音波加工可徹底為您解決問題。

A COMPETITIVE EDGE FOR HARD BRITTLE MATERIAL

Currently most hard brittle materials (such as ceramic, quartz, silicon carbide, and panel glass) are machined by grinding, which leads to low yield rate and a need for higher efficiency. Now with ultrasonic machining, these problems can be solved.



材質：二氧化鋯
Material: Zirconium dioxide



孔徑：0.4mm，深度：6mm
Hole diameter: 0.4mm
Depth: 6mm

非接觸式超音波主軸單元
ULTRASONIC
Machining System

硬脆材料解決方案 The Solution for Hard Brittle Materials

超音波加工系統

- 超音波加工系統包括：超音波主軸、刀具、超音波產生器。
- 超音波加工系統也可安裝在使用後之傳統機型，將傳統機型提升為超音波加工機。

ULTRASONIC MACHINING SYSTEM

- The ultrasonic machining system includes ultrasonic spindle, tool, and ultrasonic generator.
- Highly experienced technicians provide efficient installation service and operation instruction.



旋轉超音波加工技術優異:

- 大幅減少切削力(刀具磨耗減少)。
- 可降低切削區域之溫度。
- 切削液之效能可充分發揮。
- 切屑排除迅速。

BENEFITS OF ROTATING ULTRASONIC MACHINING TECHNOLOGY:

- It dramatically reduces cutting force (tool wear is reduced).
- Reduces the temperature of the cutting area.
- Efficiency of cutting fluid is fully realized.
- Fast chip removal.

新舊機升級超音波系統

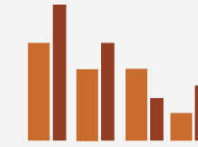
Upgrade your Tapping Center to Ultrasonic Tapping Center



ULTRASONIC

超音波加工系統 Ultrasonic Machining System

旋轉超音波加工 VS 傳統切削加工 ROTATING ULTRASONIC MACHINING VS TRADITIONAL MACHINING



旋轉超音波加工，展現多項優異特色:

- 刀具壽命長
- 切削效能優異
- 適合脆硬材料加工

Rotating ultrasonic machining exhibits many outstanding features:

- Long tool life
- Superb cutting efficiency
- Ideal for machining brittle and hard materials

超音波主軸優點

- 高頻振動較傳統加工阻力小。
- 高頻振動所產生之磨屑不易沾黏在刀具上，因此可保持刀具銳利，提高加工效率3-5倍。
- 工件不含殘留加工應力。
- 有助於改善加工面粗糙度，並可延長刀具使用壽命。

BENEFITS OF ULTRASONIC SPINDLE:

- High frequency vibration machining features less drag force than that of conventional machining.
- The abrasive dust generated during high frequency vibration machining does not stick to the tool easily, thus the tool remains sharp and machining efficiency can be increased by 3 – 5 times.
- The workpiece is free of residual stress.
- It not only improves roughness on machining surface, but also extends the service life of the tool.

超音波主軸規格

- 加工最高轉速: 標準20,000 rpm
- 音波產生器最大功率: 400 W
- 超音波頻率範圍: 19-28 KHZ
- 自動追頻，非接觸式感應。

SPECIFICATIONS OF ULTRASONIC SPINDLE

- Max. machining speed: 20,000 rpm (standard)
- Max. power output of ultrasonic generator: 400 W
- Range of ultrasonic frequency: 19-28 KHz
- Automatic frequency tracing. Non-contact type sensing.

低加工成本、高效率

- 加工成本: 超音波加工約為雷射加工的1/3。
- 加工效率: 超音波加工效率為傳統銑削的3~5倍。

LOW MACHINING COST HIGH EFFICIENCY

Production Cost: The machining cost of ultrasonic machining is only 1/3 that of laser machining.
High Efficiency: The machining efficiency of ultrasonic machining 3 – 5 times that of conventional grinding.

旋轉超音波加工原理

- 刀具旋轉運動 + 高頻振動以執行切削。
- 利用冷卻液，將去除的材料迅速帶離加工區。
- 加工時刀具上的磨粒藉由錘擊、磨蝕與錘撕扯等功能將工件粉碎或很小的微粒，再從工件去除。

MACHINING PRINCIPLE OF ROTATING ULTRASONIC

- Employs a rotating tool in combination with high frequency vibration to perform cutting.
- During machining, the abrasives on the tool will collide with the workpiece, creating small particles through hammering, abrasive eroding and tearing, which are then removed from the workpiece.
- Coolant is also used for fast splashing the removed material from the machining area.