欣賢科技
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噴霧式塗佈系統
SPRAY COATING SYSTEM

用途

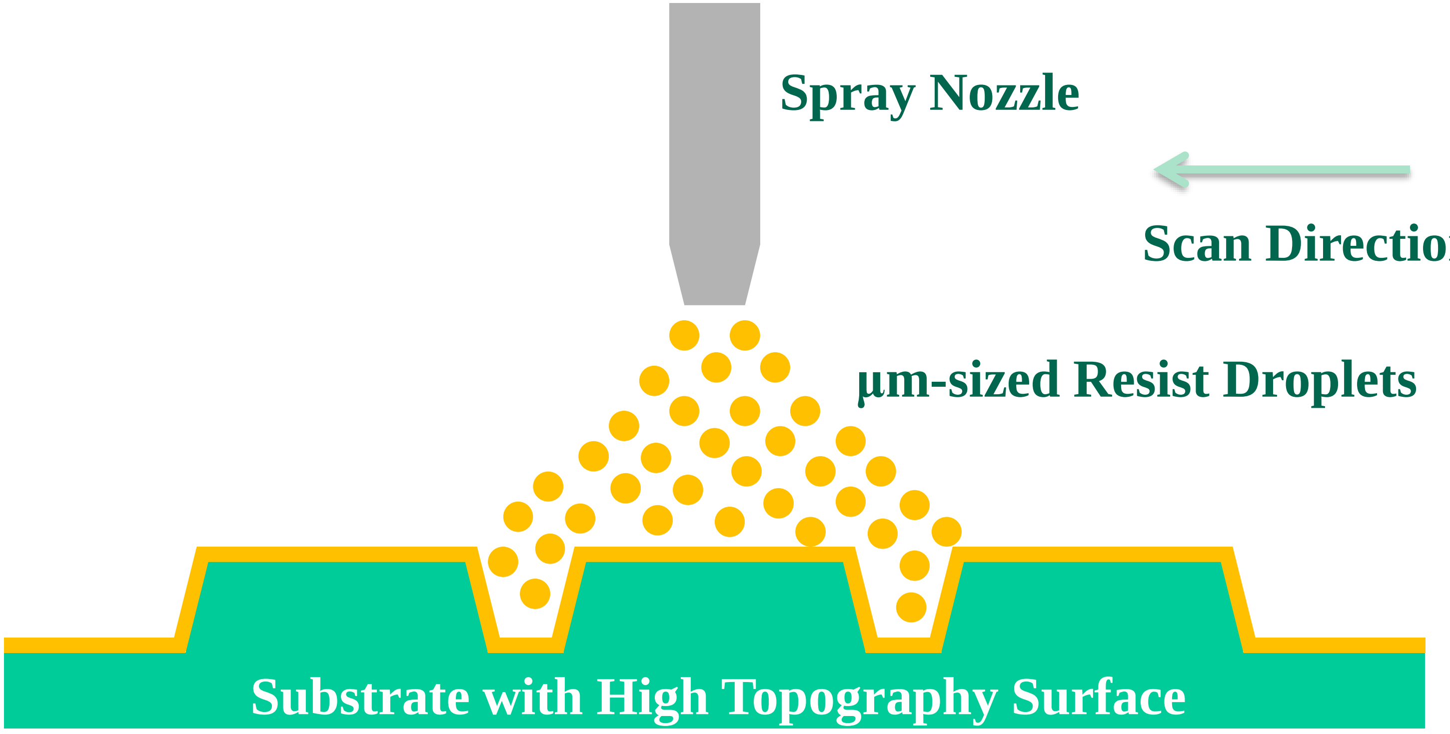
- 針對傳統旋轉式塗佈無法克服的高表面輪廓基材表面。

  Designed for nonplanar and high topography substrate surfaces which conventional spin coating cannot overcome.

- 適用於MEMS與晶片封裝的高深寬比結構、3D曲面玻璃塗佈、觸控玻璃表面抗汙塗料的塗佈製程。

  Suitable for coating of high aspect ratio structures in MEMS and IC chip package, 3D glass coating, anti-smudge coating on TP glass, and etc.

噴霧式塗佈示意

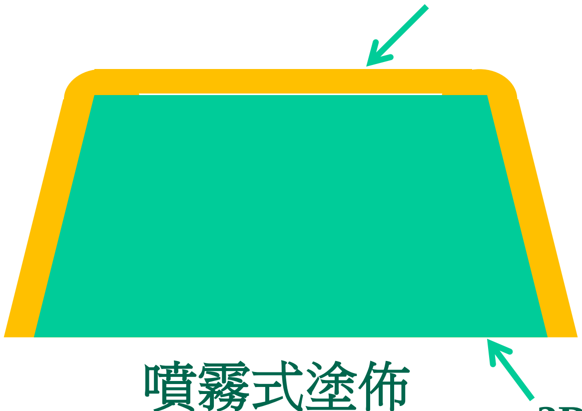

Spray Nozzle
Scan Direction
µm-sized Resist Droplets
Substrate with High Topography Surface

旋轉式塗佈 vs. 噴霧式塗佈

高深寬3D結構的塗料階梯
覆蓋性不佳
Poor step coverage of coating material

旋轉式塗佈
Spin Coating

塗料
Coating material



噴霧式塗佈
Spray Coating

3D結構
3D Structure

旋轉式塗佈 vs. 噴霧式塗佈

針對3D基材，例如2.5D/3D玻璃

優點

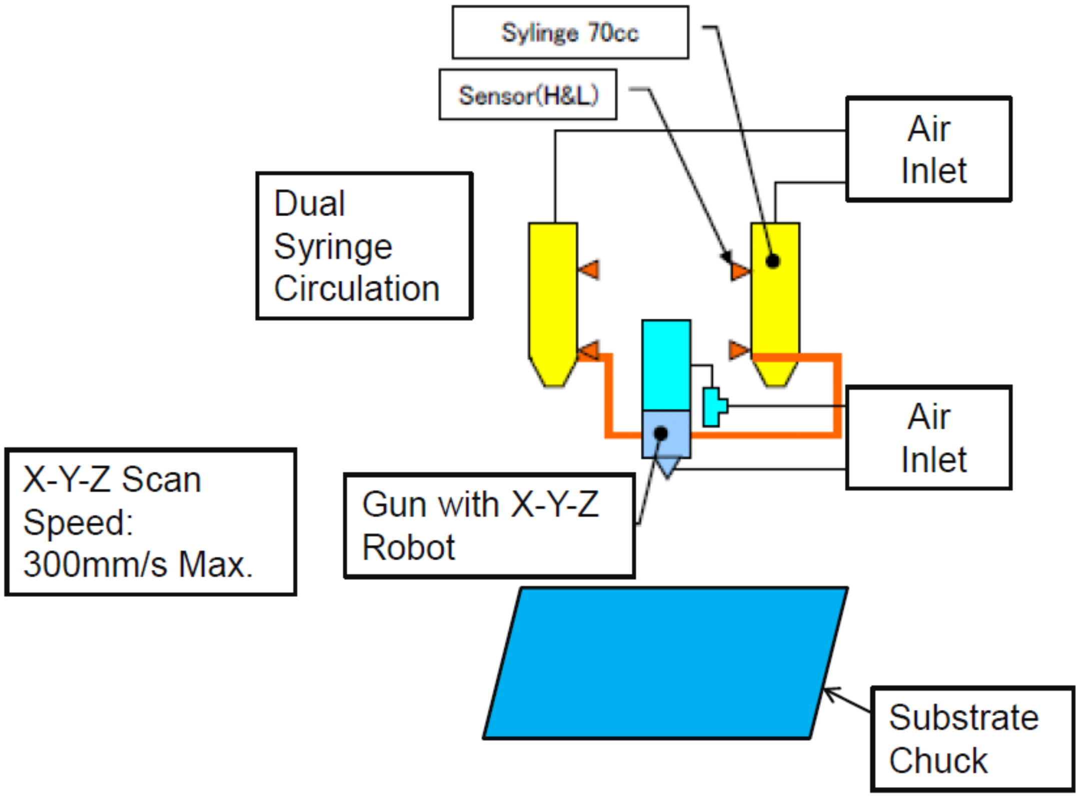
- 針對高深寬比或3D立體結構，克服旋轉式塗佈階梯覆蓋不佳的缺點。
- 可靜止或低轉速噴塗，避免旋轉式塗佈因離心力造成塗料流動，在凹槽結構底部或側壁產生塗料堆積的現象。
- 與旋轉式塗佈約2%塗料可使用量比較，噴霧式塗佈可提昇塗料可使用量(40%)。
- 可多件小尺寸基材同時塗佈，例如1x1 inch基材。
- 脆弱結構的保護層塗佈，例如MEMS的懸臂樑結構，可避免旋轉式塗佈的離心力破壞。

Advantages

- Good step coverage of coating on high topography substrate surfaces compared to conventional spin coating.
- Prevent coating material accumulation in cavity bottoms or sidewall edges.
- High material utilization of 15%~40% compared to spin coating of around 2%.
- Capable of coating multiple small-sized substrates as 1x1 inch.
- Capable of protection coating on fragile structures such as cantilever beams of MEMS, which centrifugal force of spin coating can cause damage.

Spray Gun System

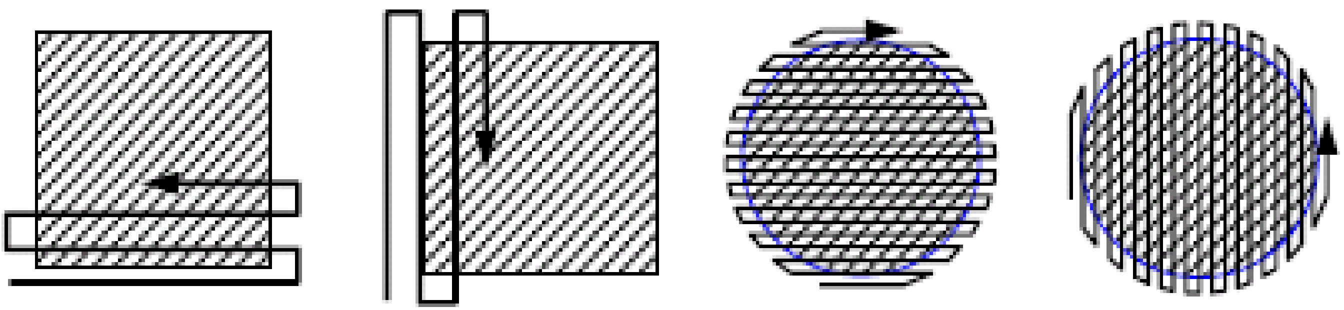
- 噴頭X-Y-Z三軸自動定位
  X-Y-Z 3-Axis auto positioning for spray gun
- 噴頭可針對高硬度材料設計
  Nozzle head designed for high hardness material (Ex. Phosphor powder)
- Scan Speed：300mm/s max.
- Heated Platform：120 ℃ max.
  (塗料噴塗時同步加熱定型，減少塗料垂流 Coating on a heated platform to prevent local flow)



Scan Pattern

可針對不同基板與Tray盤尺寸規劃

Designed for different sizes of substrate and tray

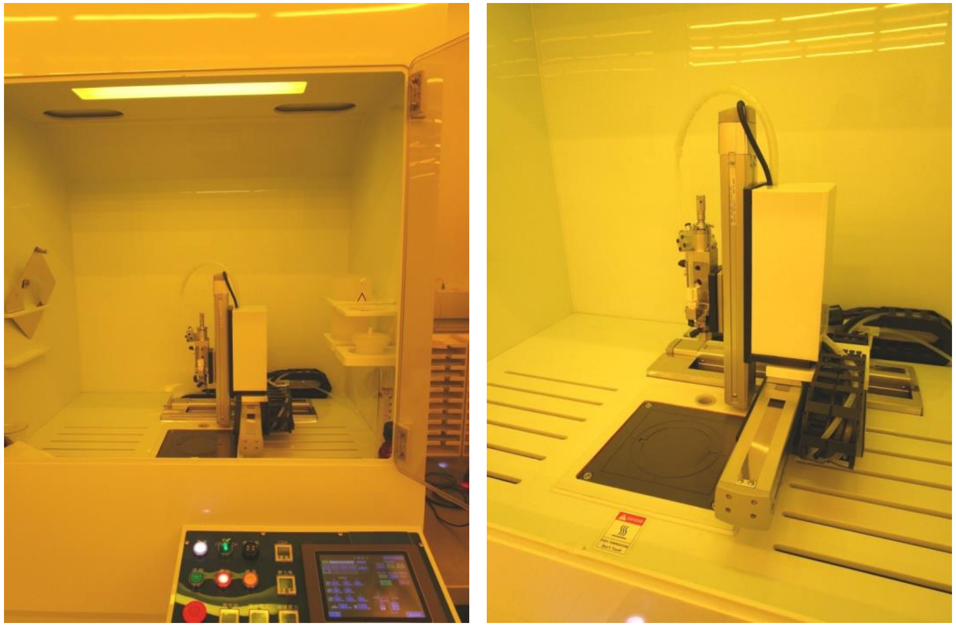


Rectangle LR   Rectangle FB   Circle LR   Circle FB

Spray Coater

- Dimension：1300(W) ×1250(D) ×1900(H)
- Coating Area：250mm Square
- Heating Plate：300mm Square 120 ℃ Max.
- Dual Syringe & Auto Pumping System
- Scan Speed X/Y/Z = 300/200/60 mm/s

<u>Dual Syringe Circulation System</u> to avoid gravitational settling.



Semi-auto Spray Coater

3D Glass Spray Coating

- **Substrate：5in 3D Glass**
- **PR：Black Matrix**
- **Dry Film Thickness：6μm**
- **Process Time：1min**
- **PR Usage：1cc**

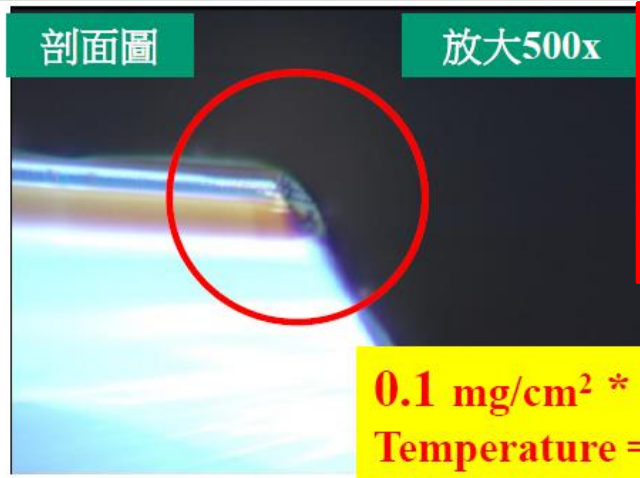
After

Before

	Measured Point #1	Measured Point #2	Measured Point #3	Measured Point #4	Measured Point #5
Sample #1	5.94	5.92	5.80	6.11	6.09
Sample #2	6.27	6.00	5.81	5.37	6.19

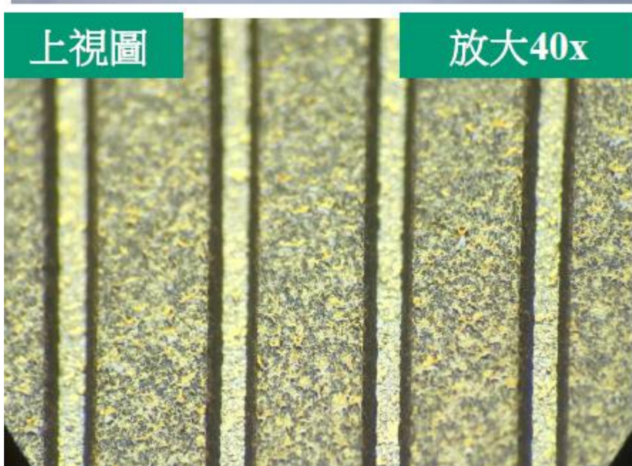
Unit：μm

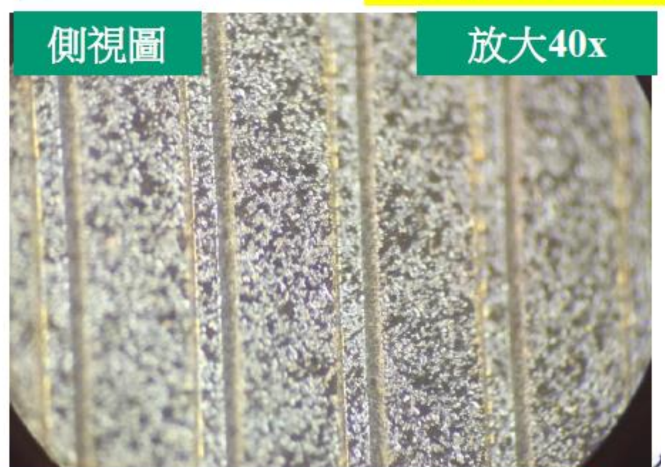
Cavity PR Coating



紅圈位置光阻已包覆Cavity邊角位置

0.1 mg/cm² * 3 layer
Temperature = 80C





Thank You for Your Attention