

Flexible Substrate Plating Technology

Introducing: Excellite FSP

A New Dimension for Flexible Substrate Plating Technology

State of the art plating results are possible with the Excellite FSP System!

Blind micro-via and through-via filling is now a production possibility due to well matched equipment and processes in the Excellite FSP system.



Ever increasing demands for HDI production processes call for innovative, future-oriented solutions.

The Excellite FSP is a roll-to-roll, continuous strip, electroplating and wet processing system designed principally for flex circuits, RFID, and solar cells while having a variety of other electronics and metal finishing applications.

The Excellite FSP is uniquely capable of handling delicate materials without handling damage frequently resulting from alternative designs.

Systems have been successfully installed at major US-based electronics firms.

Main benefits for the end user:

- Best throw in blind micro-vias
- Controlled plating thickness
 - *at hole edges and in the hole*
- Highest current densities attainable
- Compatibility with ultra-thin base copper
- Production proven with ultra thin foils
- Highest process reliability
- Reduced maintenance
- Capable for BMV and through-hole filling
- No down time for anode maintenance
- Fully adjustable current shields
- Auto strip-width adjustability
- Constant anode conditions



A Full Range of Major Technical Advantages

- Fully adjustable anode/cathode distance/shields
- Combination of inert DSA insoluble segmented anodes
- Contact systems that won't plate up
- Low maintenance coupled with high reliability
- Uniform plating thickness on the surface, in the holes and in blind-vias
- Ultra-fine line capability
- Uniform surface thickness

Plating Uniformity

The Excellite FSP is a production proven technology. Due to the unique contact design, combined with the close proximity segmented anodes, the uniformity is unsurpassed in the industry.

Blind Micro-Via Capability

Plating solution flooding and solution-flow with a unique volume pressure characteristic are incorporated into the Plating cells

Surface Topography

The anodes are segmented to enable best surface distribution also with thin copper conducting layer. The Excellite FSP with segmented anodes enables copper plating thickness ensuring $\pm 5\%$ surface distribution with copper conducting layer.

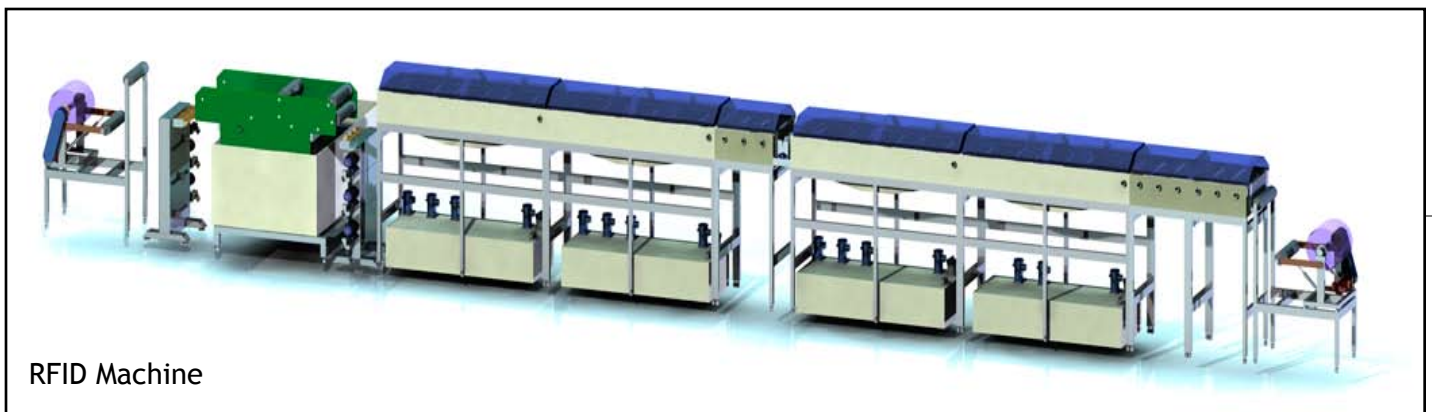
Via Filling

The Excellite FSP system is production proven for BMV filling. Additional to this through via filling can now be achieved. Combination of inert anode and soluble anodes for low maintenance and high productivity



Production Advantages

- Low consumption of organic additives
- Low organic bath loading
- Extended electrolyte life cycle
- Extended anode lifetime
- No surface defects caused by oxygen bubbles
- No oxygen bubbles in blind micro vias



RFID Machine

Material Handling

Delicate materials demand exacting control of material tension and feed rates.

Each system requires its own unique material handling solution or tension control scheme. Material specifications determine equipment complexity. Generally, as material gets wider and thinner, and rolls get larger and heavier, the complexity of material handling increases. Spindle orientation can be vertical or horizontal depending on roll weight and material tolerances. Automatic edge control is also a critical element of any material handling system.



Insoluble Anodes and Reverse-Pulse Technology

Plating systems from Precision Process and PAT have been in production making high-quality products since 1998. The quality has since been enhanced by using state-of-the-art technologies for even better results. Reverse-pulse technology gives up to 100% throwing power. Pulse amplitude and pulse timing can be varied within a wide range to optimize the throwing power for the particular conditions.

Maintenance-Friendly

The concept for this system is based on ease of maintenance without making any sacrifices in the quality. The contact-making elements are of a simple design for easy removal and continuous contacting during production.



Our Strategic Partnership

Process Partners International is the strategic partnership of Precision Process USA and Process Advanced Technology (PAT) China, offering world-class design and engineering with manufacturing capabilities in USA, Taiwan and China.

Through this partnership we offer you all the benefits of American Engineering and Quality coupled with China's cost effective fabrication and installation.

We offer clean room assembly facilities in both Niagara Falls and Taipei and have completed numerous successful projects worldwide.

Learn more at:

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Wet Processing Features and Benefits

Total Computer Control	Full control and trending of ALL parameters.
Computer Splice Tracking	Tracks individual lot and roll location. Automatically adjusts plating parameters and ramps rectifiers to achieve constant current density. Enables small lot sizes and multiple lot types to be run simultaneously.
Modular Construction	Easily expandable processes No special floor preparation required. Fast installation in 2 weeks or less.
Sealed Plating Cell	Reduces ventilation utility by up to 90% Reduces heating losses. Dramatically reduces electrical utility cost. Allows machine to be located in Class 100 Clean Room.
Air Wipes	Each station is equipped with air wipes to reduce dragout and waste treatment, water consumption and chemical usage.
Three-Dimensional Plating Shield	Enables super-flat plating uniformity across wide web shield widths to 5%.
No Drag Seals	Extremely low material drag at immersion cell entrance and exit seals Fluid stop non-roller based design Eliminates risk of marking or damaging material.
Solution Sparging	Unique design helps guide material through immersion cell Provides optimum uniform solution agitation and flow.
Easy Anode Fill Access	Easy access to soluble anode baskets for replenishment of anodes. Hinged doors in process cell covers Anode baskets equipped with hoppers. Catwalks to either side of plating cell.
Rectifier Control	Built-in pre-wired computer integrated high resolution switch mode rectifiers. Side to side and multi-zone ramped plating current control for conventional and vapor deposited substrates is available. Computer calculates real time cell area and adjusts amperage preset to maintain constant CD.
Plating Cell Membranes	Membranes separate anode and cathode plating compartments to keep anode sludge from entering plating compartment.
Automatic Fill System	Process cell fills via low pressure port until proper cell level achieved then automatically switches to high flow sparge mode preventing uncontrolled solution splashing and inadvertent damage to anode film.
Dryer	High flow low-pressure with HEPA filter.

Also available for electroless processes.

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