

Cuprapulse® IN



Reverse pulse plating with
insoluble anodes for HDI,
MLB, and ICs

Excellent conformal copper plating for HAR

DC technology does not even come close to the throwing power performance achieved with Cuprapulse® IN. This holds true for the whole range of board thickness from 1-6 mm and any aspect ratio. Cuprapulse® IN can be operated in VCP systems as well as in hoist type equipment and offers a very wide working range of organic additives.

The new process is designed for pulse plating with insoluble anodes to keep the surface thickness variation within a narrow range. This makes it a critical solution for IC substrate applications where an excellent uniformity for high hole and low hole density areas is a must. The use of insoluble anodes allows to produce circuit boards with pattern plating at approx. 3 A/dm² and to achieve excellent copper distribution. Compared to DC plating this is an improvement of approx. 50%. The throwing power into the hole (2.4/0.2 mm) is approximately 100%. The high applicable current density together with the improved performance allows for increased productivity and output.

Features and benefits

- Wide operating window and easy control
- Capable for panel and pattern plating
- Much better surface distribution in tracks and line shapes than in DC mode
- Applicable for VCP and hoist type equipment with insoluble anodes
- Productivity is increased with simultaneous quality improvements
- No change in surface appearance over wide working window
- Meets solder shock reliability requirements according to industry standards
- Excellent plating results for IC Substrate, Automotive and HDI applications

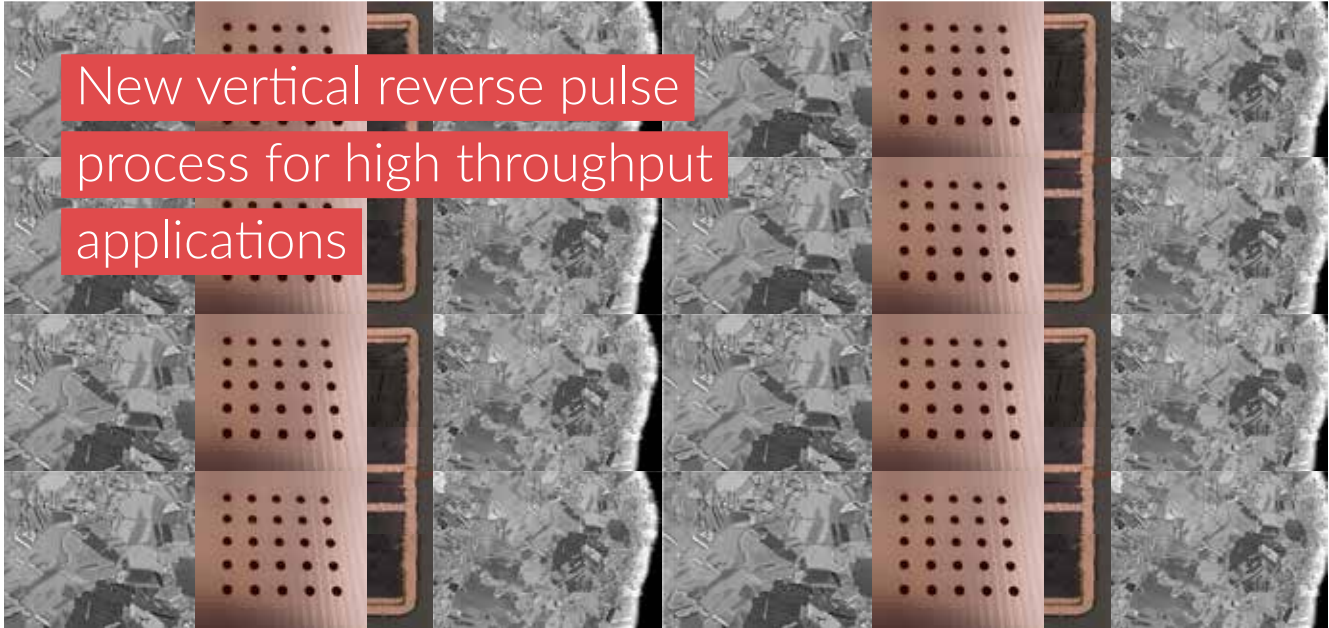
> 90 %

throwing power for HAR boards

Cuprapulse[®] SE



New vertical reverse pulse process for high throughput applications



Designed for VCP and hoist type applications

Cuprapulse SE is a vertical RPP process with soluble anodes for high throughput applications. It enables conformal copper plating in pulse plating mode and is compatible with hoist-type and VCP equipment featuring perpendicular flow management. This process achieves superior throwing power with an aspect ratio of 12:1 in the shortest plating time, suitable for both panel and pattern plating applications.

Cuprapulse SE ensures a more uniform copper deposition when compared to standard pulse plating processes with soluble anodes. This reliable process with excellent physical properties is ideal for 5G, automotive, and MLB PCB production.

Its high throwing power combined with a low surface thickness leads to high productivity as well as cost savings in anode material and post-treatment processes.

Features and benefits

- Pulse plating for superior throwing power in shortest plating time for high throughput
- Excellent surface thickness uniformity
- Applicable under turbulent flow conditions
- Easy to control two-additive system
- No two-one effects and no physical oil-out
- High applicable current density for increased productivity
- Excellent throwing power in through holes
- Wide working window
- Suitable for VCP equipment with perpendicular flow management



Inpulse® 2HF9

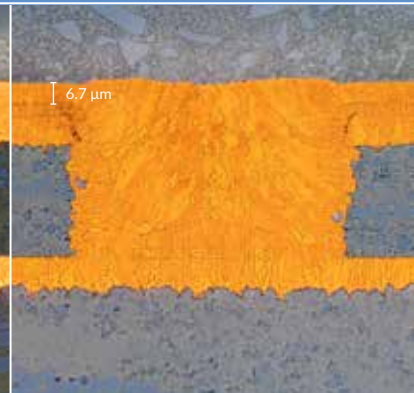
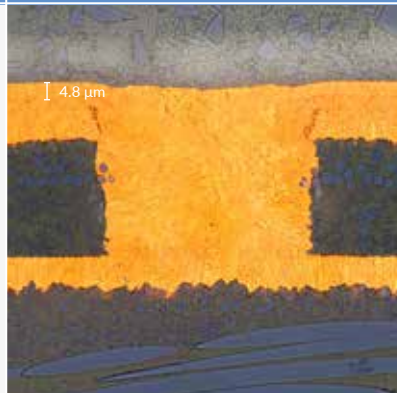
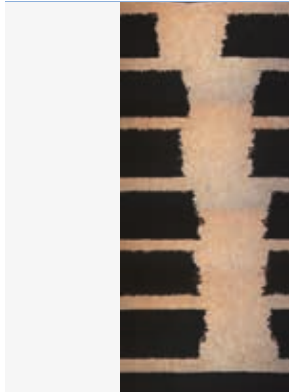


Low cost superfiling solution
for blind micro via filling



Filled stacked BMV for
smart phone production

Superfilling® technology for BMV filling



savings in material usage
while increasing productivity
and performance

50

percent less plated copper
on surface

- Plating thickness on surface 4.8 µm
- Plating time ~14 min
- BMV with 100 µm diameter, 70 µm depth
- Dimple < 5 µm
- Plating thickness on surface 6.7 µm
- Plating time ~20 min
- BMV with 125 µm diameter, 70 µm depth
- Dimple < 5 µm

Superior filling results with minimum surface plated copper

Inpulse® 2HF9 with insoluble anodes gives longest electrolyte lifetime and is proven in high volume HDI production. The process offers a combined conveyORIZED metallization and plating system. Inpulse® 2HF9 enables filled BMV's with less than 5 µm dimple. Inpulse® 2 equipment with Inpulse® 2HF9 chemistry = one system from one supplier – One reliable, mass production proven system from Atotech.

Features and benefits

- Good BMV filling performance
- Very good productivity with shortest production time
- Excellent planarity with low dimple
- Proven reliability by enabling horizontal wet to wet process flow and enabling good Cu crystal structure
- Saves money by plating less copper onto the surface