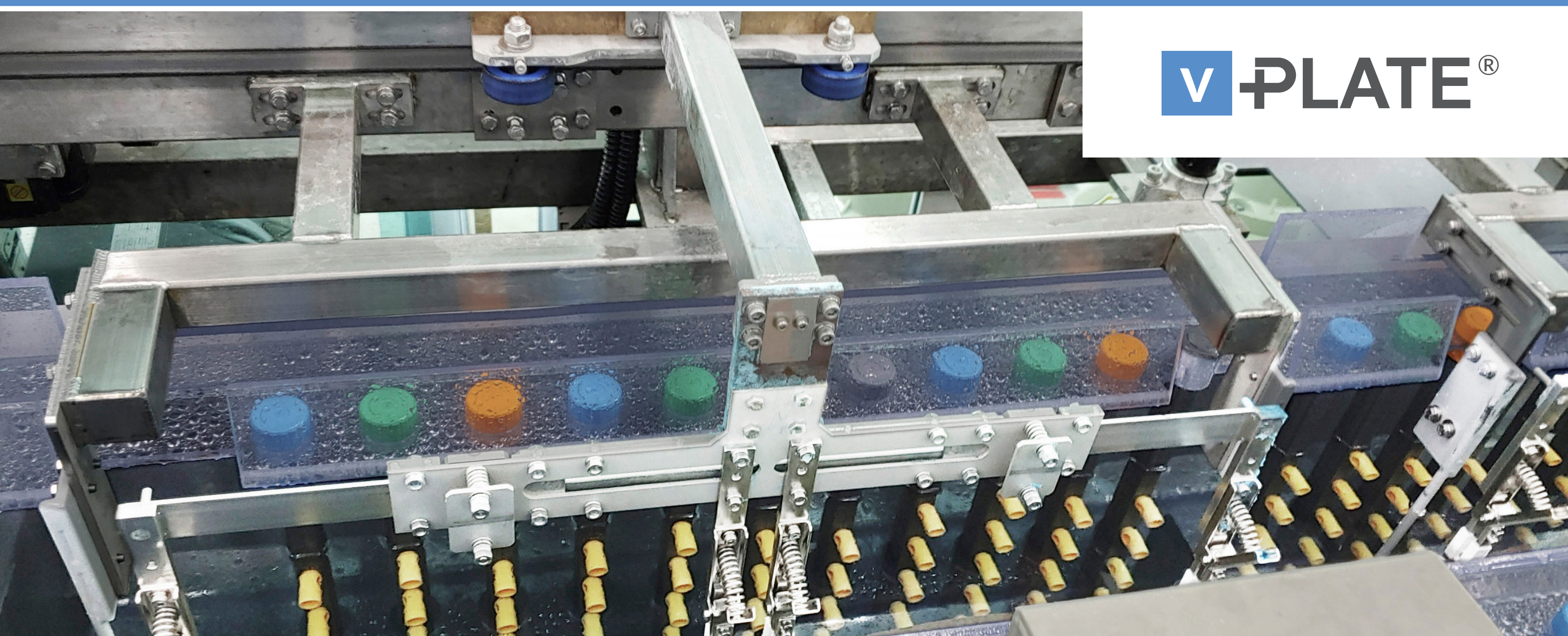
V-Plate®

Vertical continuous Cu plating

Electronics | Equipment technology & panel and pattern plating | atotech.com



Technology of choice for advanced IC substrate

Vertical continuous copper plating equipment

V-Plate® provides best solutions for advanced technologies such as mSAP and IC substrate, and is also suitable for standard HDI and rigid-flex production. The needs of the market are fulfilled by uniformities of ±10% and touch-free thin panel transportation down to 36 µm + 2×2 µm Cu clad. This is achieved by utilizing insoluble segmented anodes with adjustable anode and cathode shielding.

Full automation of the line, incl. automatic copper replenishment and automatic panel size adaption, are standard features in V-Plate®. Automatic grease supply and an automatic jig monitoring system provide options to improve operation comfort.

MKS' Atotech unique systems approach provides the best one-stop solution, supporting both equipment and process technology: V-Plate® is fully compatible to our dedicated InPro® processes for advanced HDI, mSAP and IC substrate and provides excellent results for highest technology requirements.

V-Plate® specification

Speed	0.3 – 2.0m/min
Panel standard size	Up to 558 x 635mm² (22“ x 25“)
Panel over-size	Up to 680 x 815mm² (26“ x 32“)
Panel thickness	Min.: 36µm + 2x2µm Cu clad Max.: 6.4mm
Panel handling	Clamps Jigs
Cu distribution	≤± 10% @ plating thickness >25µm ≤± 8% Target
Anodes	Mono anodes Segmented anodes

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Systems approach from Atotech: V-Plate® with InPro® series

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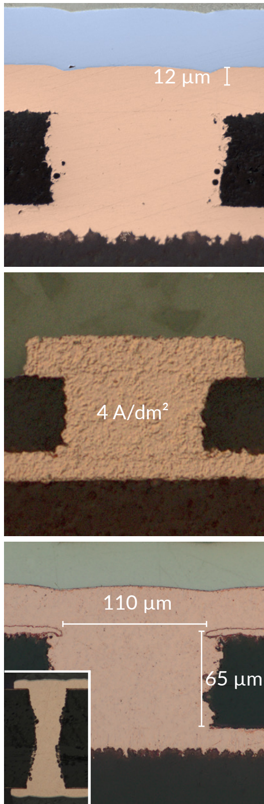

Figure 1:
Excellent BMV filling
(12 µm plated)
Figure 2:
Excellent pattern shape
Figure 3:
Excellent filling performance

V-Plate® & InPro® MVF2

InPro® MVF2 for filling process

- Panel plating at 2.0 A/dm² (pattern possible)
- Improved filling of BMVs in HDI/flex application at low surface copper thickness
- Outstanding throwing power in THs together with BMV filling
- Wide operating window for different applications

V-Plate® & InPro® SAP3

InPro® SAP3 for pattern BMV filling

- High applicable current densities (>4 A/dm²)
- Unsurpassed copper within-unit thickness uniformity at high current densities
- Excellent and stable filling performance with dimple <5 µm
- For fine line production (< 8/8 µm L/S)
- Good pattern capability, rectangular track profile

V-Plate® & InPro® THF2

InPro® THF2 for (a)mSAP production and for TH filling

- For pattern via filling (dimple <5 µm) and through hole filling
- Applicable for high current density to enable high productivity
- Improved uniformity at wider working window
- Excellent physical properties for highest reliability

Features and options for V-Plate®

Auxiliary cathode	Sacrificial cathode in jig for improved surface distribution
Cathode shielding	Automatic Cathode Shielding to adapt electrical field for different panel heights and improved surface distribution
Jig tester	Automated testing of jigs (ext./int.) for better production stability
Tension Jig	Stretching & flattening of thin panels for improved surface distribution
RFID recognition data centre	Monitoring of hanger and logging of process data for product traceability and production control
Connection to MES	Data transfer to MES via SCADA
Anti-Back-Device	Exact positioning of and accurate gap between hangers in plating tank
Lubrication system	Automatic supply of conductive to cathode rail for increased production reliability
Linear motors	Reliable drive of linear drive and up/down units reduces downtime and maintenance
Clean CuO supply	Special design to prevent mist in CuO dissolving unit for better dissolving and cleanliness
Online analysis	Can be attached for plating additives for improved process stability