SCHMID Webinar
inside the industry

Sept. 24th 2026

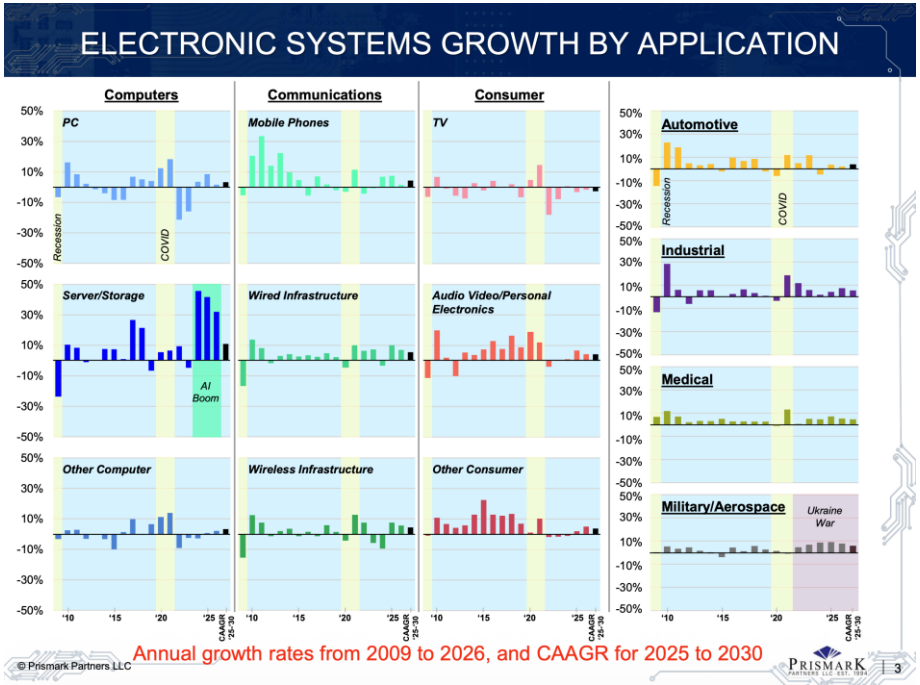


Strategic Market Imperative

AI-Driven Advanced Packaging

The Market and our Position:

- **AI infrastructure** is reshaping the Advanced Packaging demand
- Value is shifting towards **Advanced Packaging** (high-density interconnects, power delivery and PLP)
- SCHMID is uniquely positioned as a **process and yield enabler**



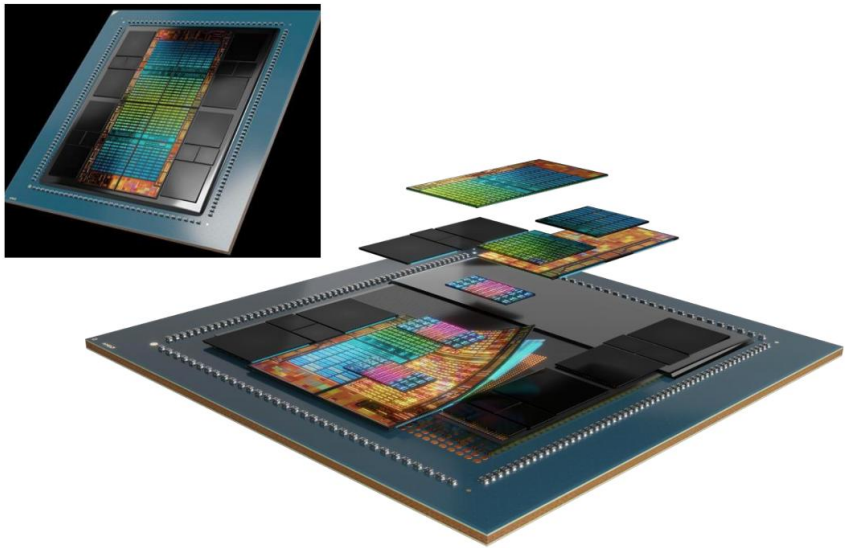
Source: Prismark 2026

Where We Play

Focussed Growth Strategy

Where we play:

- **AI Server Boards** & **Modules** (HDI / high layer count)
- **IC Substrates** (mid-term recovery + AI upside)
- **Panel-Level Packaging** (Chiplets → the growth engine)



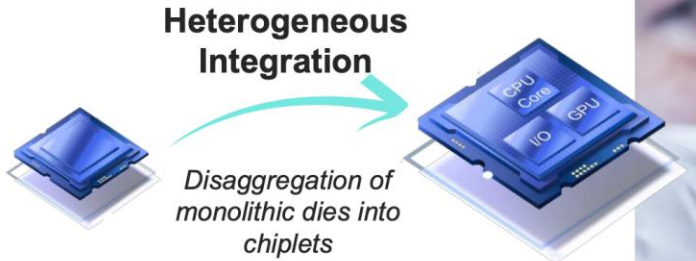
How SCHMID contributes:

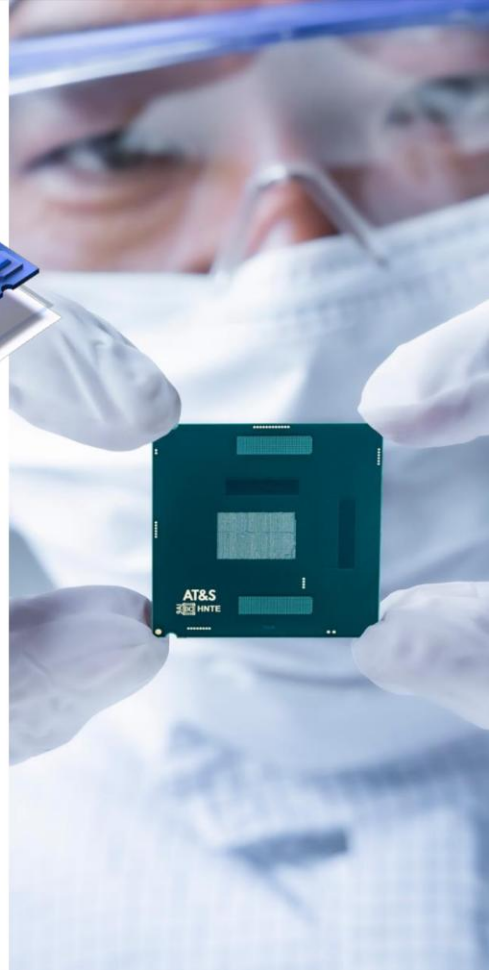
- We deliver:
  - **Best in class Yield** (biggest lever)
  - Premium processes for premium prices
  - Uptime & stability
- We **deliver quality** and we **deliver on time**. We provide **best in class Customer Service.**
- We provide **sampling capability and capacity** for the new products and technologies

Source: AMD 2025

Key market trends

Globaly





Shift to Heterogeneous Integration

HPC now focuses on heterogeneous integration beyond transistor scaling. Complexity is moving from silicon to the package level.

Challenges in Advanced Packaging

Key challenges include warpage control, high-speed die-to-die interconnections and power delivery.

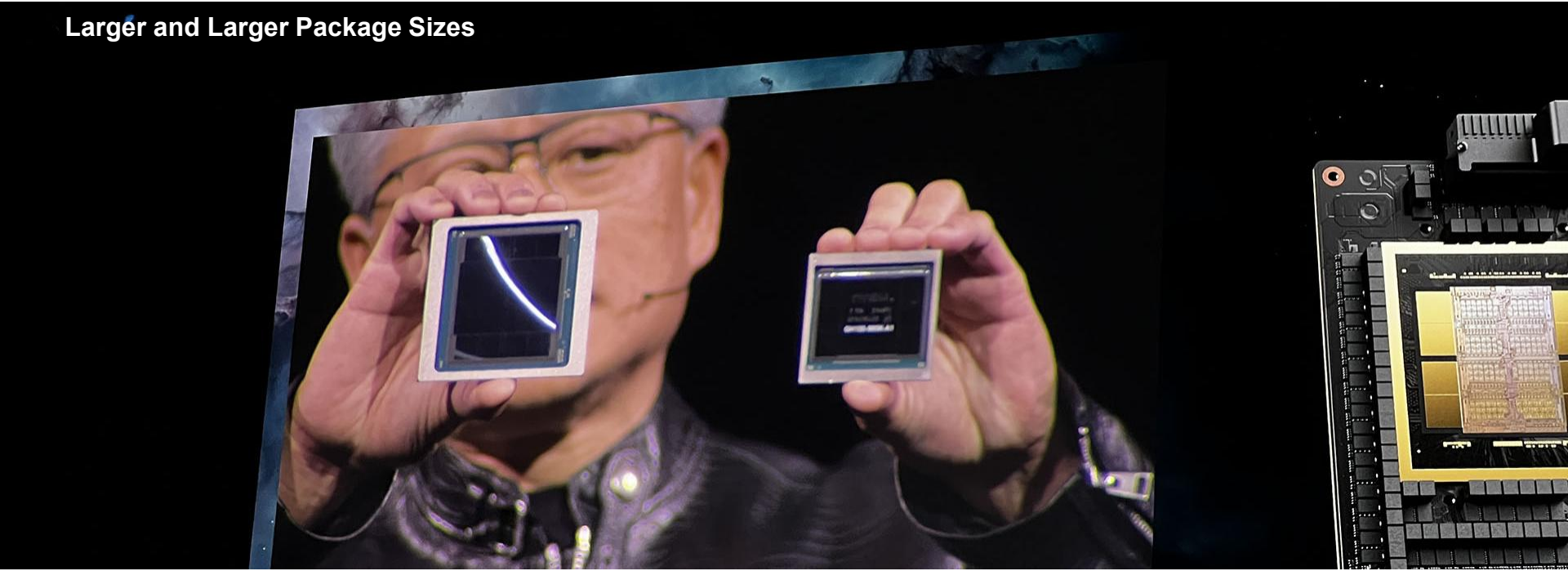
Technology Fusion for Future Computing

Combining substrates, PCBs, embedding, and packaging technologies as well as new materials will unlock new possibilities for the future of microelectronics.

Key market trends

Globaly

Larger and Larger Package Sizes



Panel formats are not standardized — sizes range 310 to 700 mm

Competitive landscape — panel size and capacity

Player	Panel size	Status	Note
TSMC (CoPoS)	310 × 310 mm	Pilot; 2–3 yrs to scale (C.C. Wei)	Extends CoWoS-R and -L (Broadcom, NVIDIA, AMD)
Samsung	415 × 510 mm	Mass production target 2028	Reported to favour organic core, not glass
Powertech (PTI)	510 × 515 mm	FOPLP since 2019; ~90 % yield	Pioneer; ~$1B PLP capex in 2026
ASE	600 × 600 mm	Fully automated HVM line by end-2026	FOCoS and FOCoS-Bridge, 310 × 310 platform
Innolux	700 × 700 mm	Converting display fabs	Chip-Last + TGV, HIPoS
SEMI standard	510 × 515 and 600 × 600	Two sizes specified	Mainstream, but not followed by everyone

TSMC evaluates two tracks

- Longtan pilot runs one line with global equipment vendors and one with Taiwanese makers
- Local suppliers are being qualified in parallel — pricing pressure

Where capacity sits

- Taiwan, Japan and China: 84.8 % of PLP capacity by 2030 (Counterpoint)
- Japan grows fastest on glass investment

No common standard yet: SCHMID lines run 100×100 to 700×700 mm and cover every size in the field.

Sources: Prismark / Counterpoint summary (Sep 2026); TSMC shareholder meeting 4 Jun 2026; ASE shareholder meeting 24 Jun 2026; Samsung at ASPS 2026; SEMI standard.

Market Outlook

Based on several Market Intelligence Provider and SCHMID internal assessment

PCB Market Forecast by Product Type (area, million m²)

Segment	2025E	2026F	2027F	2028F	2029F	2030F
Commodity	189	200	212	225	238	252
4–6 Layer	166	179	194	209	226	244
8–16 Layer	26	28	31	34	38	42
18+ Layers	3	4	5	6	8	10
HDI	26	29	33	37	41	46
Package Substrate	15	17	20	23	26	30
Flex	66	70	73	77	81	85
Total PCB	**491**	**528**	**568**	**611**	**658**	**709**

yoy growth rates	2025E	2026F	2027F	2028F	2029F	2030F
Commodity		6%	6%	6%	6%	6%
4–6 Layer		8%	8%	8%	8%	8%
8–16 Layer		10%	10%	10%	10%	10%
18+ Layers		28%	28%	28%	28%	28%
HDI		12%	12%	12%	12%	12%
Package Substrate		15%	15%	15%	15%	15%
Flex		5%	5%	5%	5%	5%
Total PCB		**7%**	**8%**	**8%**	**8%**	**8%**

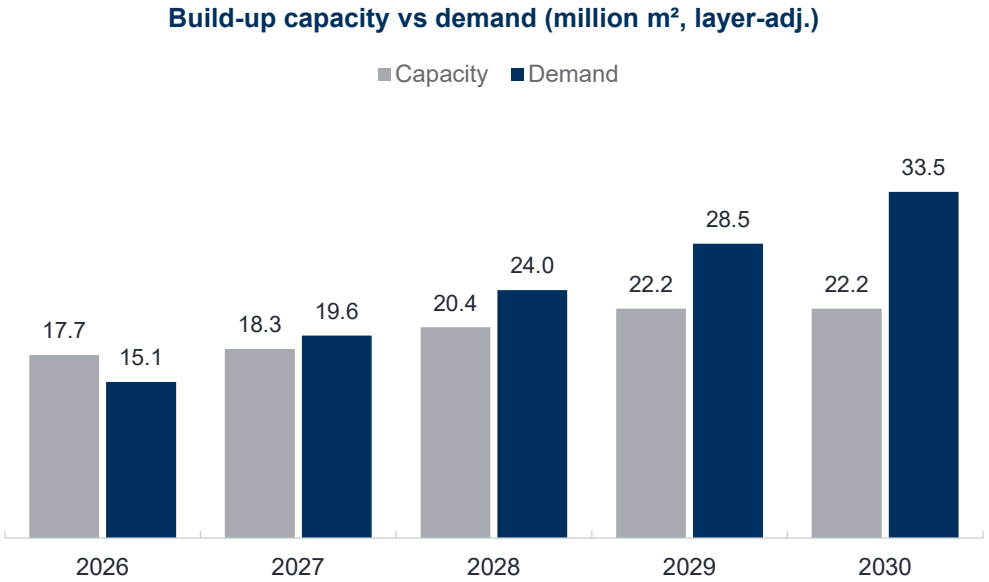
- **Overall, the market is projected to grow at a CAGR of 8%**
- Strongest growth is expected in the **18+ multilayer PCB** – mainly driven by AI Server Board demands.
  Some expect AI-Server Boards to account to 10% of all PCB area by 2030.
- **Package Substrates** rebound strongly at a CAGR of about 15%

These high growth segments are „Yield sensitive“ as the most demanding layer (mSAP or SAP) are done at the end of the build up process on top of the ML-PCB. Thus, SCHMID is the preferred Equipment and Solution provider.

Sources: TechSearch 2026, Prismark 2026, SCHMID research

FCBGA Substrate capacity falls short from 2027

Substrate manufacturer trends — supply & demand



+20 % substrate prices so far, still rising

$1B per fully automated build-up line (excl. building) for 0.6 – 1.0 million m^2 p.a. depending on layer count

32+ wk lead time for T-Glass cloth (Nittobo); eases 2027, short again from 2029

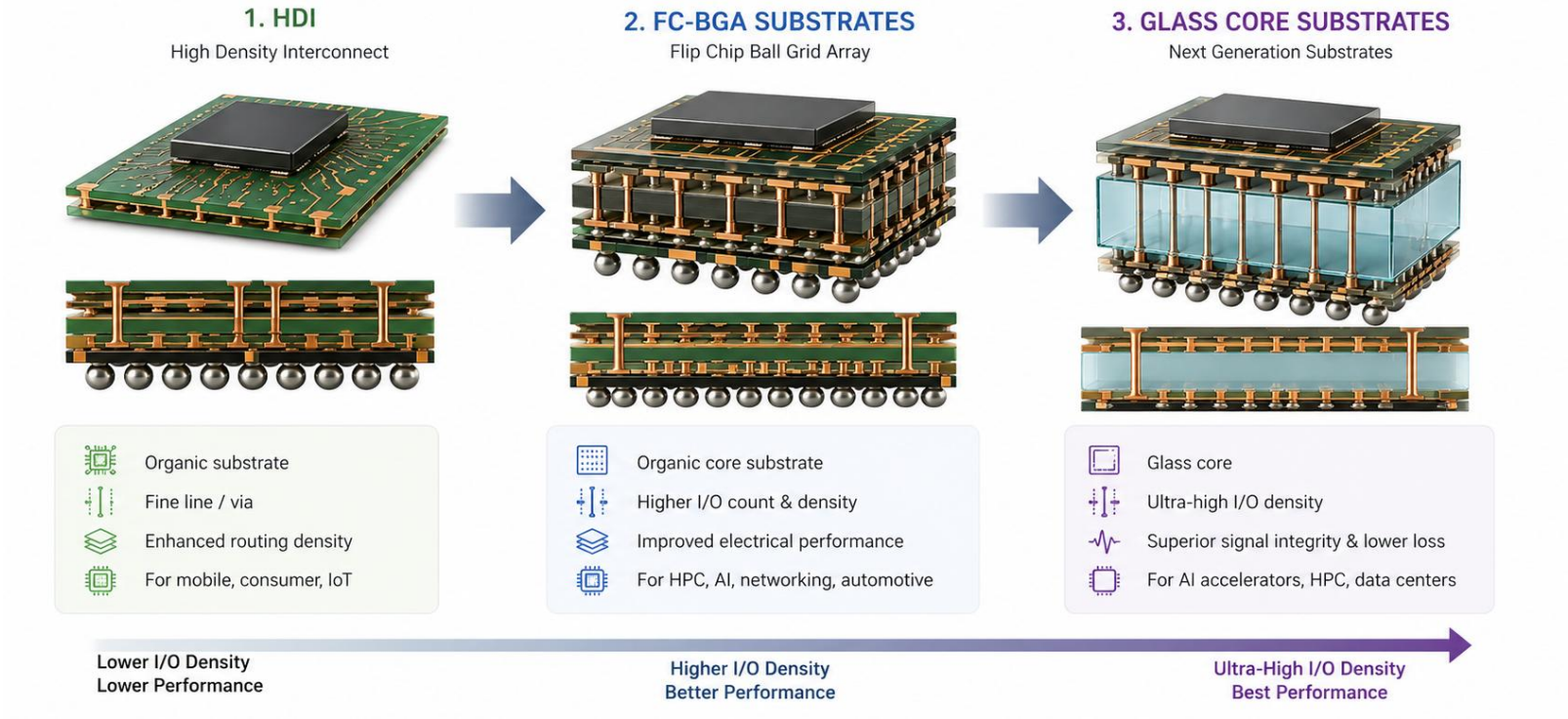
7–34 % ABF supply gap in 2027 (broker range)

Makers only add capacity against customer commitments (LTAs) → long-lead tool orders are being pulled in for 2027–28 lines.

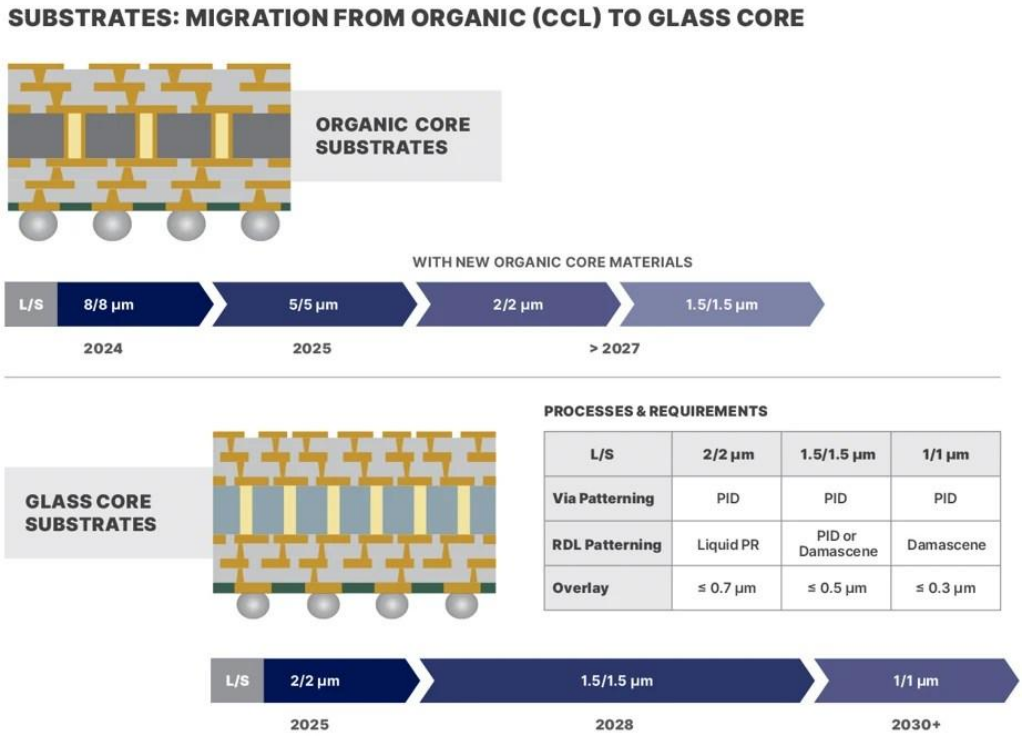
Sources: TechSearch International, Advanced Packaging Update Vol. 2 (July 2026) (Table 3.1, §3.3.1); DigiTimes 20 Apr 2026; broker estimates via Goldman Sachs/BofA/Fubon/Counterpoint (secondary).

Glass Core Substrates

The Evolution of Boards



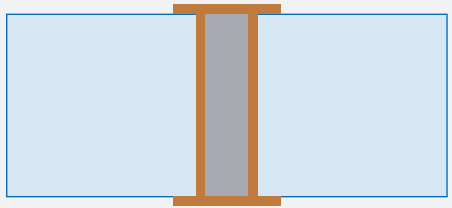
Organic Core and Glass Core



- Organic Core Substrates are the major Substrate category to date.
- With increasing miniaturization requirements to sub 5µm, the SCHMID ET Process will be needed.
- TGV (Through Glass Via) are necessary for increasing the density of the vertical Core connections.
- SCHMID TGV Processes, SCHMID bottom to top plating and the SCHMID ET Processes are paramount for realizing this products at best production Yields.

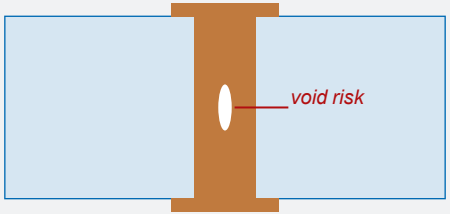
TGV metallization is the hurdle — and SCHMID's differentiator

Conformal liner + plug



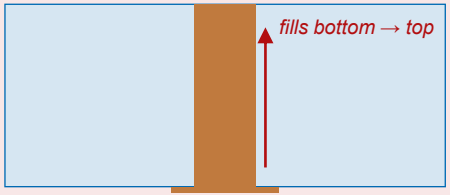
+ Low Cu volume → low stress in glass; RF-friendly
− Extra polymer plug step; higher via resistance

Butterfly / bridge fill



+ Standard ECD on a sputtered seed
− Void risk rises with aspect ratio: SEMCO void-free only to AR 6, <3 % voids at AR 8
− Seed coverage in deep vias = #1 industry hurdle

SCHMID seed-less bottom-up fill



+ Fills from the closed bottom: no void trap, little overburden, fewer steps, low CoO
+ Shown: 10–80 µm vias, AR 5:1–50:1, 0.4–1.1 mm glass; no cracks after 100 cycles −50/+180 °C and 3× reflow

SCHMID's position: the integrated TGV wet front-end at high aspect ratio (etch → clean → fill).

Sources: TechSearch International, Advanced Packaging Update Vol. 2 (July 2026) (SEMCO, Absolics, Planoptik, SCHMID data); DigiTimes 11 Sep 2026; SCHMID press release 12 Dec 2024. Schematic, not to scale.

Our full integrated Approach for Advanced packaging

Touch free combined with optimized Clean Room Concepts for HVM

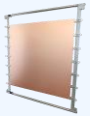
Handling & Automation



EFEM Solutions



Automation, Intralogistics



Panel in frame

Touch-Free Transport

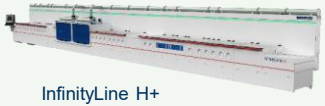
Wet Tools



InfinityLine V+



InfinityLine C+



InfinityLine H+

Bond, Cleaning, Development, Flash Etching, Stripping

Plasma Process



PlasmaLine D



PlasmaLine S

Sputtering, ICP Etching

Plating



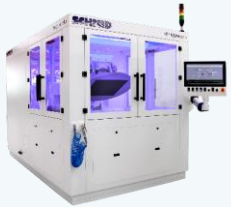
InfinityLine P+



QuantumLine P+

Cu Plating, TGV Filling

Planarization



InfinityLine L+ (CMP)

Surface Leveling

Compatible with

GLASS INTERPOSERS | ABF SUBSTRATES | ADVANCED PACKAGING | PANEL LEVEL PACKAGING

Key messages for today

Executive summary

1. **PLP is emerging, not mature.** Yole's $160M → >$650M (2024–30) is market revenue, not equipment — and AST, SpaceX and Rapidus are not in it. Volume from end-2026 (ASE), 2027–28 (PTI, TSMC).

2. **Panel plating is consolidating.** AMAT (NEXX) and Lam (Semsysco) now cover large-panel ECD.
Our edge sits at: TGV etch → clean → seed-less bottom-up fill.

3. **2026–28 is an organic ABF capex cycle.** Build-up capacity falls short from 2027; Unimicron, SEMCO, AT&S, Ibiden and Zhen Ding are pulling long-lead tools in now.

4. **Glass core slips, glass interposer rises.** Absolics, SEMCO, LG Innotek and Unimicron slipped to 2027–2030, while TSMC CoPoS, Rapidus and China accelerate. Reliability is paramount.

Sources: see following slides and appendix. Web research as of 22 Sep 2026; TechSearch International, Advanced Packaging Update Vol. 2 (July 2026).