HF-PASTE · Solder paste and inspection

Print it. Check it. Then move on.

The paste module is where a HyprFab board starts. Solder paste is printed and the print is checked before place ever sees the board.



Render of the Paste module design model (build123d, ray-traced in Blender). Not a photograph; the interior is simplified.

What the module does

- **No stencil**
  Paste goes on pad by pad, planned from the board's CAD data. There is no stencil to order.
- **Closed-loop dispensing**
  A positive-displacement dispenser pushes paste from a 3 cc cartridge under force control, with a temperature-controlled barrel.
- **Inspection on the same tool**
  A 3D inspection head scans the bare board, then the pasted board. The difference gives the paste volume on every pad; short deposits are topped up.
- **A checked board for place**
  A bad print does not travel on to place. The paste record and a height map go downstream with the board.
- **Tracked cartridges**
  Each cartridge carries a DataMatrix code with alloy, lot and expiry.
- **Inspection for stencil-printed boards**
  An inspection-only pass is planned for boards printed with a stencil.

Where it sits in the line

Paste
The board enters the first module. Paste is put on and checked.

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Place × N
Components go on the pasted board.

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Reflow
The board is soldered, then it leaves the line.

Status

HyprFab is in design (Phase 0: design model, simulator, test rigs). No module has been fabricated, measured or certified. The values in this brief are design targets. They become specifications only once they are measured on the reference board.

Pre-release information. Design targets, not measured performance. Subject to change without notice. Renders show the design model, not a product. HyprFab is a working name. © 2026 Newmatik GmbH, Am Markt 1, 55619 Hennweiler, Germany.

Design targets for version 1

Measured on the HyprFab reference board once hardware exists: 100 × 80 mm, 150 parts of 15 types, about 1,000 deposits, finest pitch 0.5 mm. Until then each value is a target.

PARAMETER	DESIGN TARGET	NOTE
Dispense rate	**≥ 10,000 dots/h**	15 nl dots at 1.0 mm pitch, 27 gauge tip.
Time per reference board	**5 min**	Paste and inspection together.
Dot placement	**±50 µm at 3σ**	Position of each deposit on its pad.
Dot volume spread	**CV ≤ 10 %**	Coefficient of variation of the dot volume.
Smallest pad, finest pitch	**0402, 0.5 mm pitch**	0.5 mm QFN and 0.8 mm BGA.
Paste inspection	**3D, before and after**	2D inspection is the documented fallback for version 1.0.
Pastes to qualify	**SAC305, SnBi**	Type 4 and type 5 dispensing pastes. Qualification is planned.
Cartridge and tips	**3 cc, 22 to 30 gauge**	One tip size per job.
Board size	**50 × 50 to 300 × 250 mm**	0.6 to 3.2 mm thick. Smaller boards ride on a carrier.
Rated input	**≤ 300 W, single-phase**	Design limit for the module.

Built on the common platform

- **One chassis**
  Paste and place are the same machine with different tools. Reflow shares the chassis, controller and conveyor.
- **Open board hand-over**
  Modules pass boards and board data with IPC-HERMES-9852, the open line standard.
- **One record per part**
  The paste volume on each pad starts a record that follows the part through placement and reflow.

Not yet proven

- Dot volume spread on very small dots. A dispensing test rig is the gate.
- 3D inspection height repeatability. If it misses its gate, version 1.0 ships with 2D inspection (presence, area and offset, no volume) and the 3D head follows as an upgrade.
- Barrel temperature control at the top of the ambient range.

Ask about a paste module.

Write to Newmatik. Tell us what you build and we will reply.

hyprfab.com/contact
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Sources: HyprFab engineering repository (newmatik/hyprfab, revision 0d65461): interface contract HLI 0.5 (draft), master plan v0.2, Paste module design v0.1. **Pre-release information.** Design targets, not measured performance. Subject to change. © 2026 Newmatik GmbH.