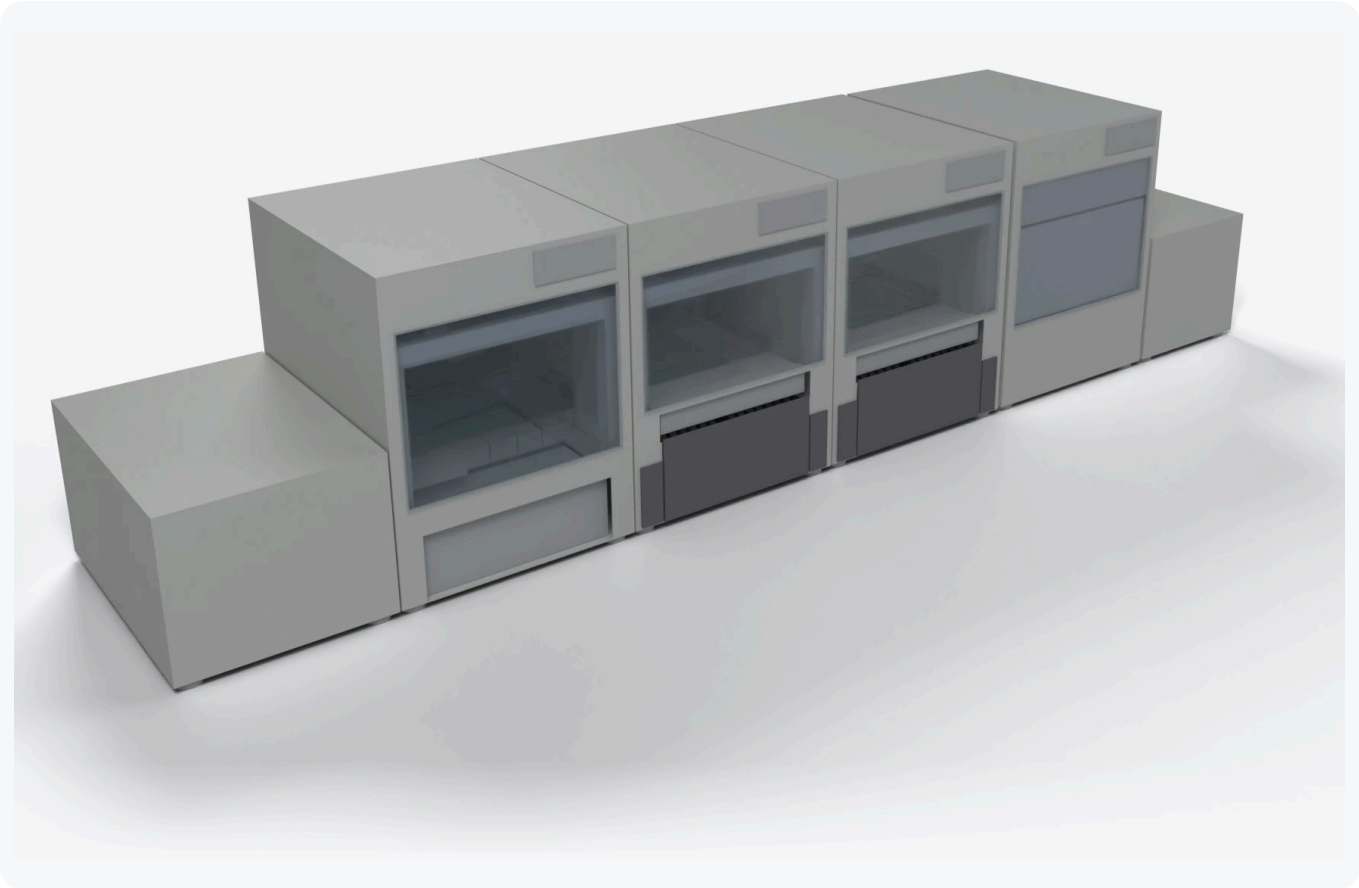
Surface-mount prototyping

Paste, place and reflow.

HyprFab is a modular enclosed line for SMT prototypes. Each station is its own module. Boards move through them on one conveyor.



A HyprFab line from the design model: entry cap, Paste, two Place modules, Reflow and exit cap on one conveyor. Rendered from the build123d model in Blender, not a photograph.

Modules that chain

Paste, place and reflow are separate modules, built to stand in a row. A short line is paste, one place module and reflow.

One conveyor

The board rides the same conveyor through every module. It does not hop between machines.

Enclosed

Each module is enclosed. The board stays inside the line from paste through reflow. End caps close the line at both ends.

Status

HyprFab is in design (Phase 0: design model, simulator, test rigs). No module has been fabricated, measured or certified. Every value in this overview is a design target. It becomes a specification only once it is 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.

How a line is built

Keep paste and reflow where they are. Put more place modules between them. Every line starts and ends with a cap.

Entry cap
Boards are loaded here.

→

Paste
Paste without a stencil, then inspection.

→

Place × N
Two nozzles, 30 smart feeder slots each.

→

Reflow
Batch chamber in the line, exit inspection.

→

Exit cap
Soldered boards come out.

The modules

MODULE	JOB	KEY DESIGN TARGETS (VERSION 1)
Paste	Stencil-free solder paste and paste inspection, with 3D inspection and a warp map as the target.	**≥ 10,000 dots/h · ±50 µm at 3σ · volume CV ≤ 10 % · 0402 pads**
Place	Pick and place with a dual-nozzle head and vision. Chains when the board needs more.	**1,500 CPH · ±50 µm at 3σ · 0402 to 30 × 30 mm · 30 feeder slots**
Reflow	In-line soldering in an enclosed batch chamber with board-temperature control.	**SAC305 ≤ 6 min · peak ≤ 260 °C · ±5 K on the board · cooling ≥ 3 °C/s**
F8 feeder	Smart 8 mm tape feeder with its own controller, identity plate and closed-loop drive.	**7″ reel or cut strip · verified by camera before the first pick**

Shared by every module

- **One chassis**
  Paste, place and reflow share the same sheet-metal chassis, conveyor and controller. The process inside changes; the enclosure and the docking faces do not.
- **Boards from 50 × 50 to 300 × 250 mm**
  0.6 to 3.2 mm thick. Smaller and odd-shaped boards ride on a carrier.
- **Open board hand-over**
  Boards and their data pass between modules with IPC-HERMES-9852.
- **One record per part**
  Paste volume, placement image and reflow profile end up in one record for each reference designator.

The planned line family

- Up to one Paste, four Place and two Reflow modules in a line.
- At most six process modules between the two caps.
- Any single module can also run on its own between an entry and an exit cap.
- The line software commissions only the declared configurations.

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Two planned configurations

Two starting points are planned. Their exact contents and prices are not final, and are not published.

Starter Line

Entry cap | Paste | Place | Reflow | Exit cap

Plus F8 feeders. The full stencil-free line: from CAD data to a soldered board without ordering a stencil.

Place & Reflow Kit

Entry cap | Place | Reflow | Exit cap

Plus F8 feeders. For boards that are printed with a stencil or arrive pasted. A Paste module can join the line later.

Line design targets

On the HyprFab reference board: 100 × 80 mm, 150 parts of 15 types, smallest part 0402. Targets for the three-module Starter Line; the Kit shares the unattended and yield targets.

6 min
Takt per board on a three-module line.

45 min
From job import to the first soldered board, with known parts.

4 h
Unattended: 40 boards in a row, with the magazine loader and unloader caps.

95 %
First-pass yield, judged by inspection and electrical test.

What runs the line

- **Job preparation from CAD**
  Imports KiCad, Gerber X3, IPC-2581, ODB++ or a placement file with BOM. Plans paste, feeders, placements and the reflow profile, and simulates the plan before a board is run.
- **Local first**
  Designed to run without an account, a cloud service or an internet connection.
- **Agents with limits**
  An agent interface (Model Context Protocol) lets AI assistants prepare and monitor jobs. Starting a run or approving a reflow profile still needs a person.

Not yet proven

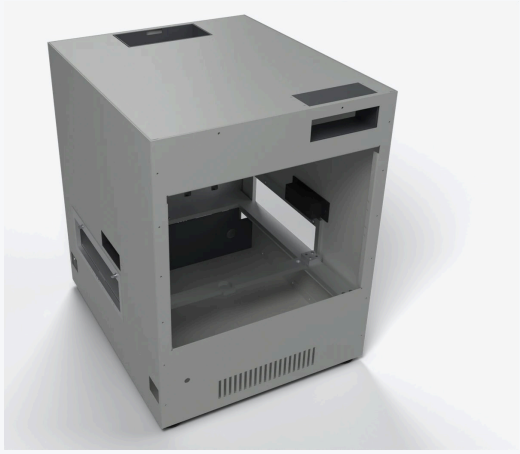
- The 6 min takt has no margin at the planned placement rate until a board is run.
- Four unattended hours need the magazine caps; the standard caps hold one or two boards.
- Inspection alone does not prove electrical function; the yield target counts electrical test.

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Designed as code

HyprFab is in design. No module has been fabricated yet. What exists is a model: the mechanics in build123d, the electronics in KiCad 10, every part built, checked and rendered by the project's CI.

- **Mechanics in build123d**
  Every part, assembly and sheet-metal flat pattern is Python. A change is a diff that can be read and reviewed, not a binary file.
- **Electronics in KiCad 10**
  The boards follow the same rule: KiCad projects in the repository, with electrical and design rule checks as the gate.
- **Built and checked in CI**
  Each change rebuilds the geometry, tests it against the interface contract and renders it. The pictures in this overview come from that pipeline, ray-traced in Blender.
- **Open hardware, planned**
  The hardware is to be published under CERN-OHL-W-2.0, the software under Apache-2.0 and MPL-2.0. These licences are proposed and not yet in force; the repository stays private until they are.



The module chassis from the design model: an open sheet-metal enclosure without door, gantry or conveyor. Not a photograph.

Where the project stands

Now · Phase 0
Design model, simulator and seven planned test rigs for the riskiest parts: gantry, motion timing, dispensing, inspection optics, reflow convection, feeder and board hand-over.

→

Next · Prototypes
Prototype modules, first measured against the targets in this overview on the reference board.

→

Then · Product
Conformity assessment and release. No dates are announced.

A target in this overview becomes a specification only when its gate passes: for example, the placement rate when it is measured on the reference board, the reflow cycle after the convection rig has confirmed the heat-transfer model.

Talk to us about a line.

HyprFab is a Newmatik project. Newmatik GmbH assembles SMT boards in Hennweiler and builds the software around that work. There is no shop on this site.

hyprfab.com/contact
service@newmatik.com

Sources: HyprFab engineering repository (newmatik/hyprfab, revision 0d65461): interface contract HLI 0.5 (draft), master plan v0.2, decision log, module designs v0.1; hyprfab.com. **Pre-release information.** Design targets, not measured performance. Subject to change. HyprFab is a working name.

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