HF-REFLOW · In-line reflow

Solder it on the line.

The reflow module is the last process station. The board comes in from place, is soldered, and leaves the line.



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

What the module does

- **A chamber in the line**
  The board stops in an enclosed chamber between two doors. Convection from above and below and infrared trim heat it; the same chamber cools it.
- **Controls the board, not just the air**
  The controller estimates the board temperature, plans the heat ahead, and learns from board to board within a lot. Profiles stay inside an approved envelope.
- **Inspection on the way out**
  Cameras at the exit scan the soldered board as it leaves the module.
- **Fume handling built in**
  A carbon and HEPA filter with pressure monitoring, and a port for ducted extraction, which is the baseline for version 1. Prepared for nitrogen.
- **Heat only with local consent**
  Hard-wired limits sit below all software. The cloud can never start a heater, and a remote heat-up needs local arming at the machine.

Where it sits in the line

Paste
Paste is put on the board and checked.

→

Place × N
Components go on the pasted board.

→

Reflow
The board arrives on the conveyor, is soldered, then 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 (100 × 80 mm, 150 parts) once hardware exists, after a convection test rig has confirmed the heat-transfer model. Until then each value is a target.

PARAMETER	DESIGN TARGET	NOTE
Cycle, SAC305	**≤ 6 min per board**	Lead-free standard alloy.
Cycle, SnBi	**≤ 4.5 min per board**	Low-temperature alloy.
Peak temperature	**≤ 260 °C**	Upper limit of the process profile.
Temperature spread on the board	**±5 K at peak**	On a 250 × 200 × 1.6 mm profiling board with 9 thermocouples.
Cooling rate	**3 to 6 °C/s**	Board centre, from peak to 150 °C.
Energy per board	**≤ 0.15 kWh**	Upper limit per board.
Board exit temperature	**≤ 80 °C**	Default; the board is cooled in the chamber.
Board size	**50 × 50 to 300 × 250 mm**	0.6 to 3.2 mm thick. Parts up to 15 mm tall on the bottom side for second-side runs.
Rated input	**≤ 4.2 kW, 3-phase**	16 A CEE inlet. A single-phase variant is rated ≤ 3.2 kW.

Built on the common platform

- **Same chassis, controller and conveyor**
  Reflow is its own enclosed module, the same idea as paste and place.
- **Open board hand-over**
  Boards and board data arrive with IPC-HERMES-9852, the open line standard.
- **A second oven when needed**
  The planned line family allows up to two reflow modules in one line.

Not yet proven

- The convection heat transfer is extrapolated. A convection test rig is the gate for the cycle time.
- Room recirculation without a duct is only an option after emissions have been measured.
- How a waiting board behaves in a line with two reflow modules.

Talk to us about a line.

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