RETROFIT THERMAL CONTROL

DEMEX

Thermal control for the machine you use.

Build stronger layer bonds with localized heat at the deposition interface. DEMEX brings LEAM thermal control to eligible existing extrusion AM platforms.

DEMEX installed on a robotic extrusion AM platform.

A retrofit built around your process

The package brings together the end effector, control cabinet, operator interface and connection set. Mounting hardware, safety glasses, consumables and installation instructions complete the setup; the chiller is an optional order item.

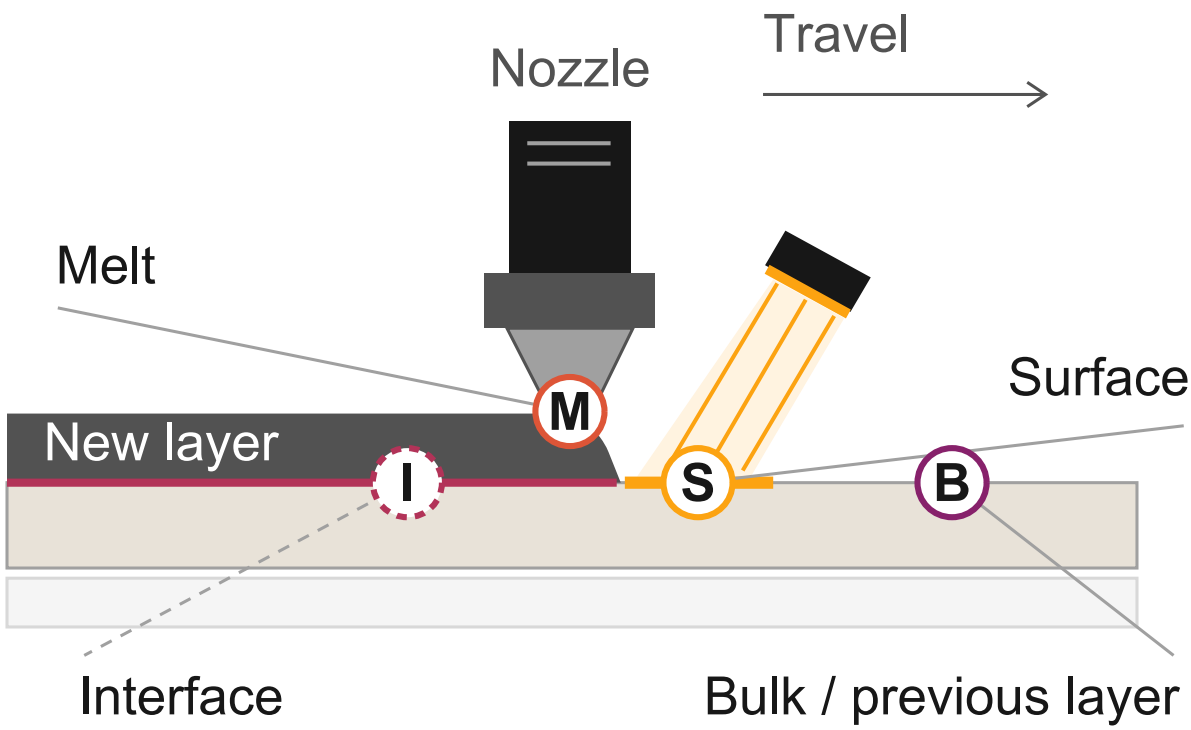
Start with the part and the machine.

We'll work through material, access, controller and cooling requirements with you.

AT THE DEPOSITION INTERFACE

Control the bonding surface. Keep the bulk stable.

The extruder setting alone does not define the conditions at the bond. DEMEX provides continuous, real-time readings and control of bulk and surface temperature.



M Melt temperature

Extruder setting

You control the melt through your extruder settings.

S Surface temperature

Live reading and LEAM control

LEAM heats a thin surface film in the heater spot while the bulk below stays stable.

B Bulk temperature

Live reading and LEAM control

LEAM controls the previous layer's temperature through cooling and changes in motion speed.

I Interface temperature

Between beads; not measurable

It results from the melt meeting the heated surface. Controlling that surface makes the bonding condition repeatable.

What arrives with DEMEX

A field-installable system for your existing extrusion platform, prepared for delivery on a standard Euro pallet.

PACKAGE ELEMENT	WHAT IT DOES
Control cabinet and HMI	Electrical cabinet with power distribution, LED controls, proportional air regulation, operator interface and integration logic.
DEMEX end effector	Ring assembly for sensing, localized LED heating and cooling at the extruder, supplied in a tough transport case.
Connection set	Power and Ethernet cables, cooling hoses, compressed-air line, chiller alarm cable and robot-side cable protection.
Mounting parts	Brackets and sheet-metal parts to attach the end effector to your extruder.
Cooling and fill materials	Optional chiller when ordered, plus distilled water and G12 coolant for the initial system fill.
Operator accessories	Four safety glasses, cabinet mouse and keyboard, plus installation instructions.

For self-installation, plan for normal workshop tools, including Allen keys and wrenches. LEAM onsite installation can also be ordered.

Connect thermal control to your machine

Electrical cabinet with HMI touchscreen and front controls.

Building services

The cabinet receives electrical power and compressed air from the site.

Machine controller

Ethernet links the cabinet to the machine controller. OPC UA access is required; see the site checklist on page 6.

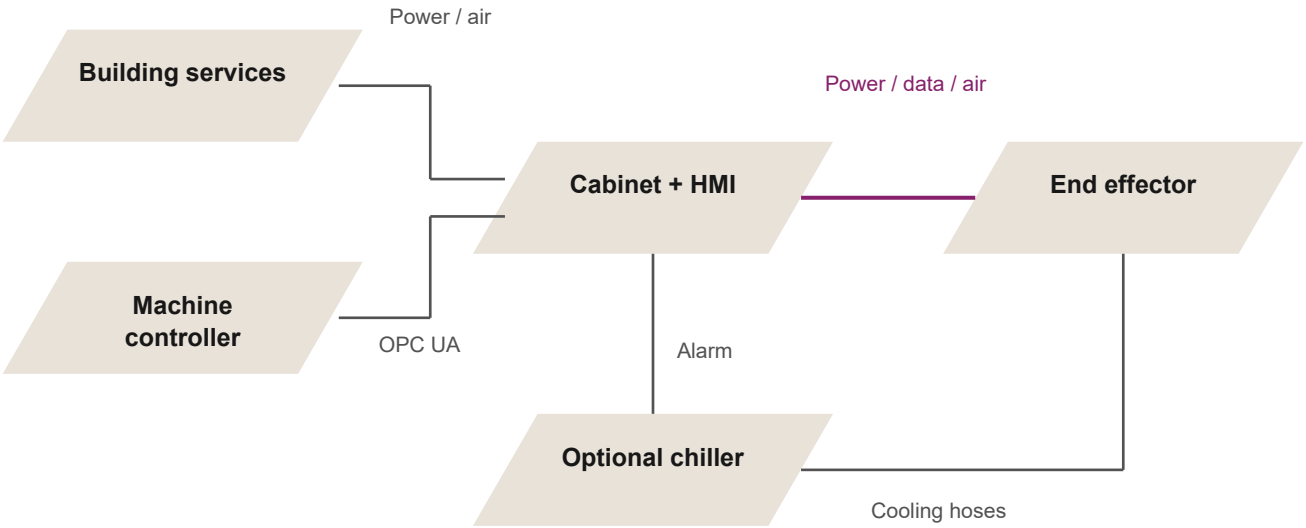
End effector

The cabinet supplies LED power, data and regulated compressed air to the process module.

Operator control

The HMI displays process and system information. Front controls include LED power-supply enable/disable buttons and the main switch.

THE CONNECTIONS AT A GLANCE



At the print head

The end-effector ring mounts around the extruder to act on the surface where the next layer joins.

Senses the process

Thermal sensing near extrusion supports the control system and the operator interface.

Applies local heat

LED power heats the deposition interface. Ethernet connects the end-effector electronics to the cabinet.

Keeps hardware cool

Chiller hoses cool LEDs and electronics. Regulated air can help part stability where retained heat is limiting the print.

A separate cooling loop for the end effector

Optional CW-6000 class chiller

Normal 230 V plug and a 10 m power cable.

Hoses and alarm connection

Two cooling hoses: 25 m standard or 50 m optional. A 10 m two-lead, normally closed alarm cable links the chiller to the cabinet.

Initial coolant fill

Target fill: 15 L distilled water plus 5 L G12 coolant. Fill materials are supplied with the system.

Plan the connections before installation

Your site supplies utilities, controller access and installation space. The package supplies the connection set.

ROUTING LENGTHS

CONNECTION	LENGTH	DETAIL
Cabinet / chiller to end effector	**25 m** standard **50 m** optional	LED power, Ethernet data, compressed air and the two cooling hoses.
Cabinet to machine controller	**25 m**	Ethernet connection for OPC UA access.
Building and chiller leads	**10 m** each	Cabinet power, chiller power, chiller alarm signal and building compressed-air feed.
Robot-side protection	**Last 2.5 m**	igus triflex R-TRL, article TRL.60.087.0, protects the exposed route near the moving tool.

YOUR SITE PROVIDES

REQUIREMENT	PLANNING DETAIL
400 V / 16 A	Overall cabinet power supply, with the 10 m cabinet lead.
6 bar compressed air	Building-air connection for a 6 mm tube or hose, with a 10 m feed hose. The cabinet regulates air for process cooling.
230 V socket	Required when the optional chiller is included.
Machine OPC UA access	An available server, provision by the OEM, or LEAM OPC UA License & Configuration when the required access rights can be provided.
Normal shop tools	Allen keys and wrenches for self-installation. LEAM brings its tools when onsite installation is ordered.

From installation to a controlled print

Choose self-installation with instructions, or order LEAM onsite installation and operator onboarding.

THE INSTALLATION SEQUENCE

01 **Position cabinet and chiller**

Place them near utilities and the machine access point.

02 **Mount the end effector**

Use the supplied brackets and sheet-metal parts on the extruder.

03 **Route cables and hoses**

Plan the 25 m standard or 50 m optional route to the moving tool.

04 **Confirm OPC UA access**

Connect to the machine controller and configure the server.

05 **Fill and verify**

Fill the cooling circuit and test alarms, HMI, sensing and LED supply controls before the first print.

LIGHT SAFETY

Prepare the cell before operation

Four safety glasses are included. Your machine cell still needs a light-safety concept and screening around the visible LED process.

Sheet panels
PLEXIGLAS GS Umbra 7C27 is the recommended sheet option. Panels can fit an existing fence where geometry and access allow.

Flexible layouts
Welding curtains are an option for modular or temporary boundaries. LEAM can advise on a custom shielding solution.

Self-installation
Follow the instructions with ordinary tools. No specialized LEAM-only tools are expected.

LEAM onsite installation
Installation, integration checks, functional testing and operator onboarding at your site.

Let’s work through your installation.

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