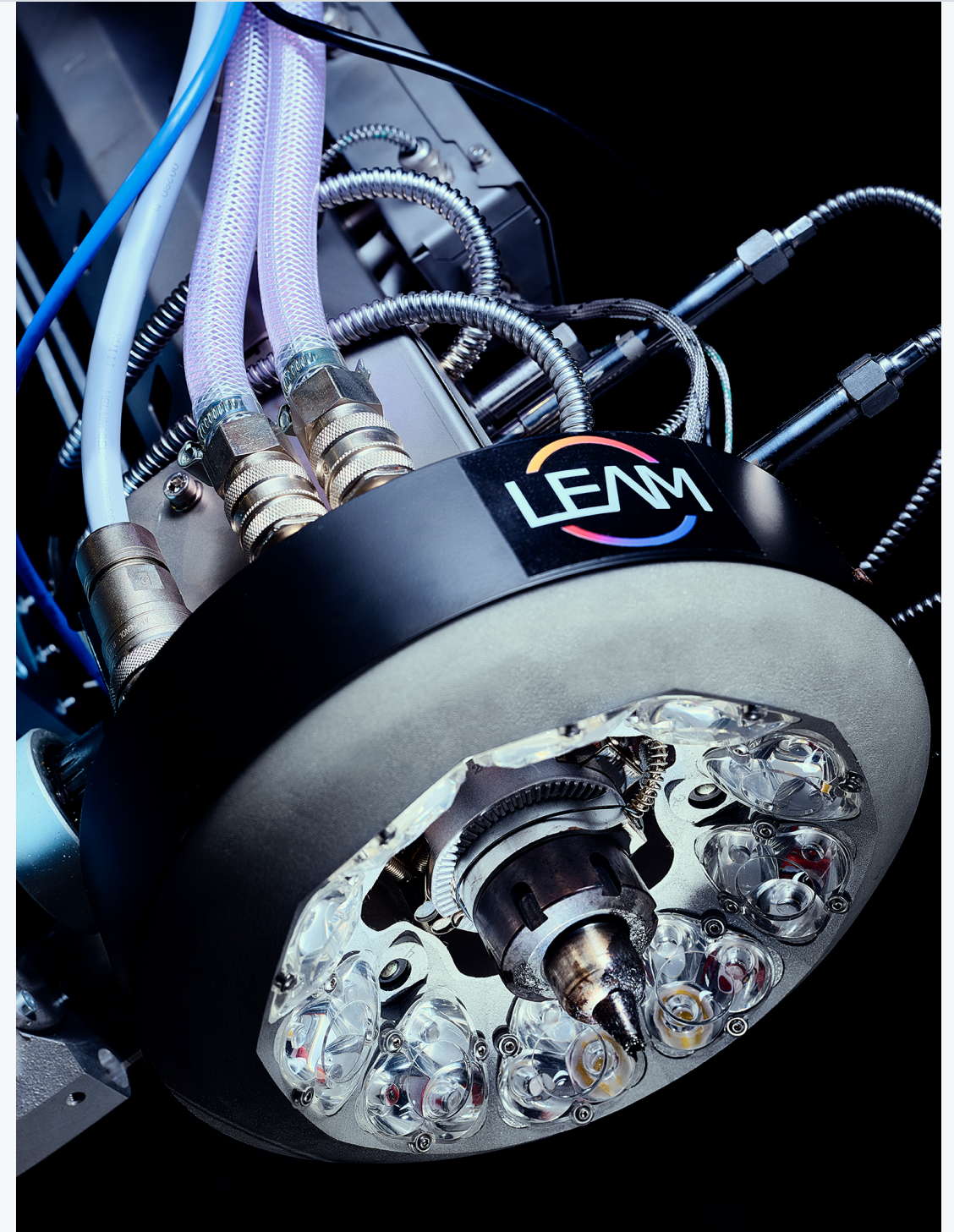


● RETROFIT THERMAL CONTROL PACKAGE

# DEMEX Retrofit System Scope

A complete retrofit package for localized thermal process control: cabinet and HMI, DEMEX end effector, connection set, optional chiller, consumables, safety glasses, and mounting hardware for eligible extrusion AM platforms.



Operational DEMEX end effector installed around an extruder.



Standalone LEAM system prepared for delivery on a standard Euro pallet.

#### ● PACKAGE CONTENTS

## DEMEX ships as a complete field-installable retrofit kit.

The core product is not just the end effector. You receive the control cabinet, operator interface, connection hardware, mounting parts, cooling path, safety accessories, and installation instructions needed to add localized thermal control to your machine.

<b>CONTROL</b>	<b>Electrical cabinet with HMI</b> Power distribution, LED controls, proportional air regulation, HMI, and integration logic.
<b>TOOL</b>	<b>DEMEX end effector in tough case</b> Ring assembly for sensing, localized heating, and cooling at the extruder.
<b>CONNECTIONS</b>	<b>Cables, hoses, and cable protection</b> Power, data, cooling, compressed air, chiller alarm signal, and robot-side protection.
<b>MOUNTING</b>	<b>Brackets and sheet-metal parts</b> Mechanical adapter set for mounting the end effector on your extruder.
<b>COOLING</b>	<b>Optional chiller and coolant fill</b> Cooling unit when ordered, plus distilled water and G12 coolant for the system fill.
<b>OPERATION</b>	<b>Four safety glasses, mouse, keyboard</b> Operator accessories for the cabinet and visible LED process area.

**CONTROL CABINET & HMI**

# The cabinet connects utilities, machine feedback, the end effector, and the optional cooling loop.



Electrical cabinet with HMI touchscreen and front controls.

**Building services**

Receives 400 V / 16 A power and pressurized air from the building. Building interface supplies 6 bar for the 6 mm tube/hose. Power and air supply cable/hose lengths are 10 m.

**Machine controller**

Connects by Ethernet to the machine controller. OPC UA server must already be installed, be provided by the OEM, or be ordered from LEAM as OPC UA License & Configuration if the required access rights can be provided. Standard data cable length is 25 m.

**End effector**

Supplies LED power, Ethernet data, and regulated pressurized air for cooling when retained heat limits part stability. End-effector routing is 25 m standard or 50 m optional.

**Operator control**

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

● CONNECTION SET

# System interfaces and routing lengths for a retrofit installation.

## 25 m standard

Cables and hoses from cabinet and chiller to the end effector.

## 50 m optional

Upgrade for larger cells when the cabinet/chiller-to-tool route needs more reach.

## 25 m data

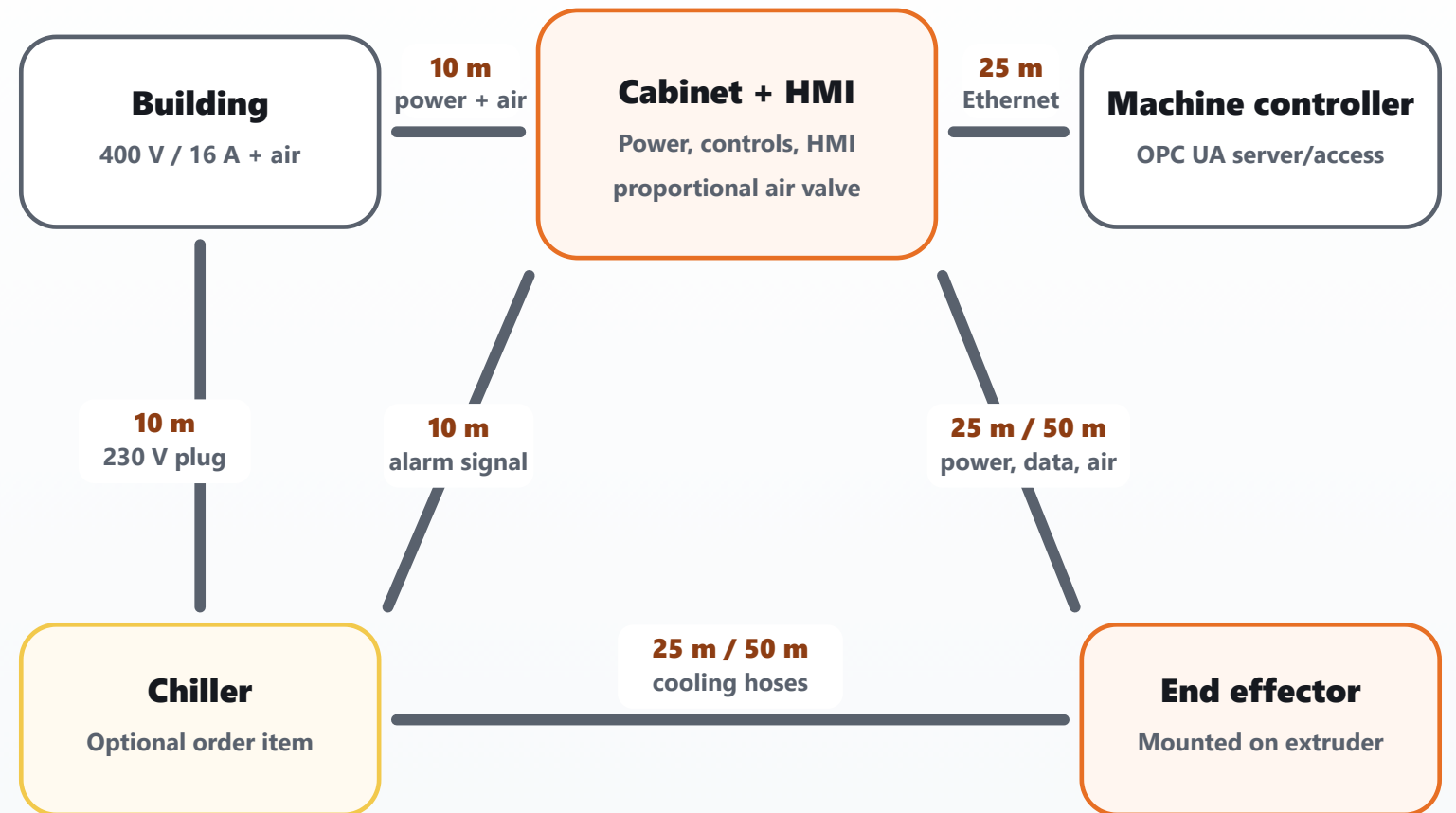
Ethernet connection from cabinet to the machine controller for OPC UA access.

## 10 m fixed leads

Cabinet power, chiller power, chiller alarm signal, and building compressed-air feed.

## Last 2.5 m protected

The exposed robot-side section uses igus triflex R-TRL cable protection, article TRL.60.087.0, on the last 2.5 m near the moving tool.



## ● PROCESS MODULE

## The end-effector ring mounts around the extruder to control the heated interface zone.

Once installed, the end effector is the active process module: it measures thermal state near the extrusion process, applies localized LED heating near the deposition interface, and receives cooling media for LEDs, electronics, and part-cooling airflow.

**Measures**

Thermal sensing close to the extrusion process supports the HMI, process visibility, and control system.

**Heats**

LED power is routed to the end effector for localized heating near the deposition interface.

**Communicates**

Ethernet data transfer connects the end-effector electronics with the cabinet.

**Cools**

Chiller hoses cool LEDs and electronics; regulated pressurized air can support part stability when retained heat is the limit.



DEMEX end effector packed in its tough transport case.

The package includes the required brackets and sheet-metal mounting parts to fit the end effector to your extruder. For self-installation, you only need normal shop tools.

## COOLING SYSTEM

# The optional chiller provides a standardized cooling loop for the end effector.



CW-6000 class cooling system used in the LEAM product package when ordered.

### Building power

The chiller connects to the building with a normal 230 V plug. The chiller power cable is 10 m.

### Cooling hoses

Two cooling hoses run from the chiller to the end effector. Standard route length is 25 m; optional route length is 50 m.

### Alarm signal

The chiller connects to the cabinet through a 10 m two-lead normally closed alarm signal cable.

### Fill materials

The box contains distilled water and G12 coolant for the initial fill. Target mix: 15 L distilled water plus 5 L G12 coolant.

**● INSTALLATION KIT**

# The package includes the mechanical and routing parts needed for normal field installation.

You can install the system from instructions using ordinary workshop tools, or order LEAM onsite installation service.

Self-installation tooling: no specialized tools are expected, only a set of Allen keys and wrenches plus your normal site tools.

**1****Brackets and sheet-metal parts**

Mounting parts needed to attach the end effector to the extruder.

**2****End-effector power cable**

Power cable from the cabinet to the end effector.

**3****Ethernet data cables**

End-effector data transfer plus machine-controller connection for OPC UA access.

**4****Cooling hoses and compressed-air line**

Cooling loop to the end effector and regulated pressurized air for retained-heat management.

**5****Robot-side cable protection**

Cable protection on the last 2.5 m where the exposed route sits on the robot side.

**6****Accessories**

Four operator safety glasses, cabinet mouse, and cabinet keyboard.

## ● SITE PREREQUISITES

# Your order includes the LEAM system and connection set; your site provides utilities, controller access, and installation space.

YOU PROVIDE	STANDARD LENGTH	PURPOSE
<b>400 V / 16 A</b>	10 m cabinet power cable	Overall cabinet power supply.
<b>Pressurized air</b>	10 m feed hose	Building air supply into the cabinet; the proportional valve regulates air sent to the end effector for process cooling.
<b>Machine OPC UA access</b>	25 m Ethernet data cable	OPC UA must already be available, be made available by the OEM, or be ordered from LEAM as OPC UA License & Configuration if the required access rights can be provided.
<b>230 V socket</b>	10 m chiller power cable	Required when the chiller is part of the order.
<b>Normal shop tools</b>	Self-installation only	For self-installation, you provide Allen keys and wrenches. If you order LEAM onsite installation, LEAM brings its own installation tools.

**LIGHT SAFETY PREPARATION**

# Add a light-safety screen around the visible LED process before operation.

The standalone package includes four operator safety glasses. Your machine cell still needs a light-safety concept for normal operation.

**Recommended sheet variant**

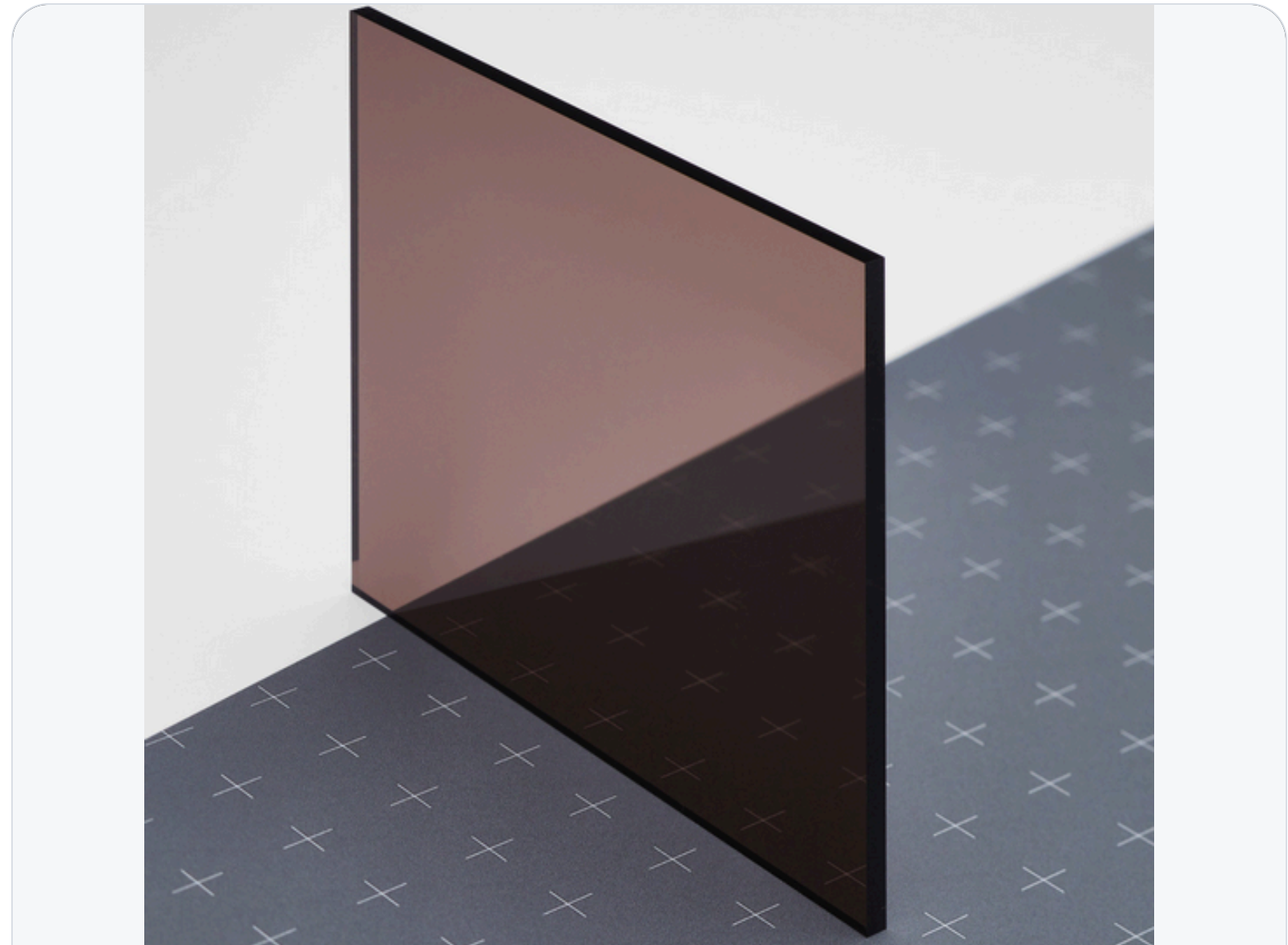
For sheet-panel shielding, LEAM recommends PLEXIGLAS GS Umbra 7C27 as the standard sheet option.

**Self-install option**

You can install sheet panels in your existing machine fence when the geometry and access points are straightforward.

**Flexible cell option**

Welding curtains can be used where a modular or temporary light-safety boundary fits the machine better.



PLEXIGLAS GS Umbra 7C27 sheet sample for visible-light reduction around the process area.

**LEAM advisory**

LEAM can advise on a machine-specific light-safety concept and a custom solution when standard panels or curtains do not fit.

**Operator safety glasses**

Four safety glasses are included with the standalone system package.



DEMEX in operation after installation: the package is designed to support application-fit review and first controlled print trials.

#### DEPLOYMENT OPTIONS

## Designed to move from installation to controlled application-fit trials.

1

### Position cabinet and chiller

Roll the cabinet and chiller near services and machine access.

2

### Mount end effector

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

3

### Route cables and hoses

25 m standard or 50 m optional to the moving end effector.

4

### Confirm OPC UA access

Connect cabinet to machine controller and configure the server.

5

### Fill, verify, and print

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

### Self-install path

You install with instructions and ordinary tools. No specialized LEAM-only tooling is expected.

### LEAM onsite path

LEAM can perform installation, integration checks, functional testing, and operator onboarding on site.

### System value

You receive an installable thermal-control system, not a loose component bundle.