SHIFT YOUR STRATEGY

GLASS PROCESSING AUTOMATION

GPAD

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Nashville
glass.org

Optimal lami-line design to meet both your current and future needs

Johnathan Paredes | Bovone North America

WHAT IS LAMINATED GLASS

Laminated glass is a type of safety glass consisting of **two or more layers** of glass with one or more thin **polymer interlayers between them** which prevent the glass from breaking into large sharp pieces.

The **interlayer** is typically of polyvinyl butyral (**PVB**), **sentryglas**, ethylene-vinyl acetate (**EVA**), ionoplast polymers, cast in place (**CIP**) liquid resin, or thermoplastic polyurethane (**TPU**).

WHY IS LAMINATED GLASS IMPORTANT?

1. Increased safety

Glass strength is incredibly improved making it much more difficult to break, and if so, glass will stay intact preventing from injuries

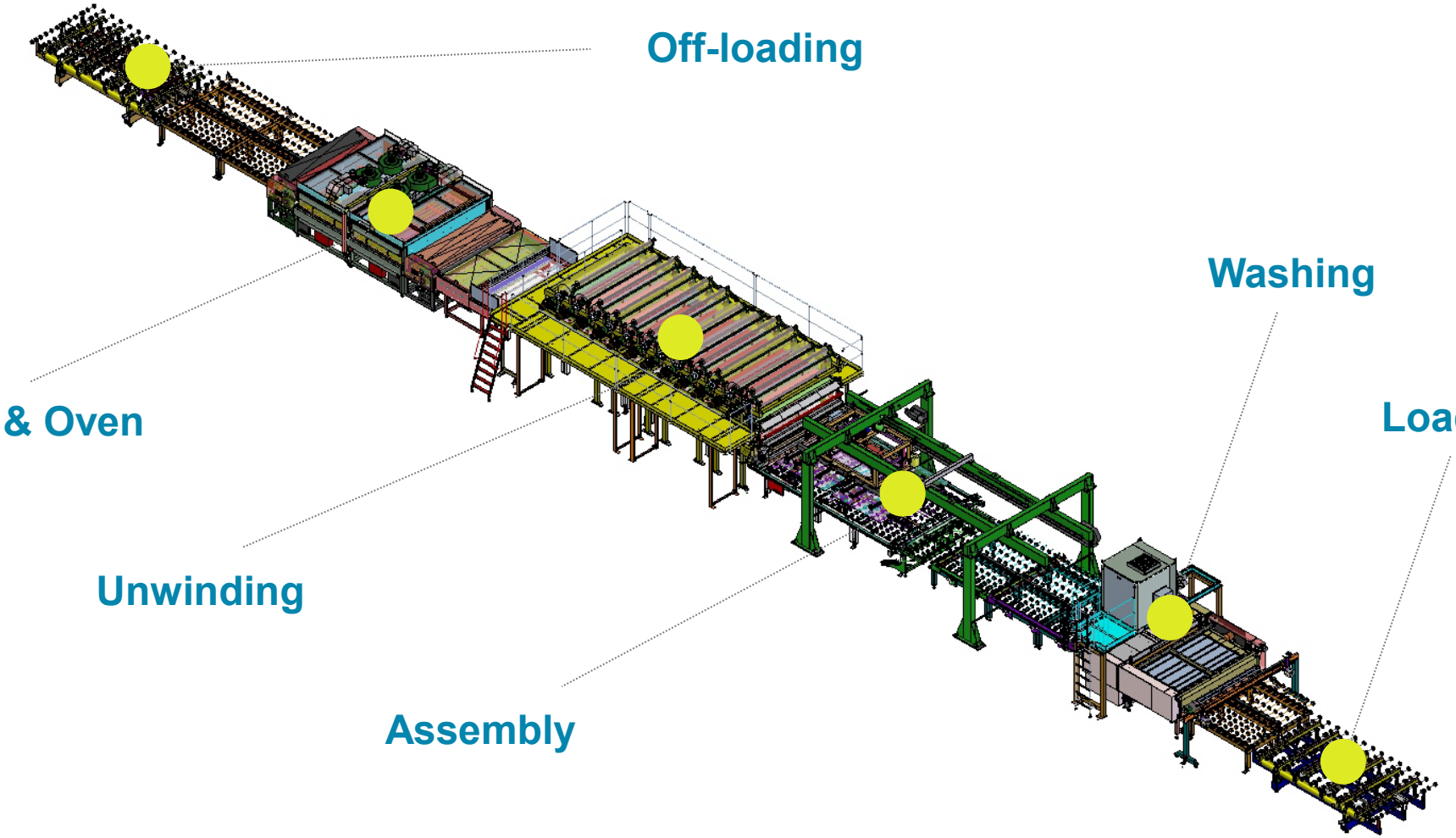
2. Reduced emissions

Laminated glass reduces heating from the sun allowing building interiors to stay cool reducing energy consumption and increasing noise isolation

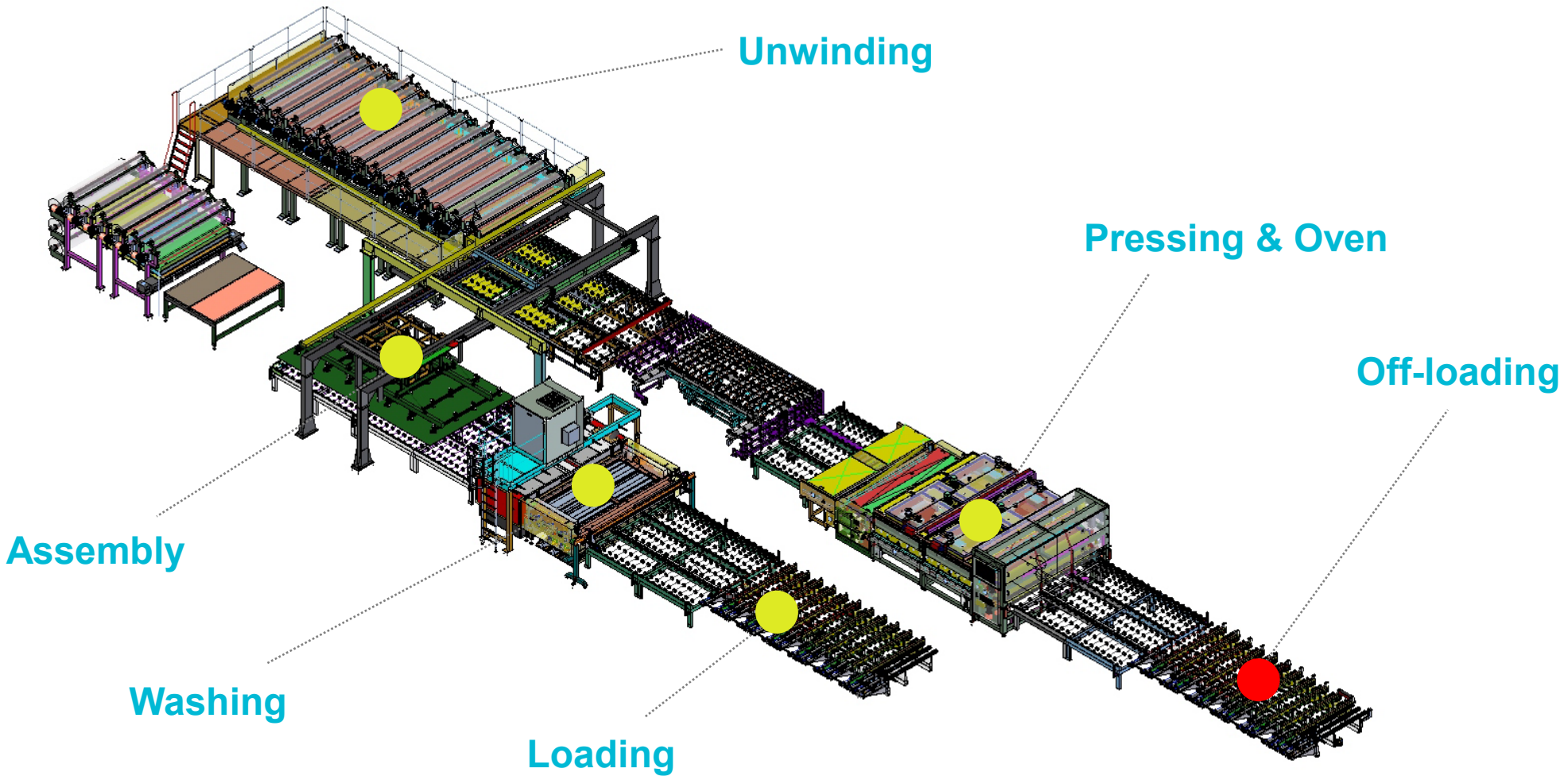
3. New designs and features

Different interlayers can be developed and inserted to create new concepts and functionalities

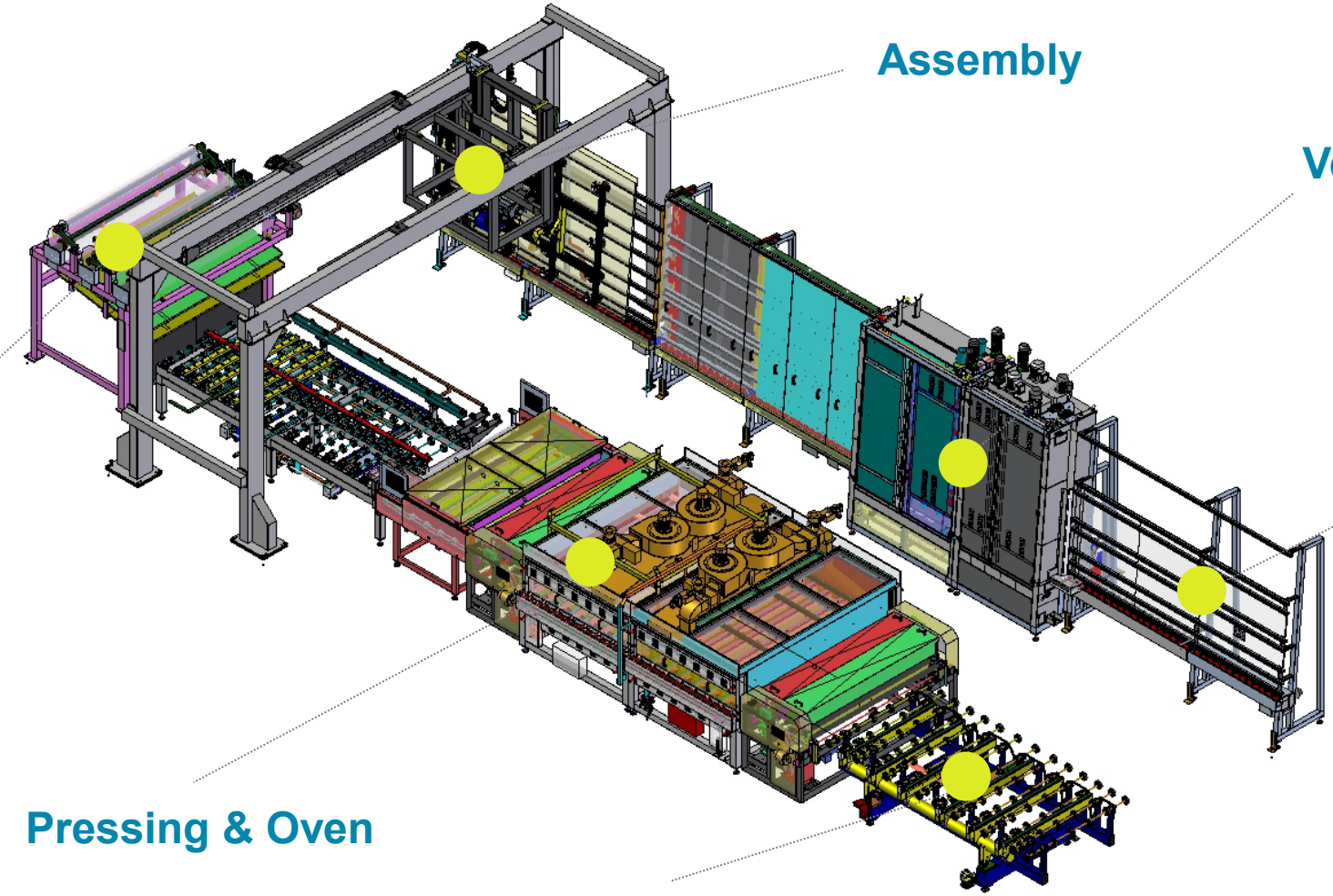
LAMINATING GLASS LINE: **STRAIGHT**



LAMINATING GLASS LINE: **U-SHAPE**



LAMINATING GLASS LINE: **COMPACT**



LAMI-LINES TECHNOLOGY: **ASSEMBLY**

1. Glass pairing

Mechanical high precision gripper on gantry pairs the glass sheets with perfect precision

2. Interlayer unwinding

Operator will manually unwind and cut the interlayer to size. Automatic unrolling is also available.

3. Storage

Depending on needs, different rolls of interlayer can be stored and made automatically available

4. Vertical or horizontal

Glass pairing can be done by the gripper starting from an horizontal or vertical position of the glass

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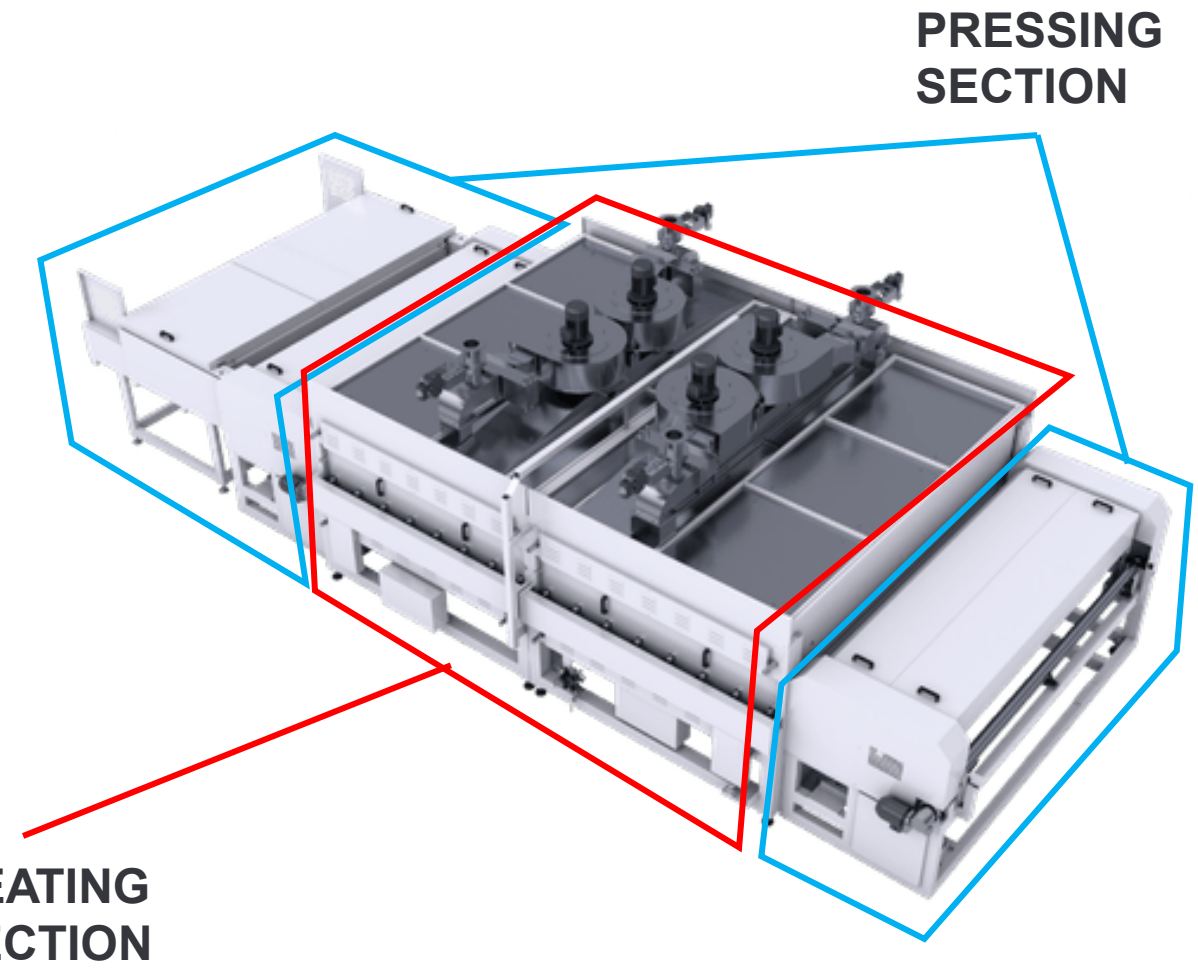
THE OVEN: **WHERE THE MAGIC HAPPENS**



PRESSING & HEATING MODULARITY

The section can be customized unifying 1 or 2 heating sections with also 1 or 2 pressing sections. This depends on the necessities in terms of speed and type of interlayer that the client will be needing.

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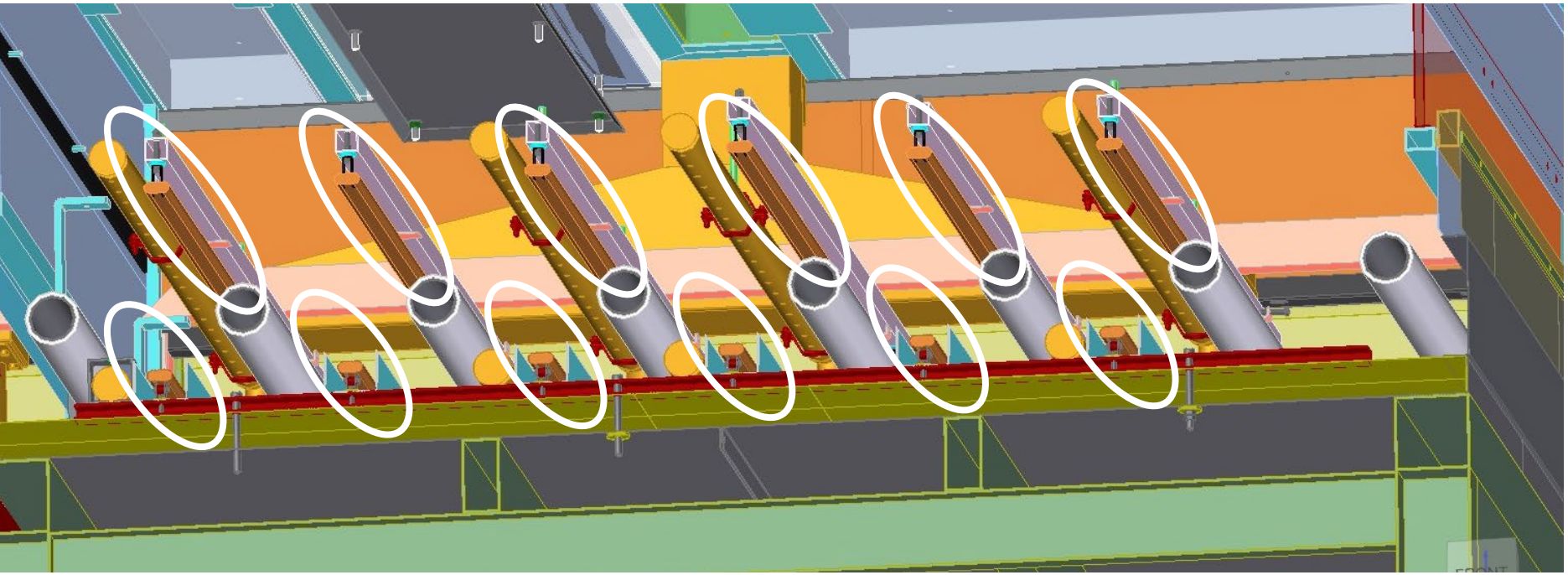
THE OVEN: **HYBRID CONVECTION IRRADIATION**

NEW HCR OVEN ADVANTAGES

- SUPERIOR FLEXIBILITY
- IMPROVED TEMPERATURE UNIFORMITY
- LOWER ENERGY CONSUMPTION
- ENHANCED MAINTAINABILITY

THE OVEN: **IRRADIATION**



UPPER & LOWER IR EMITTERS

High efficiency IR emitters heat the panel from both top and bottom. Upper emitters are gold plated to concentrate the radiation onto the glass, while lower emitters are equipped with an aluminium reflector.

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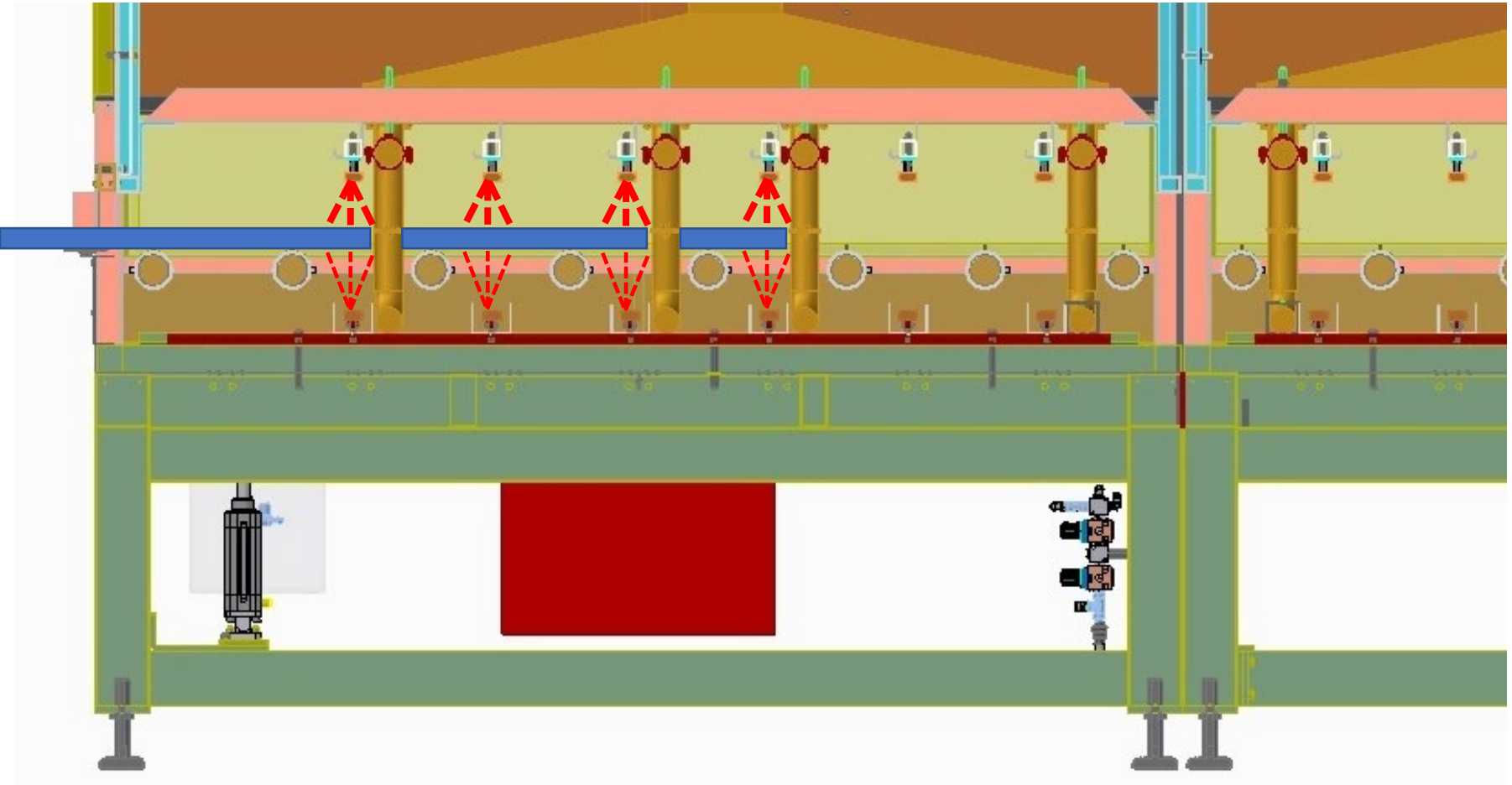

FULLY PROGRAMMABLE IR POWER

The timing and the power rate of each emitter can be independently managed and stored into the system. Pre-defined recipes help the operator in the start-up period.

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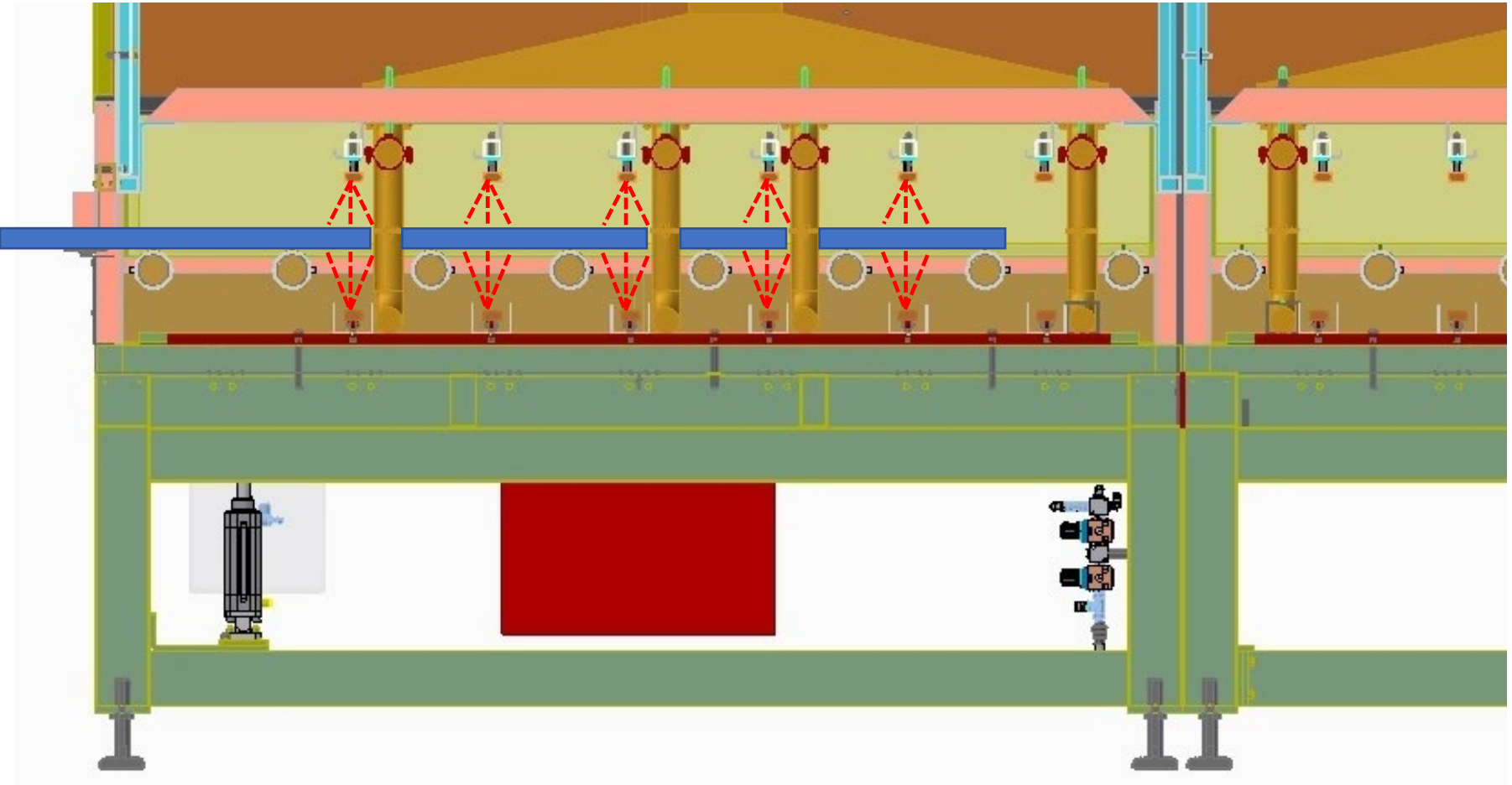

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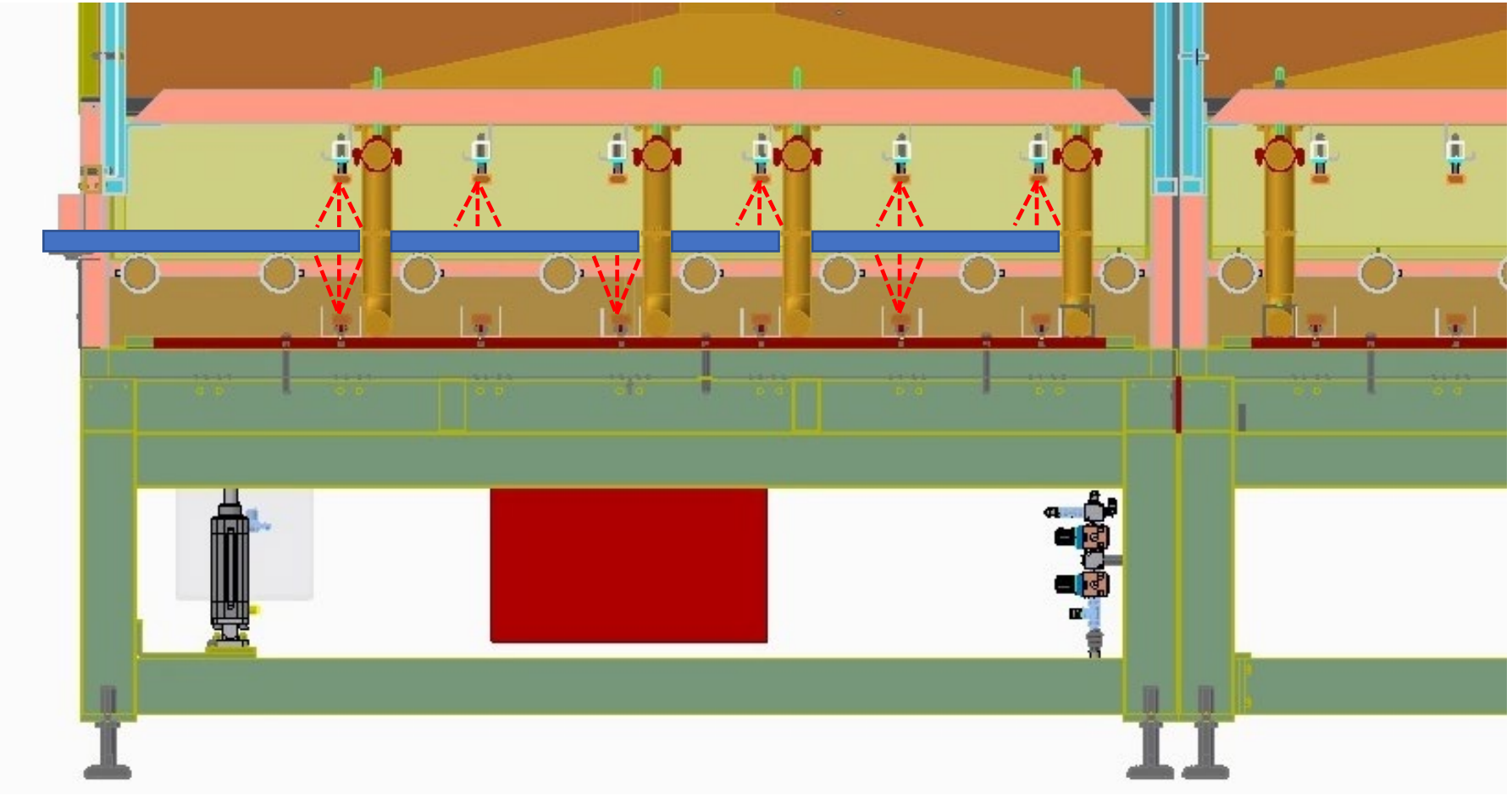

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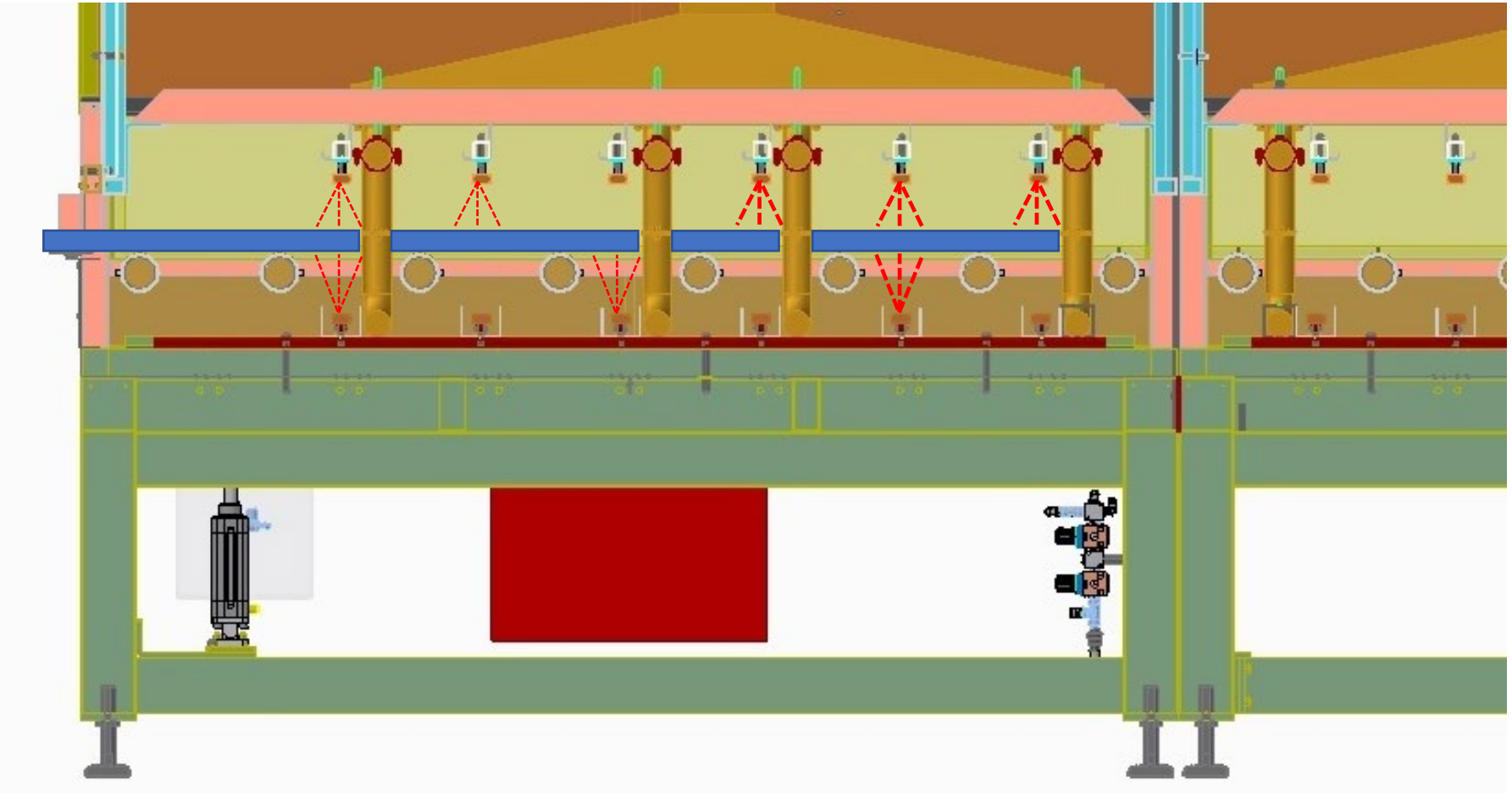

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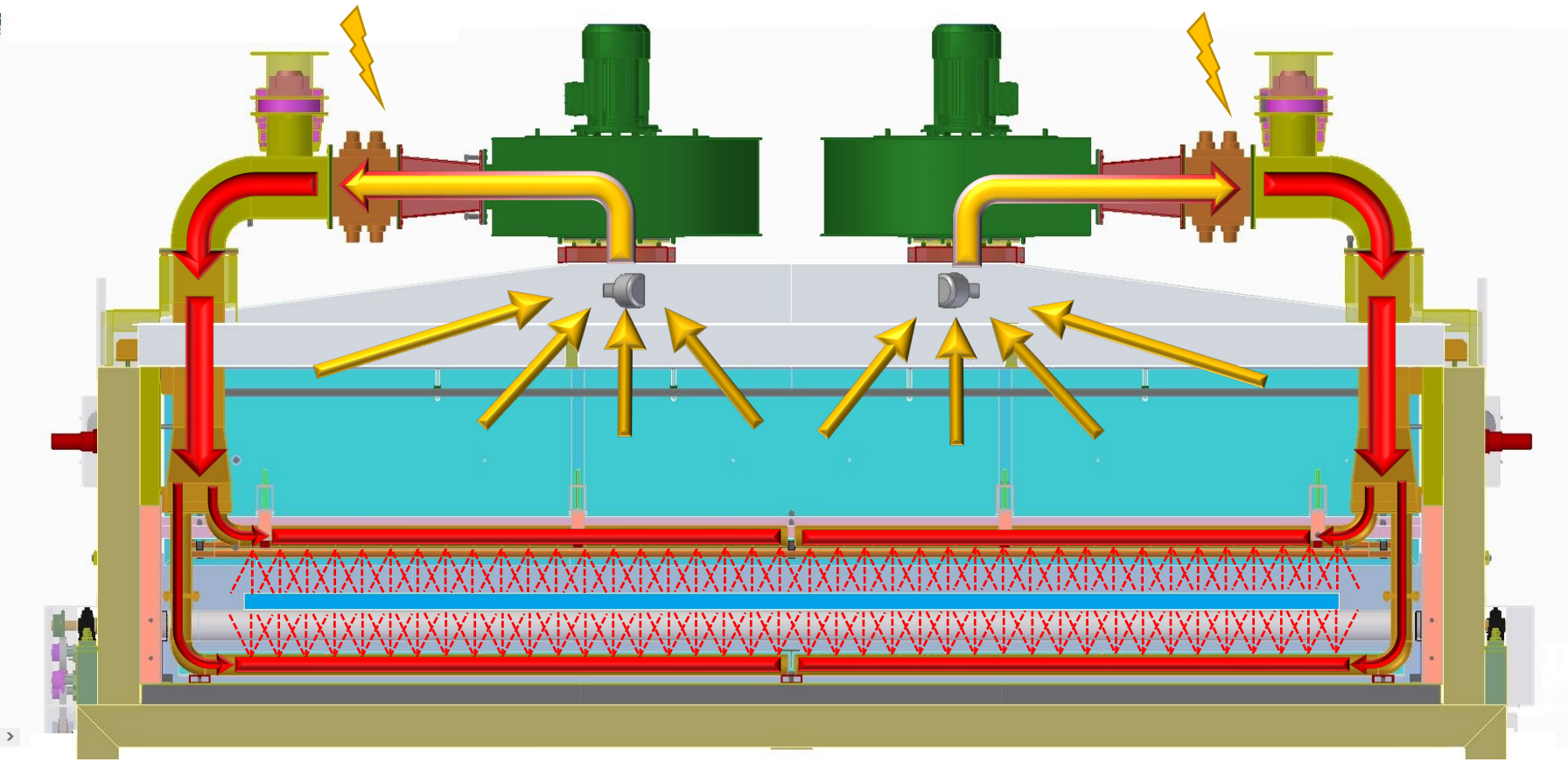
THE OVEN: **AIR CONVECTION**



TEMPERATURE UNIFORMITY CONTROL

The hot air in the upper chamber of the oven can be blown directly onto the glass surface, recovering the energy inside the oven and homogenizing the temperature of the glass.

Auxiliary electric heaters in the air ducts can help the thermal balance in case of small size panels.

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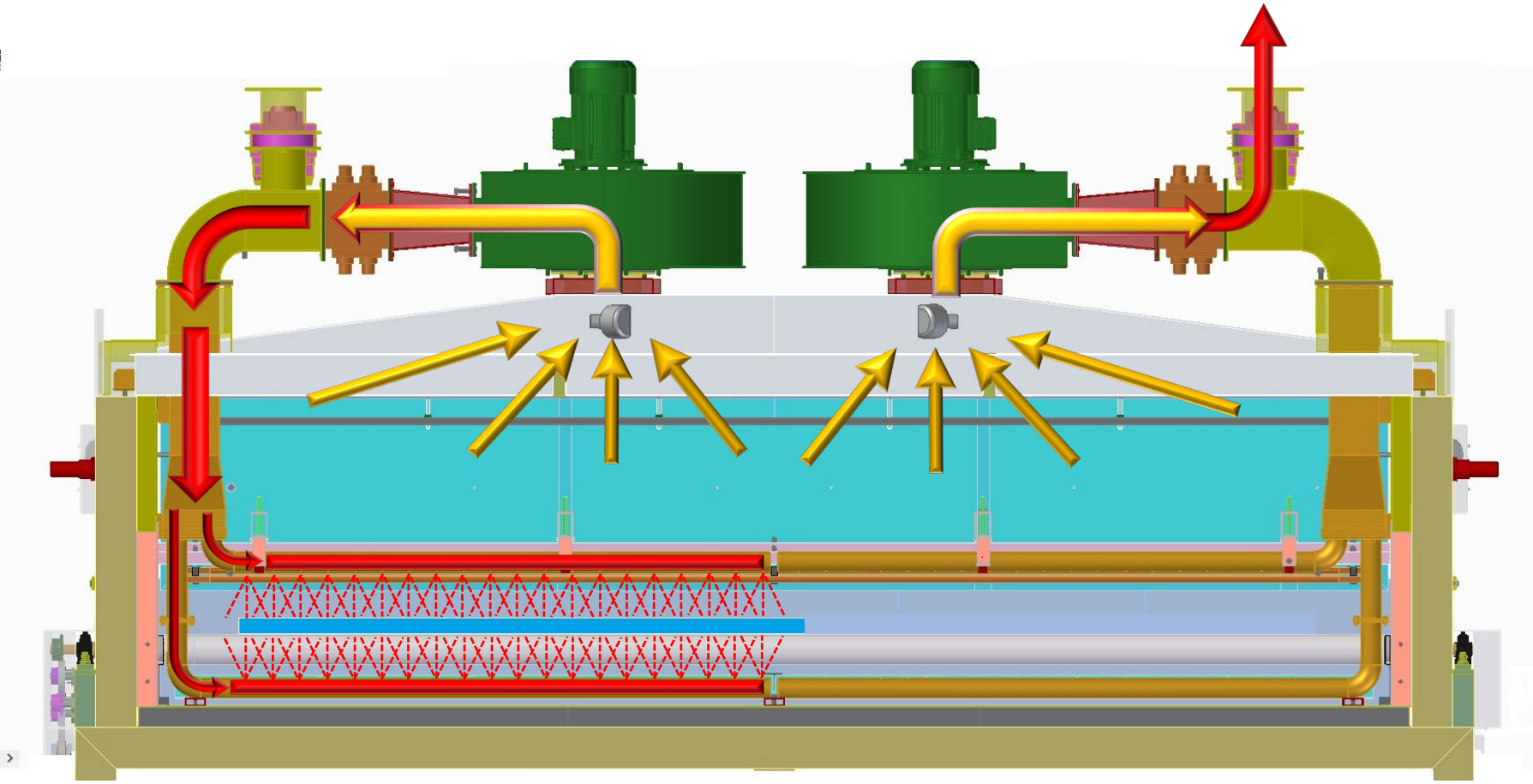
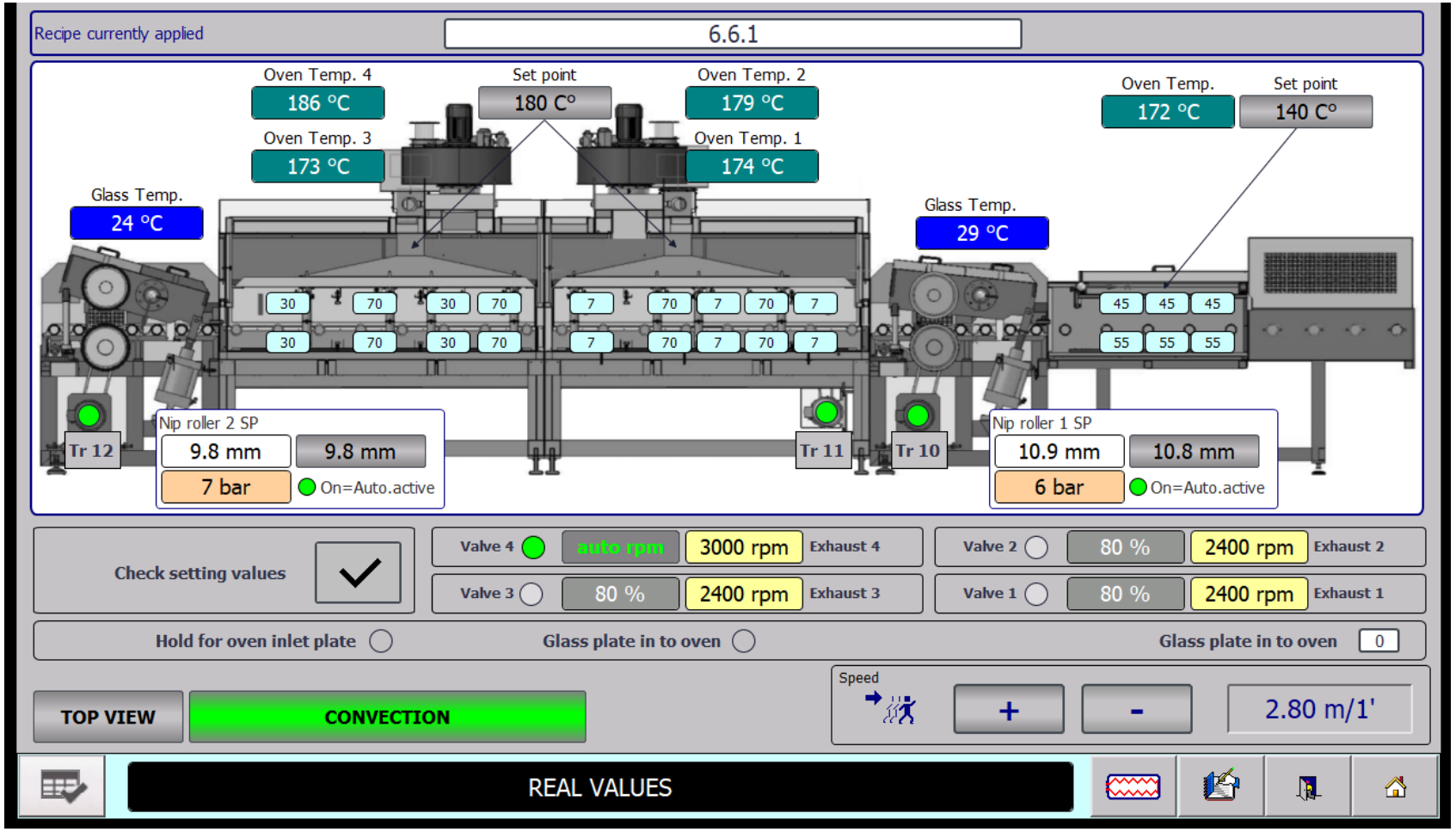


TEMPERATURE UNIFORMITY CONTROL

Exhaust valves in the air ducts are operated to quickly reduce overtemperatures or balance asymmetric load in the oven.

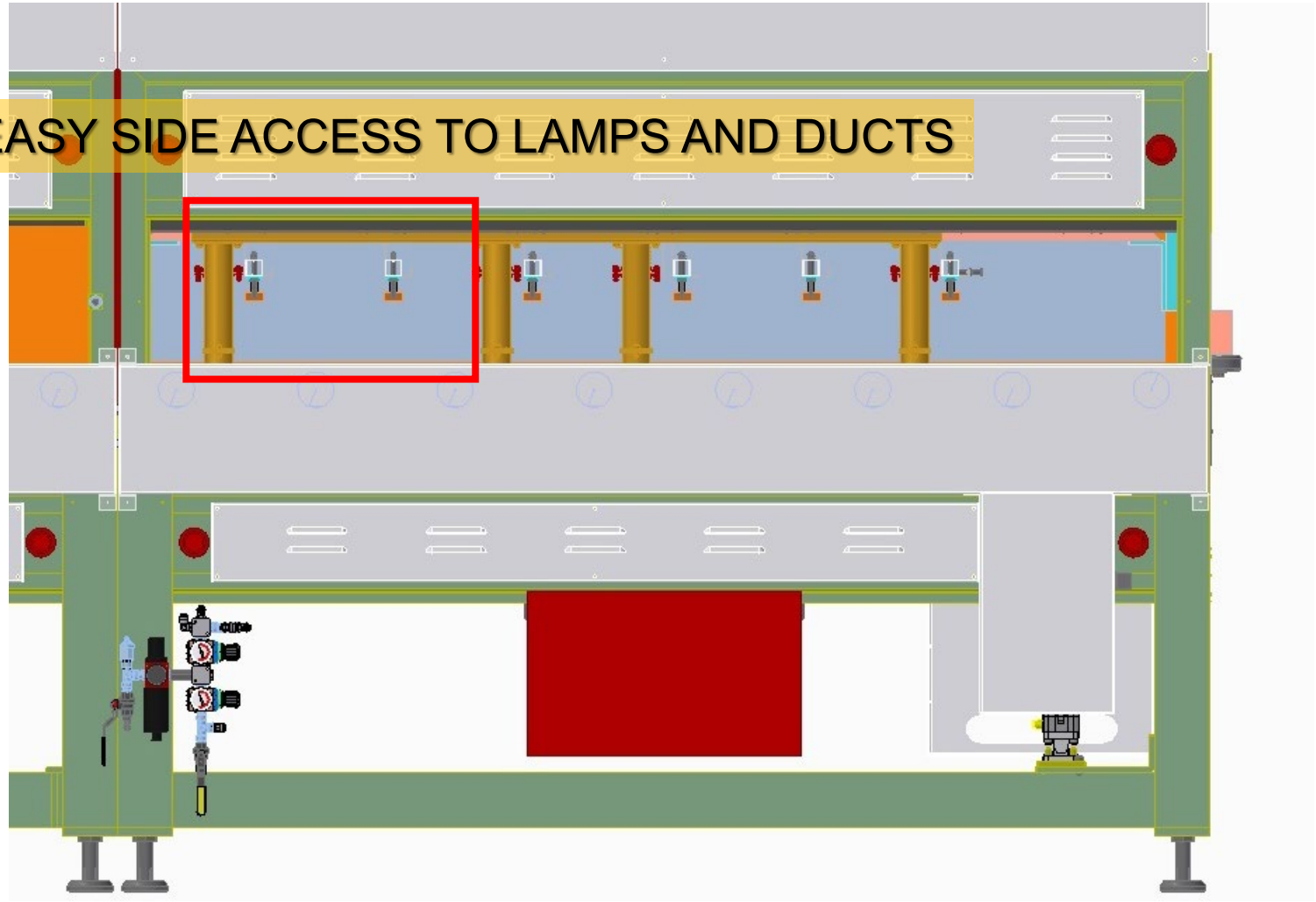
THE OVEN: **CONTROL SYSTEM INTERFACE**



EASY HMI CONTROL

The system interface shows to the operator all the parameters relevant to the panel process and allows to define the targets to reach.

THE OVEN: **EASY MAINTENANCE DESIGN**



ENGINEERED USER FRIENDLY

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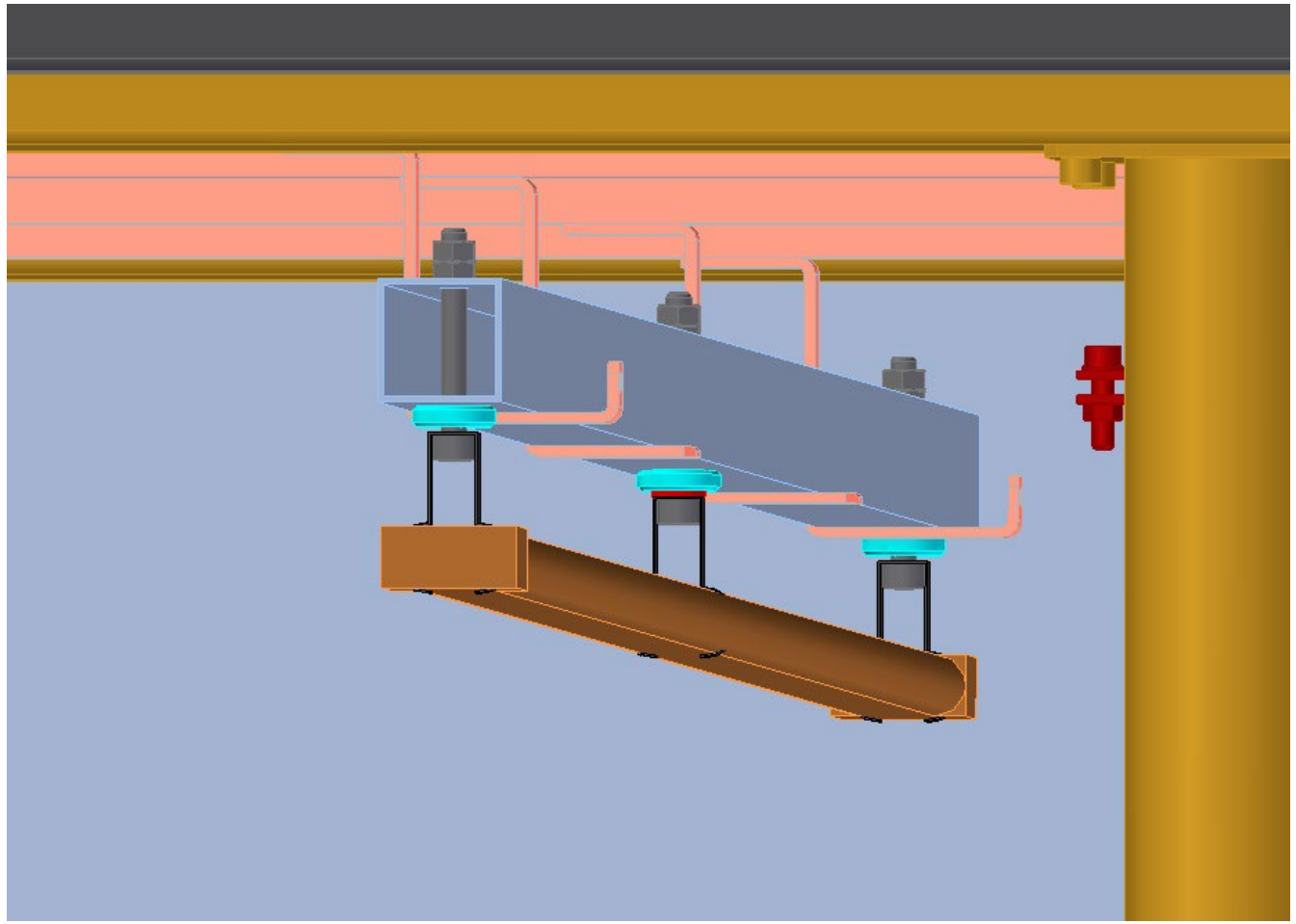

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- **The upper emitters are assembled onto a rigid support that enables an easier and safer exchange of the emitter in case of need.**

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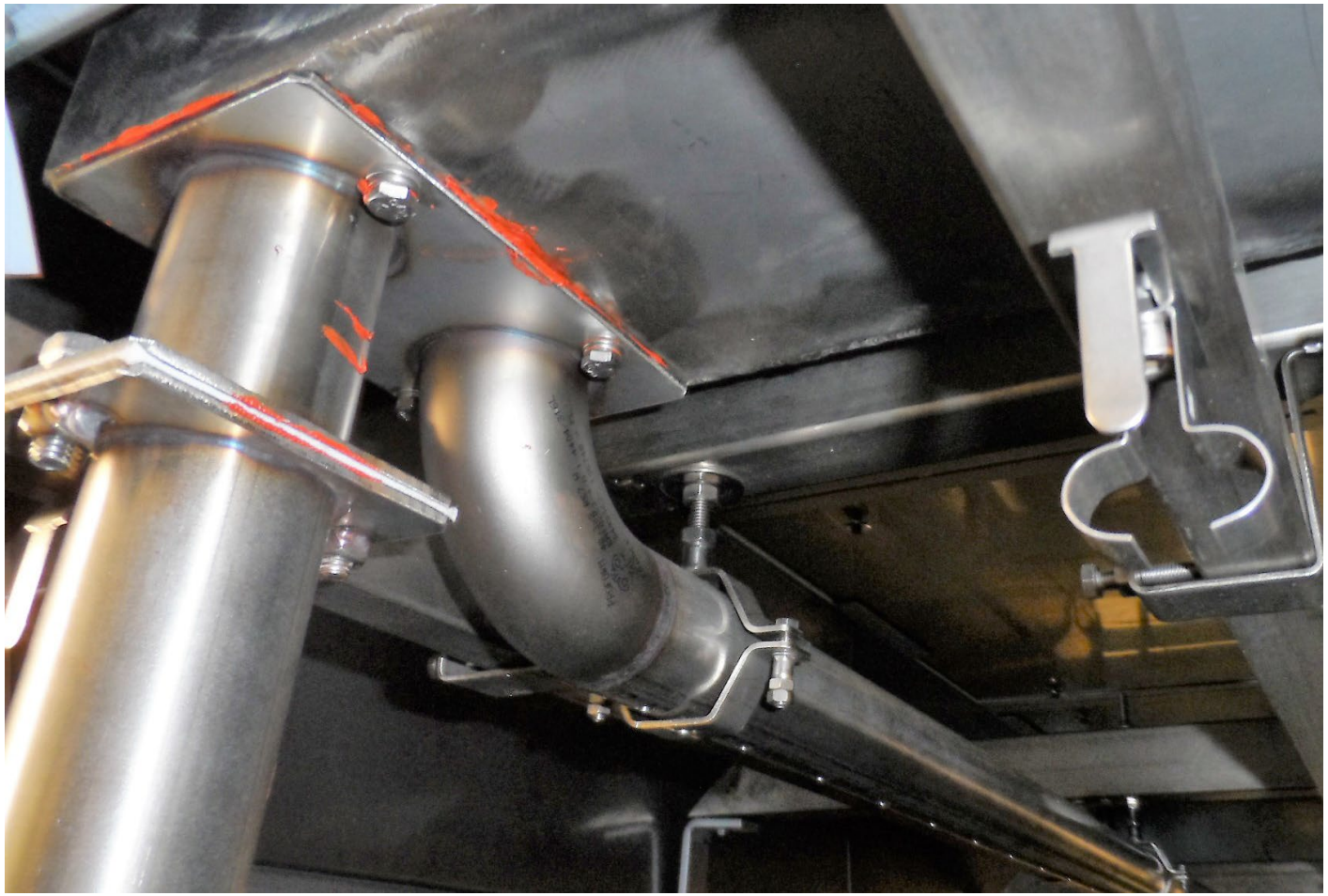

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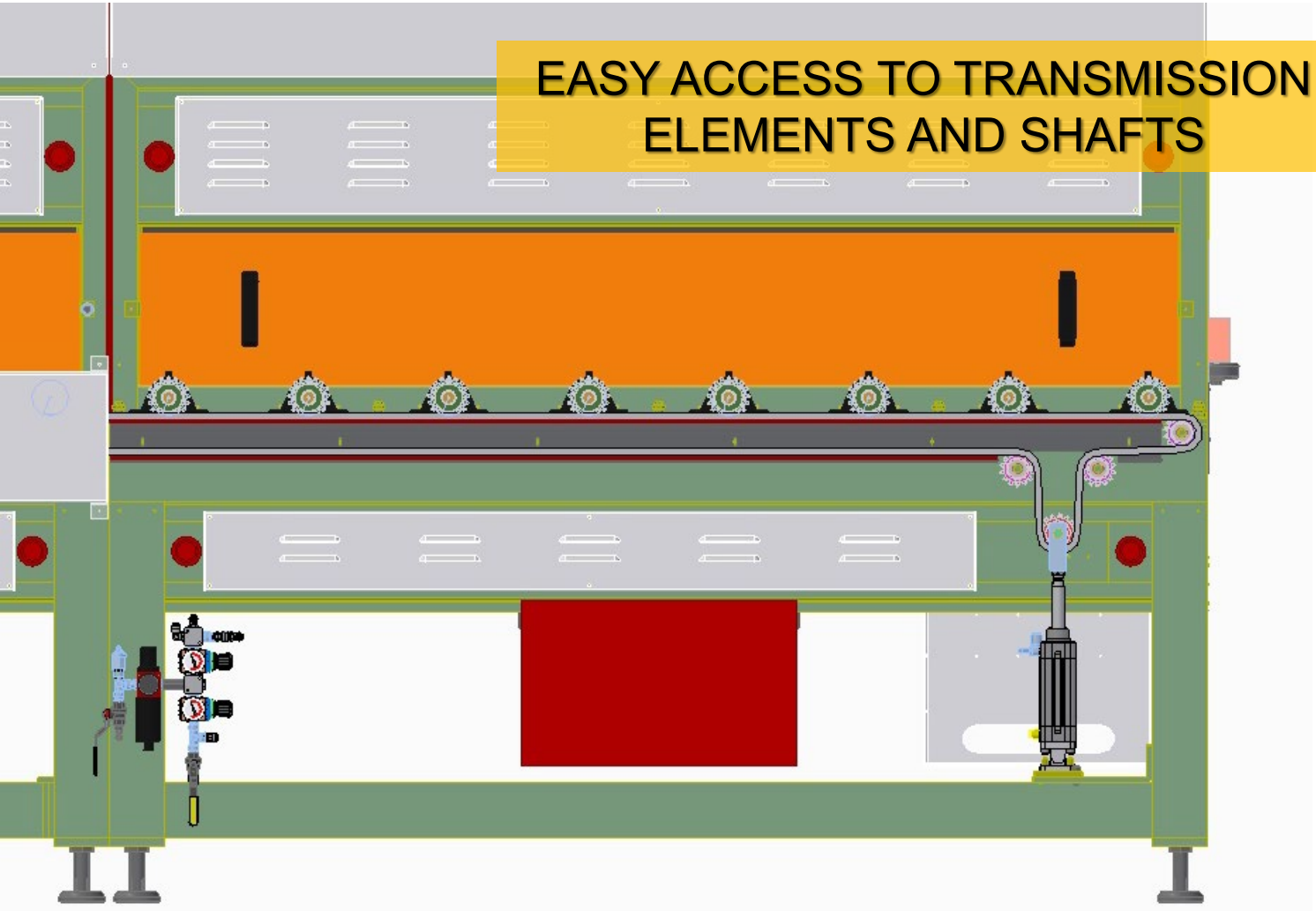

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- **Transmission gears and bearings are located outside the hot area. The rollers can be easily removed in case of need and all transmission element can be easily reached and inspected.**

THE PRESSING SECTION

Increasing the pressure on the glass and reducing bar twisting

New pressing section development

The whole design and project of the nip roller section has been revised in order to achieve higher performances:

- The entire geometry of the mechanism has been revised to allow the **maximum thickness** of the workable sheet to be **increased to 100mm**
- The roller of the mangle has a **larger diameter** to reduce its bending, obtaining greater homogeneity of force on the surface of the glass
- The torsion bar has a larger size, to avoid twisting between the two sides
- The pneumatic cylinder is in a high position in order to have a greater lever arm and therefore a greater force on the glass, **reducing the overall dimensions**
- The pneumatic system was completed with a pressure booster to **raise the pressure up to values of 9bar**, also ensuring greater pressure stability during use
- In addition, the pneumatic system was developed by equipping it with a system to limit the consumption of compressed achieving **substantial energy savings**

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OUR PERFORMANCES

1. REDUCED ENERGY CONSUMPTION UP TO 40%
2. HOMOGENEOUS GLASS TEMPERATURE WITHIN ± 2°C
3. HYBRID HEATING SYSTEM SUITABLE TO EVERY TYPE OF INTERLAYER
4. FULLY PROGRAMMABLE SETUP OF IR EMITTERS

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1954 | 2024 **70** YEARS YOUNGER

WITH A NEW LOGO

Celebrating **our first 70 years** in business, we treated ourselves to a Corporate Brand Identity reshape. Forever young even in marketing and in the management of our communication and image.

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MADE IN EXCELLENCE

WHO IS BOVONE

WHO WE **ARE**

Bovone is one of the global leading suppliers of processing machines and lines for the flat glass and stone industry.

WHAT WE **DO**

The company designs, develops and manufactures machines for glass **edging**, **beveling** and **washing**, as well as complete **laminating** and **silvering lines** for glass

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BOVONE IN NUMBER

YOUR
WORLDWIDE
LOCAL
SOLUTION
PROVIDER

13000
SQM
FACTORY

130
EMPLOYEES
WORLWIDE

135
MIRRORING
LINES

150
LAMINATING
LINES

4500
MACHINES
RUNNING


See you at
VITRUM
25
Fiera Milano Rho, 16th-19th September 2025
Solutions
Dealers
Staff
Manufacturers
Suppliers
Glaziers
Vision
Innovation
Technologies
Trend
Best practice
Networking

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THANK YOU

for your attention

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