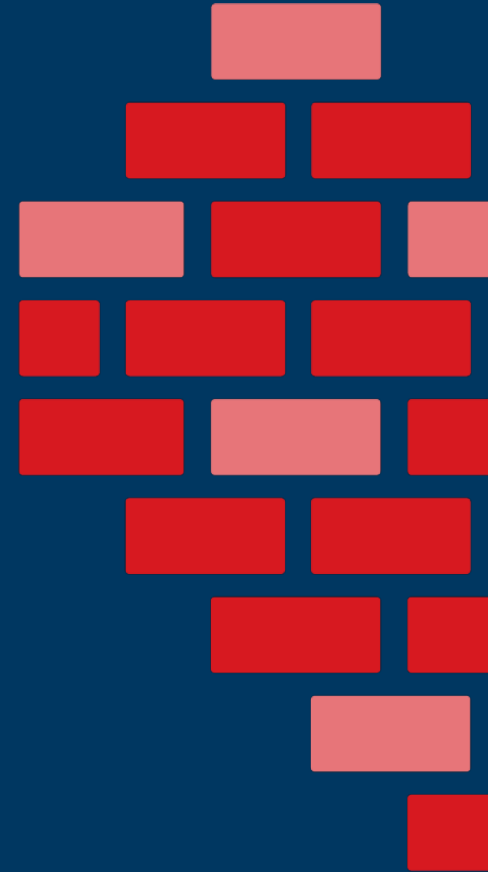


# ENVELOPE SOLUTIONS

Modular Façade Thermal Insulation & Windows

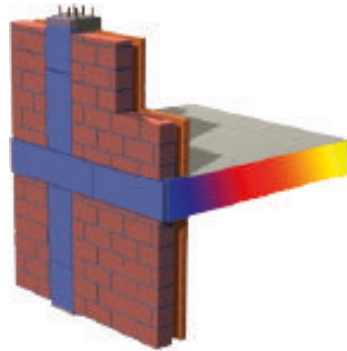


# MODULAR FAÇADE THERMAL INSULATION

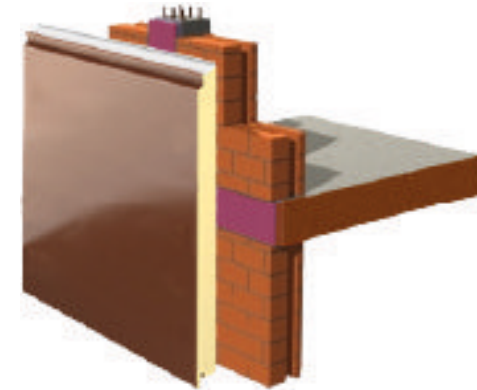
Ángela Llamas ➔ **GarcíaRama**

# FAÇADE REFURBISHMENT ADVANTAGES

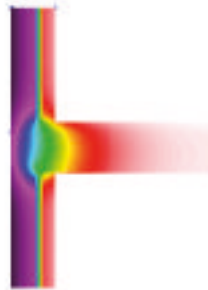
WITHOUT CONTINUOUS  
INSULATION



Refurbished with CONTINUOUS  
INSULATION WITH LOWER  
THERMAL CONDUCTIVITY



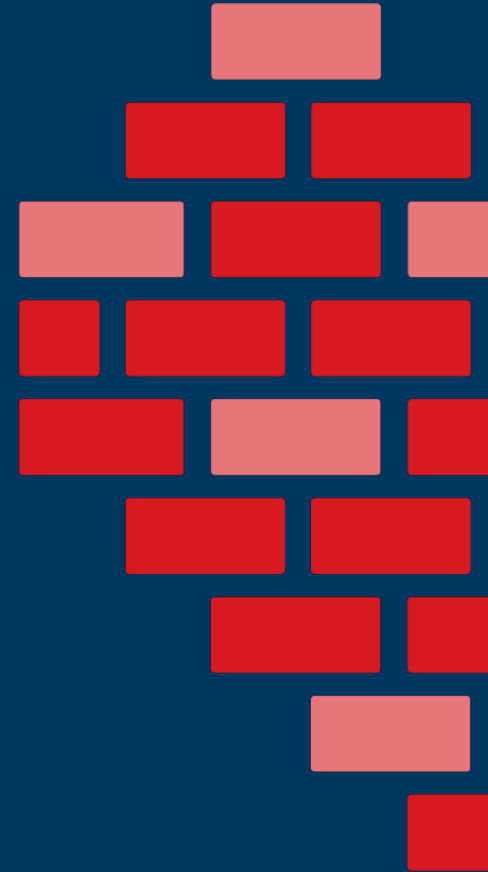
**THERMAL BRIDGES**  
Loss of heat and comfort  
inside the house

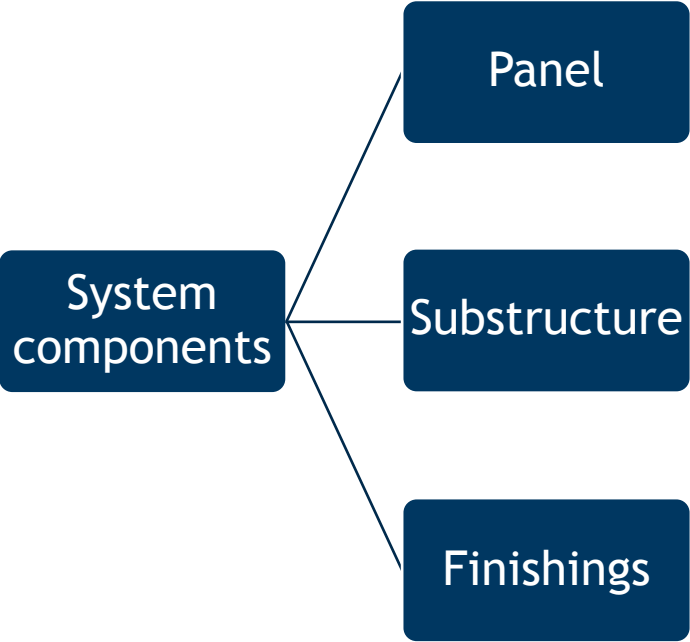


- ✓ Slows the heat movement through the building elements
- ✓ Improves the performance of the building envelope
- ✓ Helps achieve higher energy efficiency
- ✓ Provides better occupant comfort levels



# System Components





DATOS TÉCNICOS		
Espesor nominal mm	Aislamiento térmico (*) W/m² K	Masa Kg/m²
35	0,59	10,6
50	0,42	11,2
60	0,36	11,7

(\*) Para junta no ventilada.



Concrete and pre-painted steel

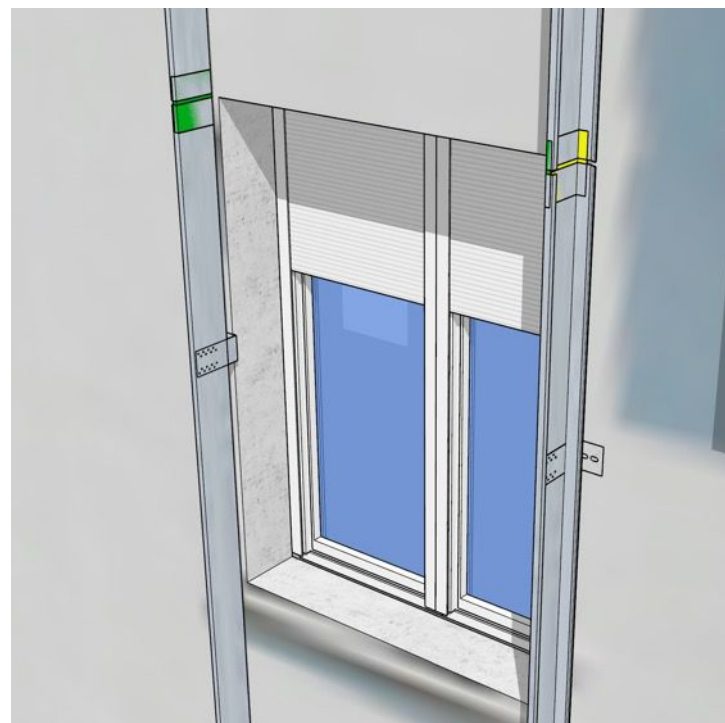
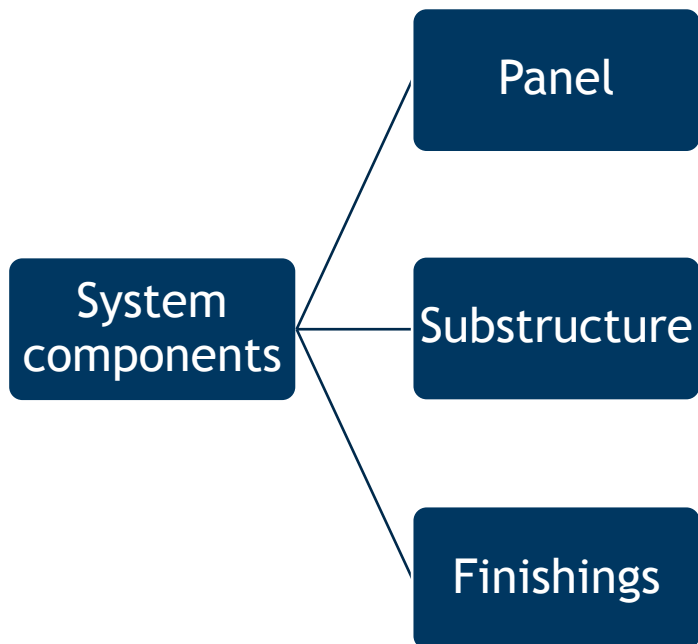
**Self-supporting**  
A 60mm panel withstands loads of **300 Kg/m²**

Hidden fixing and joint

**Lightweight**  
Three times lighter than the ceramic cladding used in ventilated facades

Tongue and groove connection

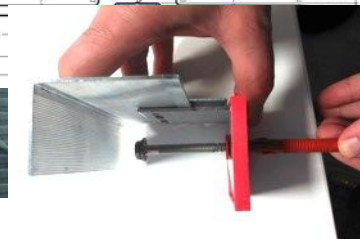
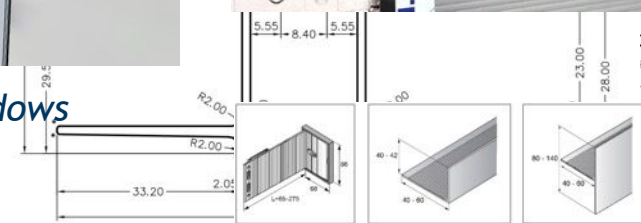
# FAÇADE SYSTEM



Solution adapted in balconies

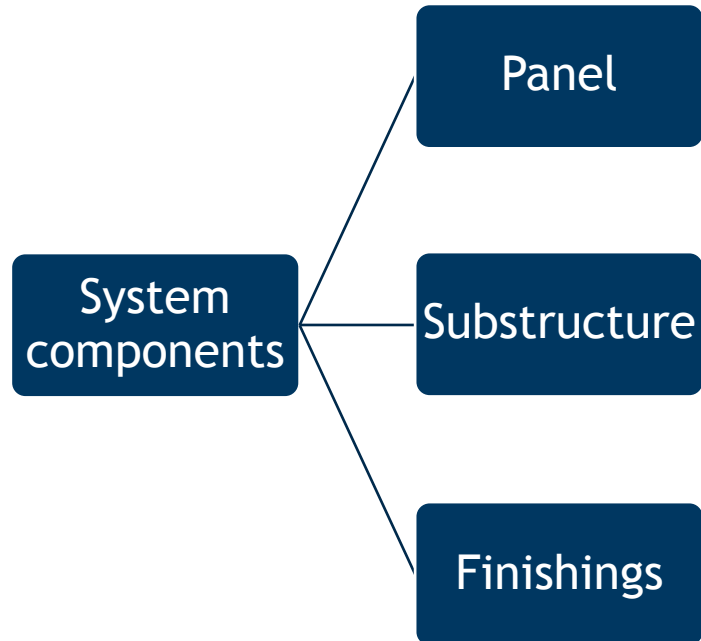


Continuous framing around windows



Installation of brackets and profiles on the Lyon building

# FAÇADE SYSTEM



*Window finishings*

# Prior works to the installation





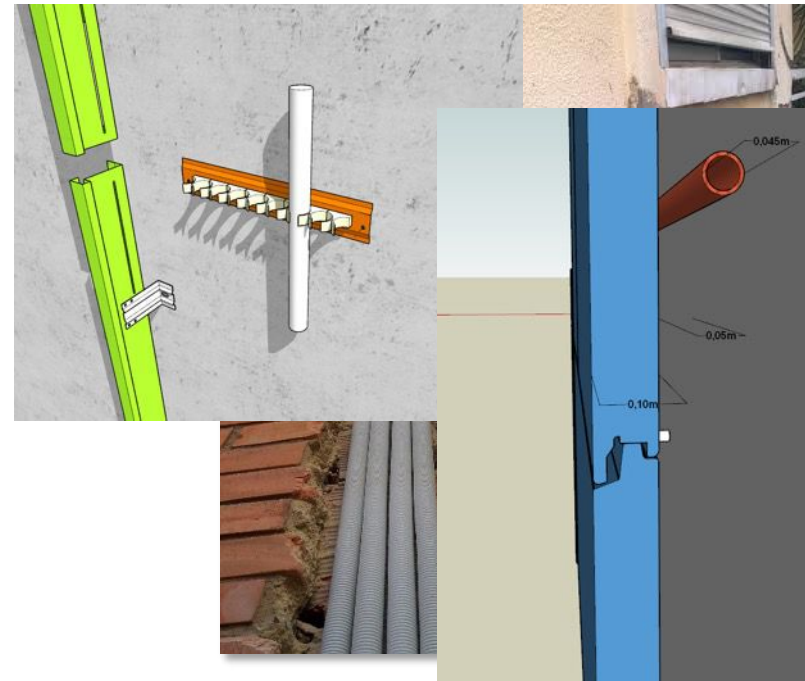
## Prior works to the installation

### Pull-out Test on façades

Check **tensile strength** of the façades and choosing the **fixing** accordingly



### Preparatory works on façades



Integration of sensors, equipment, wiring, outside of the facades **without** invading the homes.

### Survey

**Guidelines** for installation and taking **measurements** before manufacturing



# ELEVATION SYSTEMS

The modular properties of the system allow an **installation without the need for scaffolding**



Lyon (France)

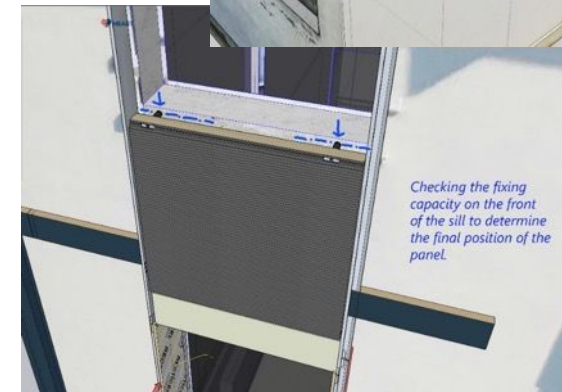
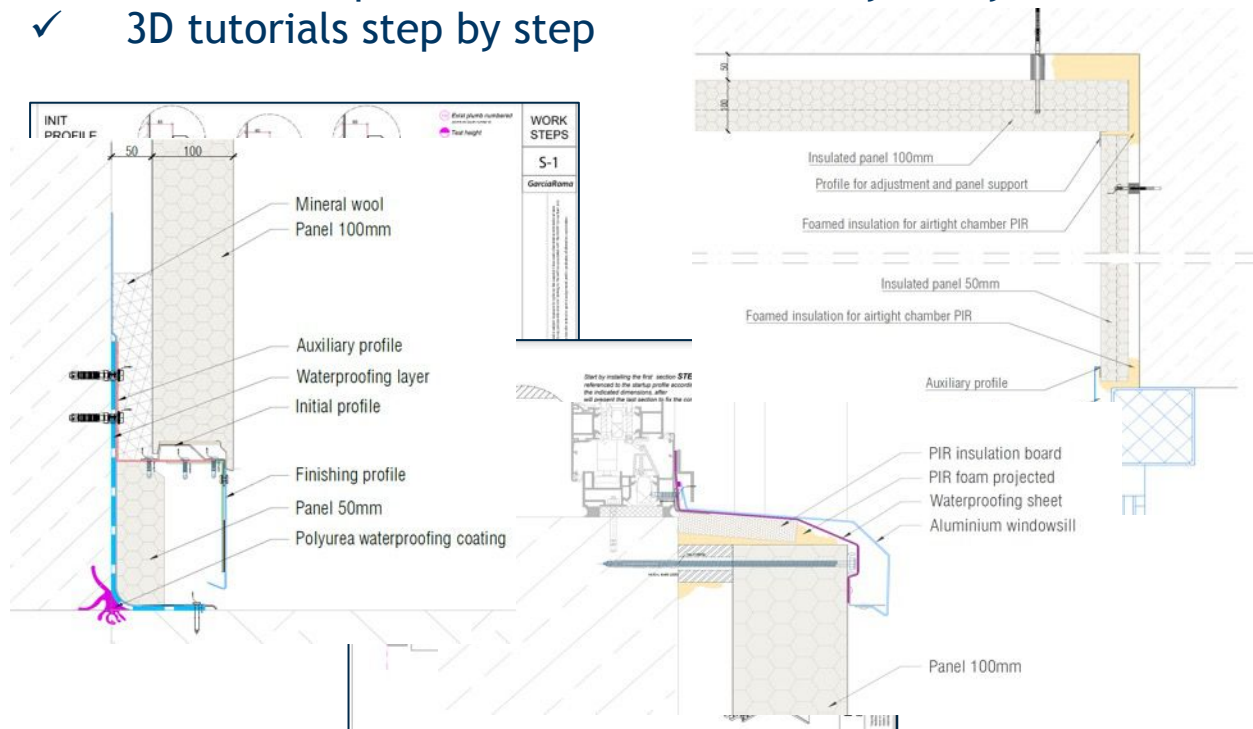


Bagnolo (Italy)

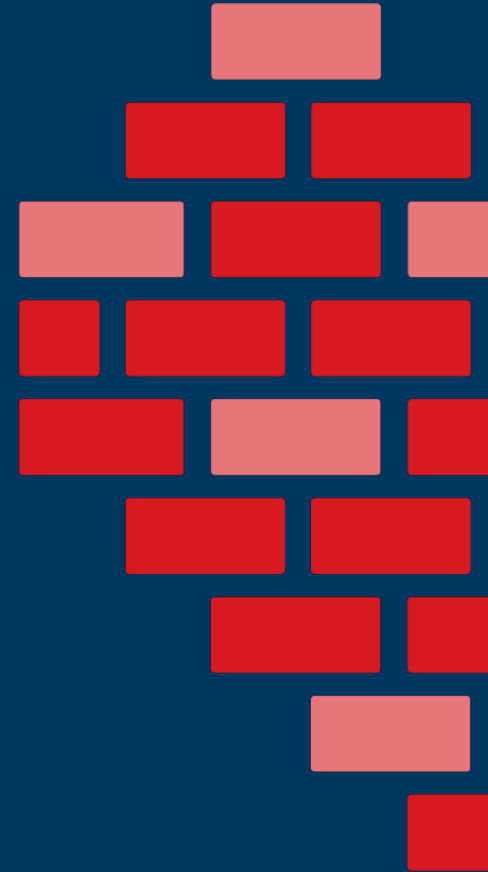
# DRAWINGS AN TUTORIALS

To optimize the installation process:

- ✓ Video tutorial
- ✓ Serialization label system on the different components
- ✓ Installation plans with codes to identify easily elements on site
- ✓ 3D tutorials step by step



# Installation process





## INSTALLATION PROCESS

- The Brackets are placed with their thermal break
- Fixings are anchored according to the dynamometric test results (mechanical or chemical anchoring)
- The profiles are attached to the brackets
- Panels are connected to the profiles with the tongue and groove connection creating an inside air chamber
- The finishings are placed, sealing the system and making the air gap airtight



# WINDOWS INTERVENTION

BAGNOLO, ITALY - WINDOWS RETROFIT ACTIVITY  
LYON, FRANCE - REPLACEMENT OF THE WINDOWS

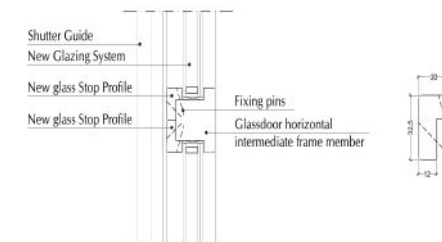
Michela Buzzetti - ZH

## BAGNOLO, ITALY

- ✓ Glass substitution
- ✓ Mounting a new modified wooden glass stop profile
- ✓ Hinges substitution
- ✓ Gaskets renewal
- ✓ Shutter box insulation
- ✓ Exterior frame side repainting



## WINDOWS RETROFIT ACTIVITIE

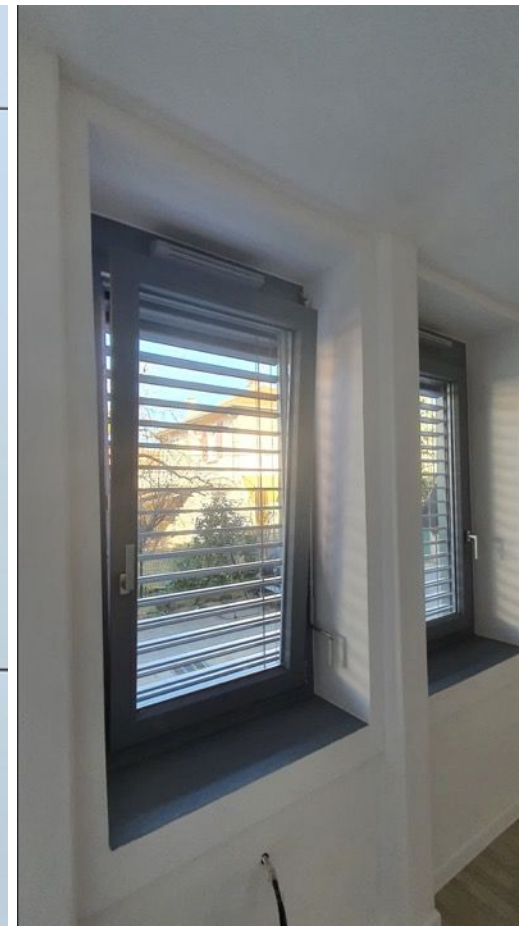




## LYON, FRANCE

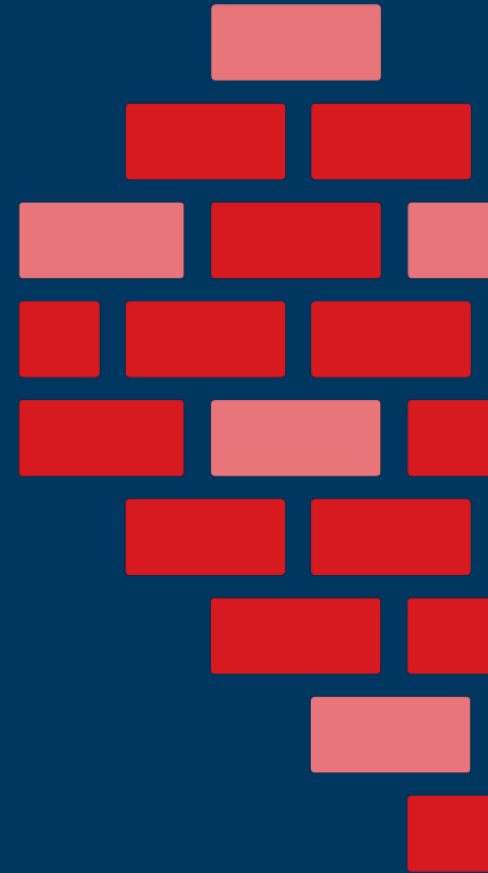
### REPLACEMENT OF THE WINDOWS

- ✓ double low-emissivity glass
- ✓ PVC frame





# Final results of the envelope intervention



Before



After



Before



After





Lyon, FRANCE

ENVELOPE SOLUTIONS

Before



After



Lyon, FRANCE

ENVELOPE SOLUTIONS

**Before**



**After**



## About HEART

The Holistic Energy and Architectural Retrofit Toolkit (HEART) brings together different components and technologies that can transform existing buildings into smart buildings, thus contributing to the Renovation Wave in order to decarbonise Europe's building stock. In developing this toolkit, the project advances and improves energy efficiency and the use of renewable energies in buildings across Europe, particularly in Central and Southern Europe, where climate change is leading to increased electricity consumption during the summer and winter seasons.

## Get in touch



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