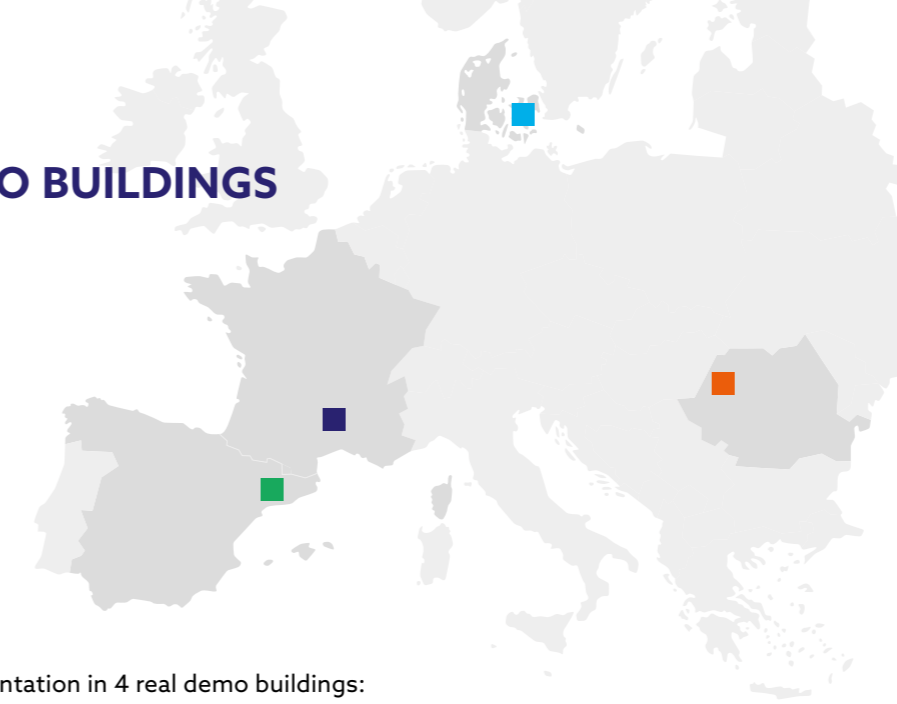


PROJECT CONSORTIUM

The AEGIR consortium involves a diverse group of 30 partners

			
			
			
			
			
			
			
			from 9 different EU countries

DEMO BUILDINGS



Implementation in 4 real demo buildings:



SPAIN
EDUCATIONAL BUILDING



FRANCE
POLICE STATION



DENMARK
RESIDENTIAL BUILDING



ROMANIA
SINGLE FAMILY BUILDING

"AEGIR aims to demonstrate an entire industrialised envelope renovation package, which integrates solutions for thermal and acoustic insulation, ventilation, renewable energy generation and storage, energy-efficient fabrication and low CO₂ footprint."



Julen Astudillo
project coordinator of Tecnalia Foundation in Spain



Developing modular, renewable & industrialised building envelopes for low energy renovation.

PROJECT DESCRIPTION

85% of the European building stock was built before 2001 and does not comply with low energy standards.

To achieve necessary climate targets in 2050, Europe must scale up the renovation wave!

The Objective

Sustainable behavior of buildings
Using industrialized and modular systems, digital tools to follow and control the process and new materials, renewable technologies, and systems.

Affordable built environment
Efficient design and renovation process accounting for the needs and necessary conditions of the location and the inhabitants, driving down the costs.

Operational behavior during lifetime
Smart management of energy generated at dwelling and building level through digital twins.

Renovation Design
Enhanced data collection and use in design, planning and implementation.



These solutions will also improve the building's insulation, airtightness, and user comfort and satisfaction with respect to standard solutions.

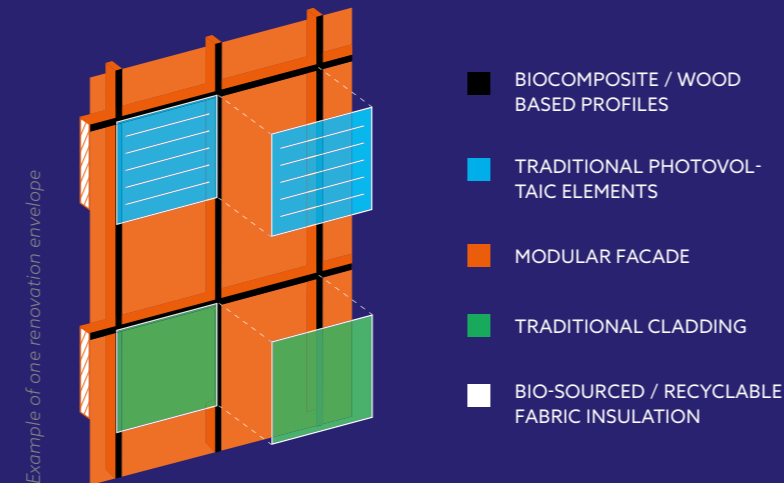
The Approach

4 different renovation envelopes will be designed which answer to the needs of different building typologies, climatic zones, social strata, and tenants' preferences. They are ready to be scaled and customized to new or existing buildings across Europe.

WORK DESCRIPTION

The building envelopes combine a package of solutions including:

- **Improved ventilation:** air ducts connected to a central heat-pump and smart windows
- **Insulation:** biobased thermal insulation and acoustic insulation
- **Bio-composite/bio-resources** profile systems and cladding
- **Renewable energy generation:** flexible PV system and PVT panels
- **Electric storage technologies:** second life batteries



This solution will achieve a low-energy manufacturing process with a low carbon footprint. It will use different digital technologies (BIM, augmented reality, digital twins, etc.) to improve building design, refurbishing, management, and operation.

AEGIR SOLUTION

DESIGN

- **Common data environment** for information sharing
- **Industrialized design** based on circular principles including local resources
- **Automation process** from cloud point laser scanning to precise 3D model
- **Automation of design** of refurbishment scenarios and KPI assesment
- **Facade configurator**
- **Residential building configurator**
- **Energy system configurator**

CONSTRUCTION

- **Sustainable use of materials** (recycled / biosourced)
- **Construction process monitoring** using augments reality
- **BIM model** -> digital twin
- **Industrialized construction systems:**
 - Modular facade system
 - Air ventilation system
 - Biobased insulation / fabric insulation
 - Window with automatic ventilation
 - Flexible photovoltaic cladding
 - Hybrid panel
 - Batteries of second life use
 - Biocomposite / wood based profiles

OPERATION MAINTENANCE

- **Optimized energetic operation** of building (= digital twin)
- **Automation in the maintenance** of the buildings systems
- **Flexibility energy connectivity** capabilities to grid and distrit