

San Sebastian, October 18, 2022

European project launched to develop industrialized building envelopes for energy renovation.



Horizon Europe project AEGIR aims to develop modular, renewable, and industrialized envelopes intended for the renovation of buildings leading to the reduction of costs and execution times. Different renovation packages are designed to answer the needs in different buildings typologies, climatic zones, social strata, and tenants' preferences, which can be scaled and customized to new or existing buildings across Europe.

Europe's objective is to achieve climate neutrality by 2050, an economy with net-zero greenhouse gas emissions, through the deep decarbonisation of all sectors, boosting economic recovery, empowering citizens, and granting wellbeing and comfortable living conditions. More than **220 million building units were built before 2001** (85% of building stock) with low or no energy standard criteria and most of them will still be standing in 2050. The oldest, non-renovated buildings are usually less energy efficient, and require more energy to keep indoor environmental conditions. They are often occupied by lower income families which face problems to pay energy bills, which means that the indoor hygro-thermal conditions are far from the comfort range, leading to health problems.

AEGIR building envelopes, the interface between indoor and outdoor conditions of a building, will be designed, manufactured and tested **to improve the building energy efficiency and indoor environmental conditions**. To achieve the EU climate neutral goal, the construction sector must consider the energy efficiency during the building operation phase, the transition from fossil fuels to renewable energy sources, as well as increase the material performance and the use of recycled and bio-sourced materials to reduce climate impact.

"The AEGIR project will design a building envelope composed by a package of solutions including ventilation, insulation and cladding systems, as well as renewable energy generation and electric storage technologies. This solution will be developed using a low-energy manufacturing process and will acquire a low carbon footprint. Moreover, it will use different digital technologies (BIM, Augmented reality, digital twins, etc.) to improve buildings management" Says project coordinator Julen Astudillo of Tecnalía (Spain)

With a 10,5 million EUR grant from the European Commission's Horizon Europe programme, the project will run from October 2022 until September 2026. The consortium consists of 29 partner organisations in 9 countries, **including all the actors from the construction and energy management value chain**. All the research partners, associations, local and international SMEs, industrial partners, and public authorities met during the kick-off meeting from October 18 to 19, 2022, in San Sebastián, Spain.

The project will deploy the solution in **four real life demo cases** in different climates to prove that the concept is **reliable in buildings with different requirements**. AEGIR will implement the building envelopes on a multi-family social residential building in Denmark, an educational building in Spain, a police station in France mixing offices and dwellings, and a single-family dwelling in Romania. The demonstrations carried out on the social houses will show that these **solutions are applicable for a more demanding public**, the demo applied on the public school will **improve the air quality and the global comfort** of users.

The building envelopes intent to reach nearly 100% prefabrication grade and reduce the building assembly process up to 50% with respect to current solutions. They will be designed in **Building Information Models (BIM)** to facilitate the data flow from design to operation. A business model that **prioritizes the involvement of local resources** suppliers and partners will be developed to pave the way for future usage of this solution.



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ABOUT THE CONSORTIUM

Research partners

TECNALIA is the largest private center of applied research and technological development in Spain, a benchmark in Europe and a member of the Basque Research and Technology Alliance. We collaborate with companies and institutions to improve their competitiveness, people's quality of life and achieve sustainable growth. tecnalia.com

FRAUNHOFER institute for Solar Energy Systems ISE in Freiburg, Germany is the largest solar research institute in Europe. With a staff of about 1400, we are committed to promoting a sustainable, economic, secure and socially just energy supply system based on renewable energy sources. We contribute to this through our main research areas of energy provision, energy distribution, energy storage and energy utilization. Through outstanding research results, successful industrial projects, spin-off companies and global collaborations, we are shaping the sustainable transformation of the energy system. fraunhofer.de

CSTB objective is to imagine the buildings and cities of the future by guiding and securing sustainable construction and renovation projects, to improve the quality of life by anticipating the effects of climate change. It focuses on five key activities: research and expertise, assessment, certification, testing and the dissemination of knowledge. Its field of expertise covers construction products, buildings, and their integration into neighbourhoods and cities. cstb.fr

TUDELFT is the Faculty of Architecture and the Built Environment and has a leading role in education and research worldwide. The faculty has a strong focus on 'design-oriented research'. The driving force behind the faculty's success is its robust research profile combined with the energy and creativity of its student body and academic community. Staff and students are working to improve the built environment with the help of a broad set of disciplines, including architectural design, urban planning, building technology, social sciences, process management, and geo-information science. tudelft.nl

CEA is a major player in research, development and innovation, the CEA (19,925 employees) is active in major sectors such as defense and national security, nuclear and renewable energies, biotechnological and medical research, and technological research for industry. It is the leading French research organization in terms of the number of published patents applications and is also the leading French applicant on the European scene according to the European Patent Office. liten.cea.fr

CAMBRIDGE (The University of Cambridge) is a public research university, established in 1209, with 7,913 academic staff, and 23,247 students. The university has also been a hub for the development of a high-tech business cluster on its campus. The Construction Information Technology (CIT) group at Cambridge led by Prof Ioannis Brilakis is a research group oriented on advanced applications of computer vision and pattern recognition on infrastructure data collection, information retrieval and knowledge generation. At its core, the CIT group is active in automated digitisation of existing built environment assets, such as roads, buildings, bridges, and industrial facilities. cit.eng.cam.ac.uk

DTI Danish Technological Institute is an independent and non-profit research and development institute. Since 1906 the Institute has worked to promote the application of technological advances, for the benefit of both the individual business and the continued development, growth, and prosperity of society as a whole. This takes place in line with interdisciplinary and highly relevant societal drivers: digital transformation, green conversion, the circular economy and growth, productivity, and innovation capacity. dti.dk

Associations and consulting support

INNOVAWOOD mission is to foster innovation and bring business benefit to the entire value chain from forestry to wood, to furniture and construction. InnovaWood provides an European platform to share knowledge, latest information and follow developments as well as innovative trends. InnovaWood aims to provide a strategic orientation to the European research and innovation ecosystem which is evolving in response to the global challenges. innovawood.com

ICLEI Local Governments for Sustainability, founded in 1990 as the International Council for Local Environmental Initiatives, is the world's leading network of local and regional governments committed to sustainable development. ICLEI believes that local action drives global change and the leadership of local and regional governments can make a major difference in addressing complex environmental, economic and social challenges. iclei-europe.org

TENERRDIS is a French energy cluster covering the whole energy value chain, from production to transport and distribution of renewable energies (PV, batteries, hydrogen, smart grids, etc.). Tenerrdis, with its +270 members, is a cornerstone for SMEs, industrials, public bodies, local authorities, academic and scientific partners to develop public and private partnerships through R&D projects. Tenerrdis organised +70 events per year, representing +2900 participants. tenerrdis.fr



Industrial partners and SMEs

BEEPLANET is a start-up company founded in March 2018 in Navarra, Spain. We manufacture energy storage systems by reusing lithium-ion batteries from electric vehicles. Our major aim is to lead the integral management of the second life and recycling of automotive batteries, by proposing sustainable energy storage solutions. [beeplanetfactory.com](https://www.beeplanetfactory.com)

CHAZELLE is the merger between 140 journeymen specialized in the realization of reinforced concrete structures since 1987 and a design office of about fifteen professionals specialized in the financial, technical and administrative management of construction projects all trades and real estate development (born in 2001). With the union of its skills, the CHAZELLE group has been committed for many years to a quality, safety and environment approach. Each of the projects and building sites they carry out are challenges for which they combine their skills from design to delivery. [groupe-chazelle.fr](https://www.groupe-chazelle.fr)

COMSA, the parent company of COMSA Corporación, is a construction company in Spain with a strong presence in Europe and South America. For more than 130 years, it has been a specialist in railway projects that include the construction and maintenance of high-speed lines, trams, metropolitan and regional railways, as well as in the field of civil works and singular buildings. In turn, COMSA Corporación is a global infrastructure, industrial engineering and services group, with a turnover of €758M and a workforce of more than 5,000 people. [comsa.com](https://www.comsa.com)

DOMEA was created to create good, safe housing that ordinary people can pay for. This presupposes as low a rent as possible. We achieve this through continuous streamlining and digitization of our services and because we are one of Denmark's largest general building and housing administrations. Domea.dk is non-profit, owned by the customers and democratically managed. We are run as a commercial company to ensure as low a rent as possible. [domea.dk](https://www.domea.dk)

DUALSUN was created in 2010 by two engineers from Ecole Centrale Paris (Jérôme Mouterde and Laetitia Brottier). DualSun is the designer of the world's first certified hybrid "Made in France" solar panel. This 2-in-1 panel produces both electricity and hot water. It is designed by a team of engineers based in Marseille and manufactured in a dedicated factory labeled Vitrine Industrie du Futur in the Auvergne-Rhône-Alpes region. DualSun has also developed MyDualSun, a simple and fast simulator allowing the complete study of a project to be carried out. [dualsun.com](https://www.dualsun.com)

ENAR is a Spanish technical consultancy and engineering specialized in building facades. Our work is essentially focused on architects and developer's requirements, assisting the design of non-traditional facades for ensuring a quality execution. ENAR has collaborated with many important architects of national and international renown. [enararquitectonicas.es](https://www.enararquitectonicas.es)

GEZE GMBH and IBERIA is your partner for door, window and safety technology. The most important for them is customer confidence in our products, system solutions and services for doors and windows. They are a major driving force behind the digital networking of building technology - with one goal in mind: the development of comfortable buildings. Our intelligent products impress our customers worldwide with their workmanship, comfort and design. [geze.com](https://www.geze.com)

ICM Ingeniería Cruz Marqués SLP was founded in 1999 by Chema Cruz Marqués, Industrial Technical Engineer, and was consolidated in 2001. Since then, ICM has established as a reference technical office delivering installations engineering services in the Center and North of Spain. ICM has proven to offer high quality services in the important installations that it designs, projects and manages in the residential, industrial, building construction, environment and renewable energies, and covers all the aspects from the initial planning until completion of installation. [icmingeneria.com](https://www.icmingeneria.com)

IDP Group is a global and multisectoral technical service company, founded in 1998, which is specialized in the fields of engineering, environment, and architecture. [idp.es](https://www.idp.es)

OTEIS is an independent engineering group, providing consulting and design services to the building, water and infrastructure industries. It is composed of nearly 500 engineers and technicians, working in 20 agencies located mainly in France and in further international places (Beyrut, Moscow, Algiers, Monaco), with a turnover of 50M €/year. In the building construction sector, OTEIS brings a multidisciplinary expertise to its customers and partners with civil engineering, HVAC, electricity, energy and environment, Building envelope & Facades, BIM & Synthesis, Facility management engineering, and Real Estate advisory. [oteis.fr](https://www.oteis.fr)

SOPREMA Soprema is a global company that produces waterproofing and insulation products for buildings fields. Range of bio-based insulation are commonly used in Europe. Portfolio contains Pavatex Range of products, wood fiber for both rigid and flexible insulation board. Soprema gets also some bio-based products to fill in jobsite, as cellulose wadding. Soprema develops some new technology and products in order to place the bio-based insulation in new fields or application for buildings. [soprema.fr](https://www.soprema.fr)



UNSTUDIO Founded in 1988 by Ben van Berkel and Caroline Bos, UNStudio specialises in creating ground-breaking architecture and design at all scales, from bridges to public buildings, offices, residences, exhibitions, products and urban masterplans. The name UNStudio stands for United Network Studio and refers to the collaborative nature of the practice. unstudio.com

UXAMA Fachadas Singulares Uxama is the culmination of a project born from the knowledge and enthusiasm of the people who make it up. The company offers its clients a comprehensive and personalized service, with the aim of participating in the different phases of a project's development, seeking to incorporate the best systems for each project. They are specialists in the technical development and management of unique façade projects with high added value. With extensive experience in aluminum curtain wall systems and high-performance aluminium systems, buttoned glass enclosure systems, skylights, solar protection systems, ventilated facades, glazed fire enclosures... in short, they provide solutions to complex needs. uxama.com

TERMOLINE was founded in 1997 and is an innovative design & build company in industrial construction field focused on energy efficiency and renewable energy with a strong expertise GSHP and Hybrid Heat Pumps, radiant heating, and cooling systems T.A.B.S. (Thermally Activated Building Structures), and the energy recover from the waste, shallow geothermal energy: energy piles and slurry walls. termoline.ro

WESTAFLEX is one of the world's innovation and quality leaders in the market for ventilation products for air-conditioning, exhaust and building technology. Wherever air flows, disturbing noise can occur. This is why Westaflex has consistently integrated acoustic solutions into air technology applications - acoustics and air technology in harmony with people and the environment. We place particular emphasis on sustainable, environmentally friendly manufacturing processes and products. Westaflex systems are currently offered in ten countries through subsidiaries and in 22 countries through licensees. Westaflex is a family business in the third generation. westaflex.de

Municipalities

BOEN SUR LIGNON is a rural small town with a population of 3500 inhabitants between Lyon, Saint-Etienne and Clermont-Ferrand cities. The building to be refurbished in AEGIR is the police station with a mixed used between tertiary (police officer working there and welcoming inhabitants) and residential multifamily house hosting the policemen families. Boën will host a pilot demo around the refurbishment of the local police building. commune-boen.fr

SIEL42 is a Departmental level inter-municipal cooperation body of the type known as an EPCI. The Syndicate Committee is made up of 350 local elected representatives and was set up in 1950. It is the owner of the electricity and gas distribution networks in its area of intervention, and as such monitors the activities of the concession holders, Enedis and GRDF. SIEL-Territoire d'énergie Loire carries out extension, reinforcement and undergrounding work on those networks. www.te42.fr

MALGRAT de Mar is located in the North coast of Barcelona, its population is around 20.000 inhabitants, officially born as Vilanova de Palafrons in 1373, has traditionally been an agricultural town with a considerable maritime trade activity and, from the nineteenth century on, an important industrial activity. Therefore it is a very diverse town, because during all its history fishermen, miners (in the early twentieth century the Mines of Can Palomeras were exploited, nowadays they are closed), peasant farmers, who still today can be found in the Pla de Grau, lived together. ajmalgrat.cat

Follow the AEGIR Journey!

