

# BUILD



Exciting times: we're ready to fine-tune and implement the MEZeroE building paradigm. Discover how we'll do it and be a part of these innovative synergies.

MEZeroE  
Measuring Envelope systems  
for Zero Energy buildings

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# BUILD

As we transition from enhancement to execution, the true potential of our evolving platform is coming to light. The acceptance and performance of this platform hinge on a growing community of users. Let's take pride in our collective achievements and become the ambassadors of this movement. Together, we can expand our community and accelerate the transformation of the construction world. You are invited to join us in building not just structures, but a legacy of innovation and sustainability.

Within the dynamic realm of sustainable construction, the MEZeroE project is advancing on its ambitious path. This third edition of the annual magazine aligns with a pivotal juncture: the materialization of the construction of measurement and verification lines, the setting of open innovation services and the impending realization of the digital platform. In this bustling ecosystem, the erected pilot lines exhibit advanced engineering and exemplary dynamism, operating as anticipated, thus fulfilling the promise of progress. Simultaneously, the gates of innovation have been thrown open, promising a continuous stream of discoveries and enhancements.

Eight Living Labs, true microcosms of the project's vision, are in the process of being outfitted with cutting-edge monitoring systems. They will be fully operational in the first quarter of 2024, with initial tangible results expected by early 2025. A call to expand this network has been launched, inviting an even greater synergy within the builder community. On the horizon is the roll-out of MEZeroE's digital innovation platform, envisioned to be the cornerstone of this ambitious project. It aims to become the convergence point for construction professionals, although its economic model is still in the making, promising ongoing contemplation of viability and impact.

This construction phase bears witness to an unprecedented alliance between the scientific and academic communities and industrial stakeholders. Together, they weave the tapestry of a future where innovative materials are deployed with speed and efficiency, redefining the market with buildings aiming for minimal carbon impact and maximal energy efficiency. The narrative of MEZeroE is neither linear nor devoid of challenges. Each milestone achieved adds a piece to a complex puzzle, that of an industry undergoing transformation, seeking to harmonize the demands of today with the imperatives of a sustainable future. The path is strewn with obstacles and discoveries, but each step forward is a stride towards the transformation of an entire industry.

The journey continues, and each new development adds a chapter to the saga of sustainable construction, a story that MEZeroE is proud to narrate and shape.



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# Let's change the rules together

As a decisive strategic lever for meeting the urgent challenges of the energy transition, the construction and architecture sector needs to renew itself. As in the academic and IT fields, the construction industry has every interest in rapidly adopting the open innovation model.



Part of the team at an outdoor workshop during the General Assembly in Barcelona



The economic race in which each industrial player develops its own solutions to bring them quickly to market in a competitive spirit has reached its limits. Today, to go further and have a chance of transforming our industry, the time has come to move from individualism to collective action. In this sense, each stakeholder in the new MEZeroE ecosystem we're building has a dual role to play: both benefiting from and contributing to the vast mission supported by everyone. Academic players, test labs and companies can act together, giving birth to a new sustainable paradigm, both economically and energetically. This won't happen overnight, if only because of the disruptive mentality we need to adopt. If we, as individuals, don't like change, the economy loves it, not only to avoid crises but also to reinvent itself in a pro-active way to meet the challenges ahead.



Francesco Babich  
Project coordinator and Senior Researcher  
Institute for Renewable Energy, Eurac Research

“  
Academic players, test labs  
and companies can act together,  
giving birth to a new sustainable  
paradigm, both economically and  
energetically”

Europe has a key role to play in bringing about this change: that of re-industrialization. Competent and well-positioned in cutting-edge products and techniques for the facades and envelopes of a new generation of sustainable buildings, European companies have major advantages, in terms of technological know-how and local positioning within a circular economy based on short circuits. It's up to you and us to help this virtuous new ecosystem grow together.

The end of 2023 marks a decisive turning point for MEZeroE, with the launch of its open innovation digital platform. We have high expectations for this step. We hope you will too. And that it will quickly generate far-reaching, innovative and relevant synergies. In the meantime, we also wanted to show you who's behind the project. In this third issue of our magazine, we invite you to discover the people behind the scenes of this vast undertaking, to understand their backgrounds, their ambitions and their expectations. Enjoy your reading.

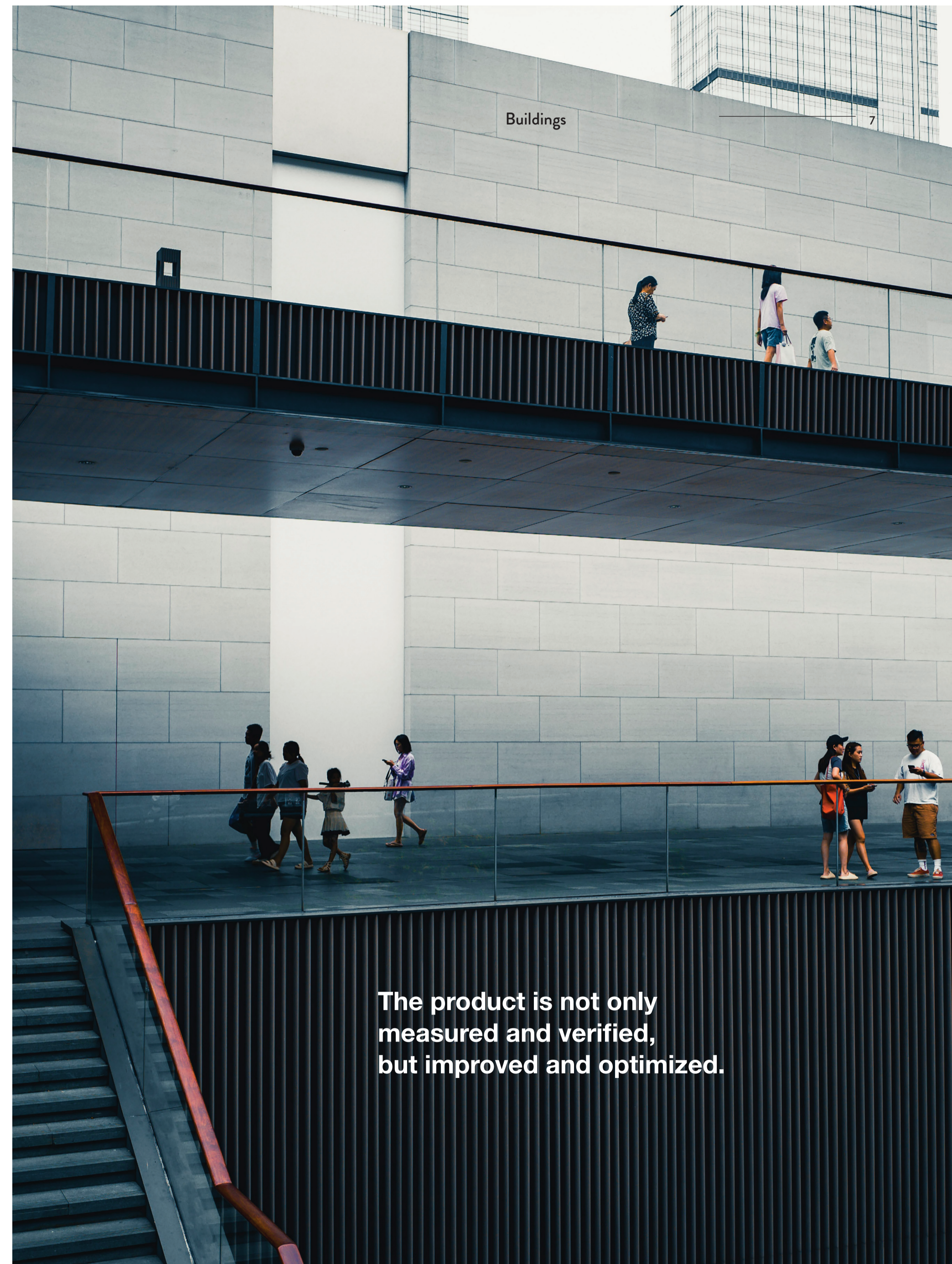
# Buildings and people interactions

**By blending occupant feedback and hard data,  
we can precisely identify areas where adjustments  
are needed.**

The integration of hard data with occupant feedback creates buildings that are more energy efficient, more comfortable, better adapted to user needs and more in line with sustainability objectives. This approach promotes occupant satisfaction and contributes to the overall value of buildings in the construction industry.

Combining objective data on indoor environmental conditions, such as temperature, humidity, and lighting, with feedback from occupants, architects, and material manufacturers contributes to optimized building design. This approach ensures that buildings meet the actual needs of users, resulting in more comfortable and efficient spaces. In fact, this user feedback makes it possible to adjust building parameters to optimize comfort, taking into account individual preferences, which helps MEZeroE achieve one of its primary goals: to improve occupant satisfaction, well-being, and ultimately, human comfort. By blending occupant feedback and hard data, we can precisely identify areas where these adjustments are needed. In turn, this improved comfort and reduced energy consumption contribute to the sustainability of buildings, enabling them to meet more stringent environmental standards.

Cross-referencing data can help identify potential problems early, enabling proactive and preventive maintenance that avoids high repair costs and disruption to occupants' lives. It's worth remembering that in some regions, regulations require buildings to maintain a certain level of comfort for occupants. And the integration of hard data and occupant feedback makes it easier – thanks to more objective and verifiable information – to ensure compliance with these requirements. It comes as no surprise that buildings providing high levels of comfort for occupants are more attractive to tenants, users, and investors, which can increase the value and profitability of real estate assets. By soliciting feedback based on the occupants' experience, building owners and managers can increase occupant engagement, improving satisfaction and generating long-term loyalty.



**The product is not only  
measured and verified,  
but improved and optimized.**

## Building owners benefits and expectations

As part of the project, innovative envelope products are produced, tested in the laboratory and then installed and tested in real buildings in order to obtain feedback from users and assess their day-to-day performance. Part of MEZeroE's activities is dedicated to testing products in real buildings and owners are invited to install the technology provided by the project in buildings free of charge and share feedback.

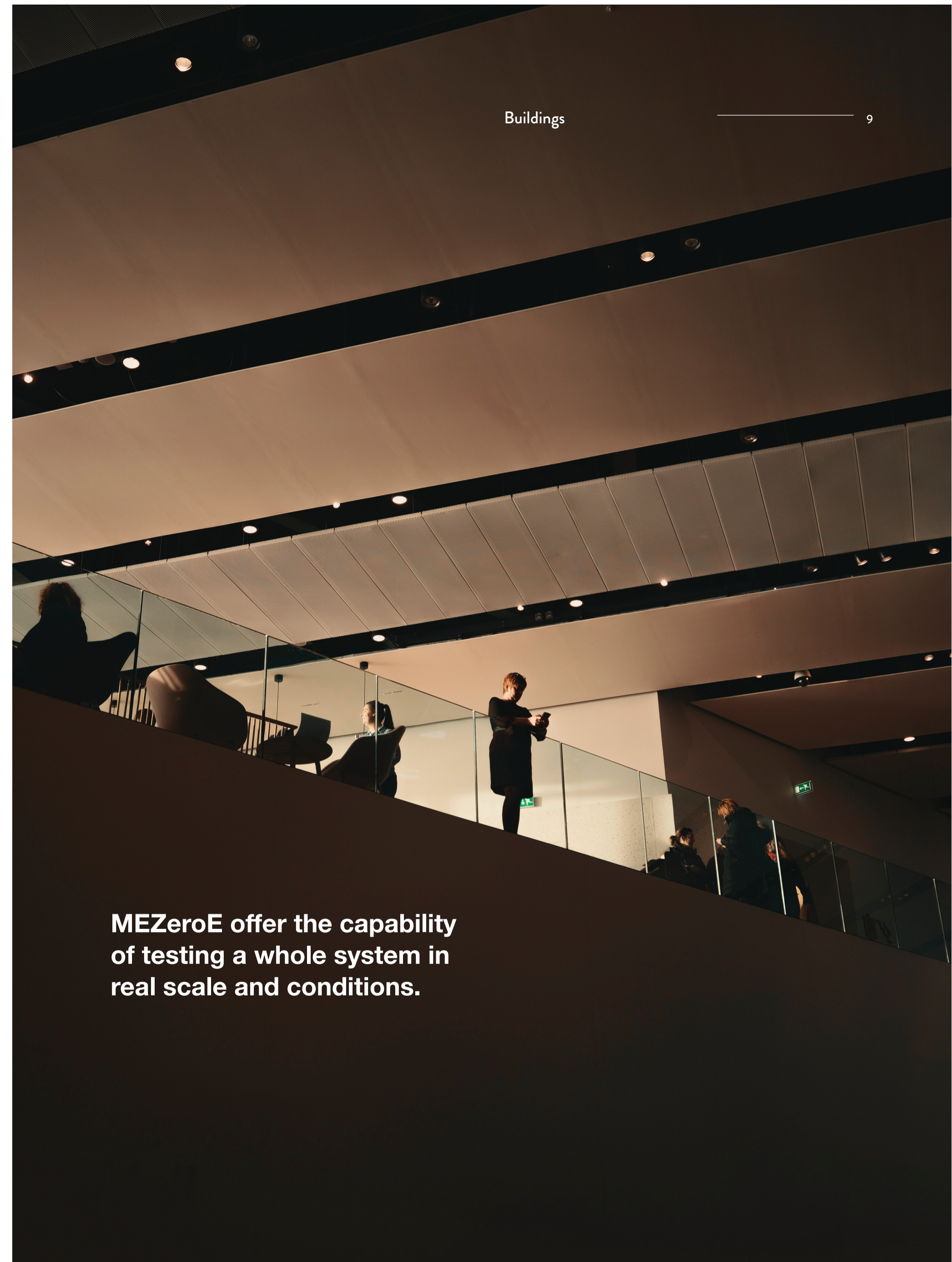
A data collection system enables real-time monitoring of a building's energy consumption. This provides the building owner with the ability to proactively monitor energy performance and quickly respond to issues as they arise. By collecting data, the system can identify energy inefficiencies, heat leaks, faulty equipment, or occupant behaviour that negatively impacts energy consumption. This allows the building owner not only to take necessary steps to rectify any problems but also to optimize the building's operating costs. By monitoring the carbon emissions associated with energy consumption, the building owner can find ways to reduce the building's carbon footprint, contributing to the fight against climate change and the achievement of sustainability goals – the ultimate win/win scenario.

Collecting data on energy efficiency and carbon emissions is crucial for ensuring regulatory compliance in many locations. By doing so, building owners can avoid potential penalties and ensure that they meet strict regulations on energy usage and emissions. Furthermore, the data collected can be used to identify areas where energy performance improvements are required. This may include upgrading insulation, replacing obsolete equipment with more efficient substitutes, or adopting more responsible energy use practices.

Collecting such data can also increase the value of the building, as potential buyers or tenants are likely to be attracted to a building whose low operating costs contribute to sustainability. Finally, integrating a data collection system demonstrates owners' commitment to sustainability, with an appreciable benefit to their images and reputations. This can lead to participation in sustainability initiatives and enhance the overall value of the building.

### Procedure to apply a building as a test site

Answer the MEZeroE Call for buildings by filling the application form available on the project website and send all the required data to the Living Lab management team.



**MEZeroE offer the capability of testing a whole system in real scale and conditions.**

## The architect is a pivotal interface between developers, clients, owners and users.

Driven by the energy transition and the sustainable imperatives facing the construction industry, the architectural mission has evolved considerably. At once advisor and consultant, expert and learner, facilitator and integrator, architects find themselves at the heart of a vast paradigm shift that they both follow and promote.

**As an architect, you occupy a pivotal position between all stakeholders in the construction industry. How do you encourage a sustainable approach?** As architects, our approach is first and foremost to bring our knowledge to bear in imagining with our clients the most sustainable solutions possible. Often, some clients already have a certain sustainable approach in mind for their projects. Our role is to take this thinking a step further, by imagining solutions that don't yet exist, or even by targeting much more ambitious objectives than those initially determined in terms of sustainable performance. In this sense, our goal is to get to a shared vision with our clients, in which sustainable objectives are listed very precisely and specifically.

**Objectives such as aiming as far as possible for zero-emission buildings?** We need to go even further. Building without generating negative environmental impacts has already been a common sustainable foundation in our approach for several years. Today, our vision is to do even better. This is essential if we are to meet the urgent challenges of the energy transition. Generalizing the construction of net-zero buildings is, in fact, a vital minimum. The idea is to construct buildings that are themselves decentralized sources of energy production. Buildings that are designed to reverse ecological damage and to have a net-positive impact on the natural environment. And all this with materials that are recycled, natural or can be reused, within a technological or biological loop, at the end of the building's life cycle. All this forms the basis of what is known as regenerative architecture.

**What are the main obstacles to sustainable construction?** Generally speaking, economic factors are still an obstacle. This is not just a question of costs, as many contractors are beginning to understand the economic added value generated by a sustainable investment at the outset, but also aspects relating to risk management, or at least its perception. In this sense, the main obstacle is, in fact, the change in mentality that needs to be brought about among a project's decision-makers. A case in point is wood, now recognized as a reliable, practical and,

of course, sustainable solution for building structures. But this change in perception has taken time, and is still taking time in some regions, since the main players in the construction industry are large, relatively non-agile groups who have traditionally used concrete and steel. This change in perception, for example with regard to the use of wood in structures, now needs to be applied to zero-emission and energy-producing buildings.

**With regard to the sustainable solutions and products that are being developed for both the structure and the building envelope, do you have any promising synergies with manufacturers? Has the role of the architect also evolved along these lines?** Absolutely. A few years ago, as architects, our job used to be to design the plans for a project, then select the materials and solutions available, focusing above all on their price. Today, our approach is completely different. Designing a project involves much broader thinking. As architects, we have to consider all aspects of sustainable materials and solutions that are available from local suppliers. Ideally, these players are also integrated as stakeholders, so that their expertise and knowledge can be called upon in the design phase. The architect therefore needs to get out of his or her bubble and find out about the solutions that are being developed and that are the most consistent with the project and its sustainable approach. **Regarding the access to this knowledge and know-how, is the factor of being able to benefit from a single entry point, as provided for by the MEZeroE platform, an attractive advantage in your opinion?** Absolutely. The construction industry is a vast sector, made up of multiple players and stakeholders. For many of them, access to sustainable skills and knowledge remains a major challenge as is access to the right players. Having a single entry point to get to all this can only be beneficial. As part of this approach, one of the best practices is to ensure that all specific notions and lexical elements are spelled out, so that we all speak the same language. Agreeing on a clear common terminology is essential.

Malin Belfrage  
Architect in charge of R&D in transformation and circularity  
Sustainability strategist at White Arkitekter



One of the best practices is to ensure that all specific notions and lexical elements are spelled out, so that we all speak the same language”

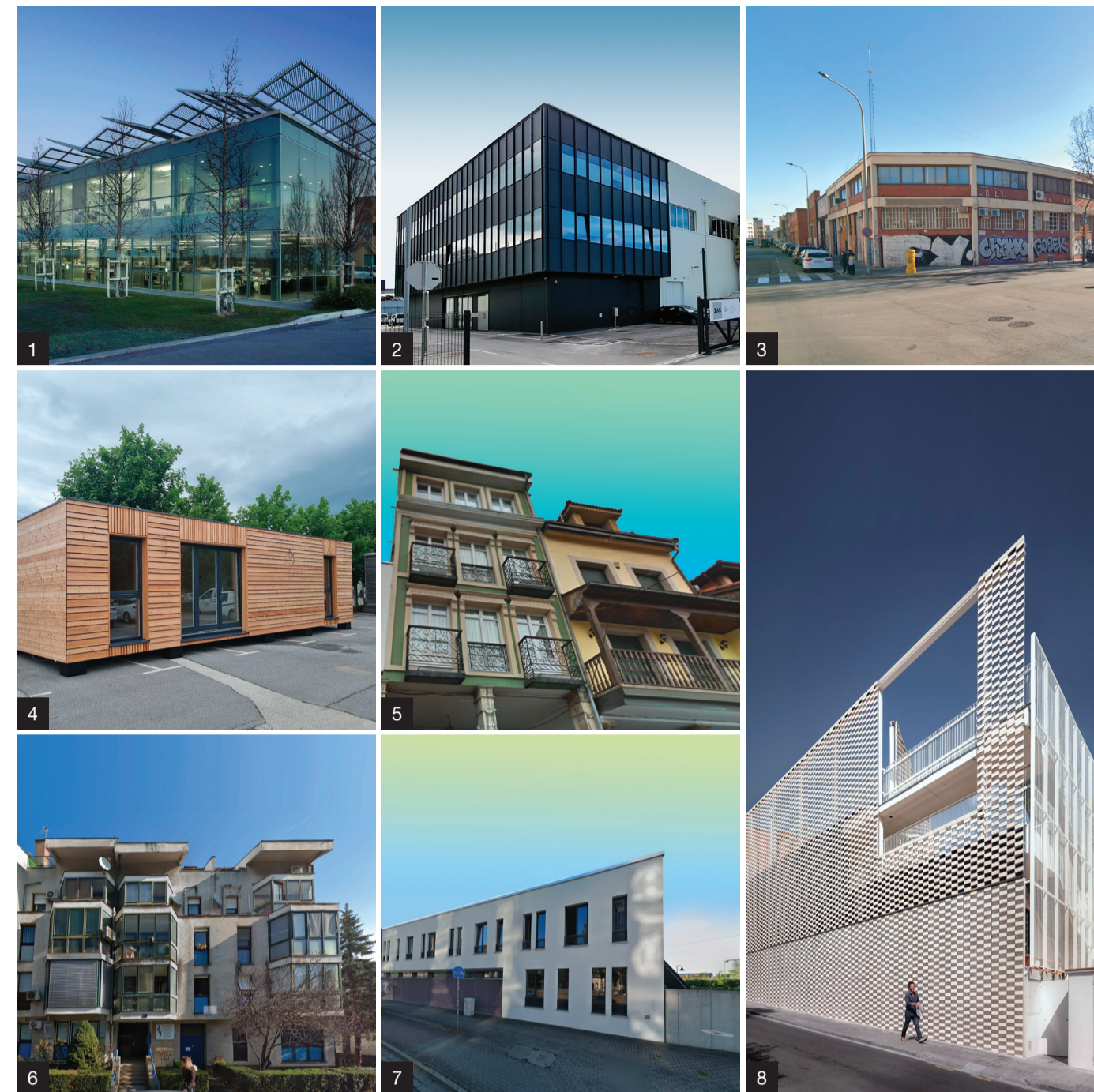


For Malin Belfrage, architect in charge of R&D in transformation and circularity, and sustainability strategist at White Arkitekter, sustainable architecture has to go beyond zero-emission buildings. The aim is to become an integral part of sustainability through energy-producing structures. Welcome to the era of regenerative architecture.

8 monitored  
Commercial  
Educational  
Residential  
Public

# LIVING LABS

MEZeroE's Living Labs serve as a platform to connect all stakeholders involved in the development of nearly Zero-Energy Building (nZEB) envelope products. The objective is to promote the exchange of knowledge among industry, research institutions, test sites, and certification bodies to support the creation of new and innovative products. Our goal is to provide a real-world testing environment for nZEB products, facilitate the collaboration between building owners and manufacturers, and monitor product performance and occupants' satisfaction in actual buildings. We conduct product testing in real-world conditions and match building owners with suitable product manufacturers. Our test sites have varying levels of user involvement and install a monitoring system to ensure accurate data analysis and reporting.



## Commercial

### 1- ITALY - Poggio Torriana

**Multi-domain indoor environmental quality**  
Measurement of indoor physical parameters before and after renovations, and collecting occupant feedback for evaluating multi-domain indoor environmental quality (IEQ): thermal comfort, acoustic comfort, visual comfort, and indoor air quality.

The building utilizes the façade as an interface and environmental management element, working with the heating/cooling and lighting systems as well as other automation to control and measure the environment. This saves energy and enhances user comfort.

### 2- SLOVENIA - Logatec

**Indoor thermal and daylighting comfort, energy performance.**  
Carrying out a thermal comfort study and calculating energy saving pre and post retrofitting.  
Office building with connected state of the art fire laboratory. Building is undergoing a renovation toward improving its energy consumption and indoor comfort by applying energy efficient glazing system to its windows.

### 3- SPAIN - Barcelona

**Indoor environmental quality (IEQ) monitoring**  
Thermal and acoustic comfort will be the main focus of the indoor environment monitoring and post-occupancy evaluation.  
Window system will be replaced to enhance safety and reduce energy consumption as part of a rehabilitation project.

### 4- SLOVENIA - Ribnica

**Envelope performance**  
Real condition timber envelope solutions on modular house. Calculating heat transfer through the building envelope, by measuring the heat flux (U-value), ambient and surface temperature.

## Residential

### 5- SPAIN - Avilés

**Renovation of cultural and historical building**  
Integral rehabilitation of a comprehensive protected building in the historic centre of Avilés.  
Tailored roof/facade smart membranes and sealing tapes will be used. Advanced functional coatings and nanomaterials for energy efficient glazing system will be applied on the facade and windows, respectively.

### 6- CROATIA - Zagreb

**Envelope performance**  
Residential house with reinforced concrete load-bearing structure. Restoration of the roof slab and thermal insulation of a loggia wall.  
Calculating heat transfer through the building envelope, by measuring the heat flux (U-value), ambient and surface temperature before and after insulation foam implementation.

## Public

### 7- GERMANY - Dresden

**Organic photovoltaics integration**  
Renovation of the shell and roof. Complete interior restoration will be carried out, bearing in mind the new use of the area as a workshop hall with offices and a social area.

## Educational

### 8- SPAIN - Barcelona

**Façade photovoltaics integration**  
Newly constructed kindergarten and primary school upgraded with a Flexbrick pergola featuring photovoltaic cells that provide electricity and shading.

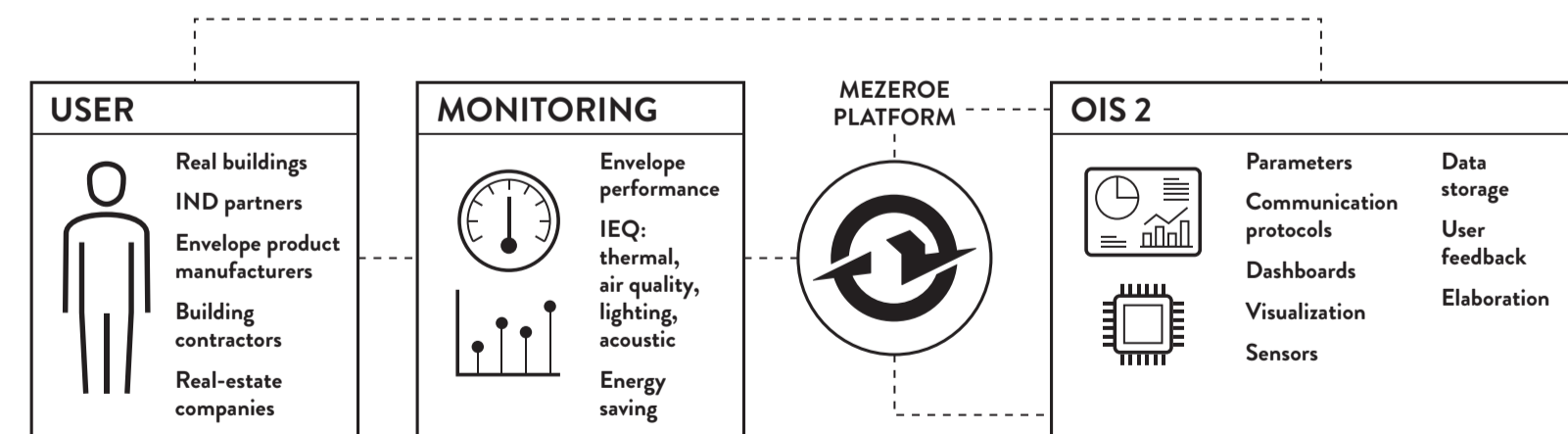
# An inside look at Living Labs

Living Labs give us the chance to evaluate products and processes in a real building or in a test facility that emulates one. They are populated by real people whose feedback, both during their residencies and in post-occupant evaluations, is combined with objective test measurements including – among other parameters – air quality, temperature, and humidity. For a closer look at these Living Labs, we turned to two experts who are active partners in the MEZeroE project. Urša Blumauer works at Slovenian National Building and Civil Engineering Institute in Ljubljana. Akshit Gupta is a researcher at Institute for Renewable Energy, Eurac Research.

The Living Lab has two main objectives. Firstly, it aims to create an organized and collaborative environment for stakeholders to cooperate in the development of nearly Zero-Energy Building (nZEB) envelope products. Secondly, it provides real environments for product evaluation under real conditions. The specific objectives are focused on improving the competitiveness of companies that produce nZEB envelopes.

Buildings are equipped with sensors that monitor the quality of the indoor environment, while users will provide feedback on the products installed and the living environment. The aim is to test advanced, high-performance technologies in real-world conditions, with user interaction and control of specific parameters. A real, existing building, occupied by people and equipped with sufficient integrated sensors to measure the relevant parameters,

is used as the technological basis for evaluating the nZEB technology. Since no adaptation is required on the part of the users, at least in the long term, the feedback is unbiased and gives an insight into the users' perception of the technology. This is a crucial and unique non-engineering assessment tool in the product validation process.



Urša Blumauer  
Researcher at ZAG

“  
**Monitoring systems consist of adding a decisive dimension to the value of raw data: the human feeling and experience**”

It offers a comprehensive, cost-effective range of protocols for measuring, verifying and characterising building envelope products.

As the demand for sustainable and efficient building practices grows, the need for a comprehensive monitoring service becomes evident. Open Innovation Service 2 (OIS2), with its standardized protocols and innovative approach, stands at the forefront of meeting this demand. By seamlessly integrating monitoring technologies, it not only addresses current challenges but also anticipates future needs, offering a holistic solution for informed decision-making and optimized building performance.

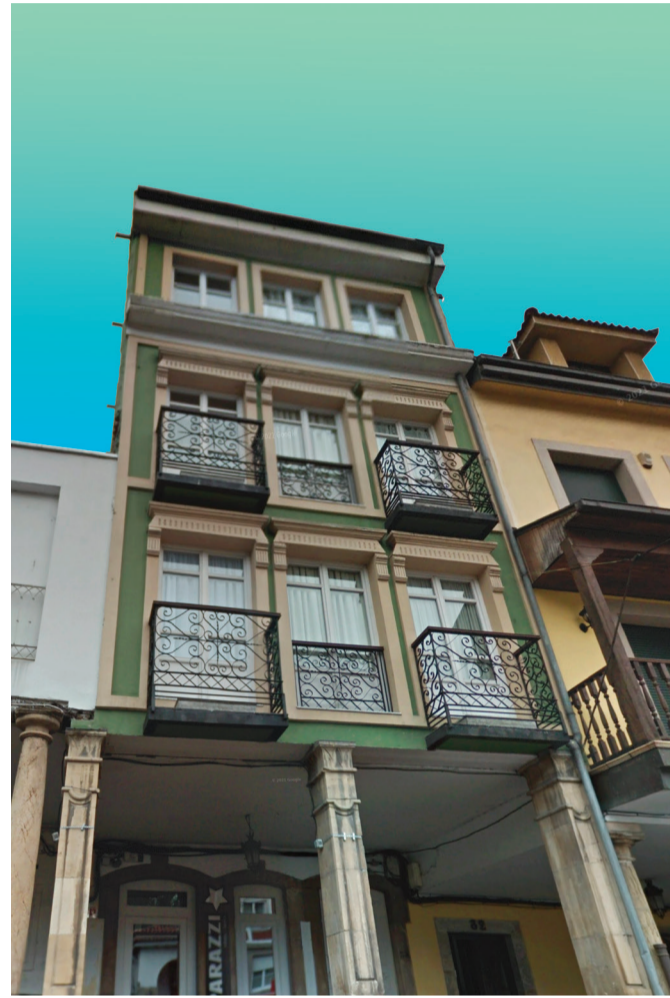
This journey of OIS2 development involved a keen focus on precision, adaptability, and stakeholder collaboration to create a comprehensive framework. The protocols have been crafted not only to meet current industry needs but also to anticipate and address future challenges, making OIS2 a pioneering force in advancing sustainable and intelligent building practices. OIS2 will provide the monitoring services for the Living Labs, where the specific products installed and the required

performance tests to be carried out will drive the monitoring protocol application.

OIS2's focus on specialized monitoring, stakeholder interaction and access control, robust architecture, and comprehensive reporting, ensures not only data security but also a seamless and organized user experience. As OIS2 continues to evolve, it stands as a beacon of innovation, driving sustainable and informed decision-making in the ever-evolving landscape of building management.

**We invite building owners to implement the technology provided by the project to be installed on their buildings free of charge and provide us with feedback.**





**SPAIN - Avilés**

**Renovation of cultural and historical building**  
Integral rehabilitation of a comprehensive protected building in the historic centre of Avilés.

Avilés is a Spanish city and council located in the Principality of Asturias, in the north of the Iberian Peninsula, on both banks of the Avilés estuary. It is one of the three largest and most important towns in Asturias. The old town has been classified as a historic site, thanks to its jewels of civil and sacred architecture, which has not hindered the authorities' determination to speed up the upgrading of its urban space through renovation. The Living Lab's scope of work involves the renovation of a residential building, including the installation of made-to-measure waterproofing membranes for the roofs and façades, as well as advanced and perfectly integrated functional coverings and nanomaterials for an energy-efficient glazing system.

**SLOVENIA - Ribnica**

**Envelope performance**

Real conditions timber envelope solutions on modular house. Calculating heat transfer through the building envelope, by measuring the heat flux (U-value), ambient and surface temperature.



Image @ Riko Hiše

This is a mobile and modular prefabricated wooden building that serves as a Living Lab. Its design aims to provide a comfortable, high-quality, healthy, safe, and economical office space. Increasingly, wood-based sustainable and innovative solutions are being embraced by both public and private investors and property owners alike. It would be particularly interesting to see if these solutions have been tested in real-life conditions to measure their thermal and energy performance.

**OFFICE - ITALY**

**Poggio Torriana**

**Multi-domain indoor environmental quality**

Measurement of indoor physical parameters before and after renovations, and collecting occupant feedback for evaluating multi-domain indoor environmental quality (IEQ): thermal comfort, acoustic comfort, visual comfort, and indoor air quality.



Image @ Focchi

The façade system developed for this project is comprised of a stick curtain walling with structural silicone glazed modules that are mechanically fixed to the grid. The aluminium mullion is responsible for safety and sealing functions, while the structural part is fulfilled by glazed fins characterized by lightness and transparency. These can also be used for double-height facades, such as the atrium.

Starting from 2016, a series of interventions were carried out to create an integrated facade-plants-BMS solution, making Focchi headquarters a Living Lab for the study and prototyping of integrated solutions. Focchi's specialized knowledge of the façade world, together with that of the management and control of the building, has allowed for the combination of façade components with hardware ones. This involves

a façade with integrated sensors and actuators, including the management of fan coils inserted in the façade and environmental sensors, connected with a software system. The BMS system is wired with the façade and the sensors in the room, providing a reliable solution with energy and comfort performance that is validated and easily scalable in other similar buildings.

The building exploits the façade as an interface and environmental management element, working in connection with the heating / cooling system, the lighting system, and other automatizations that can be implemented on the façade by controlling and measuring the environment. This ensures energy savings in the building and increases user comfort.

SPAIN - Barcelona

**Façade photovoltaics integration**

Newly constructed kindergarten and primary school upgraded with a Flexbrick pergola featuring photovoltaic cells that provide electricity and shading.

Located on Escorial Street in Barcelona, the Virolai Petit kindergarten is a unique building that showcases a fusion of traditional and modern design elements. The building was created by the innovative minds at Sarrablo architecture studio, who have done an excellent job of crafting a structure that stands out from the rest. The kindergarten features facades that allow for ventilation from all sides, except for one that provides protection from the noise of the city. The building opens to a peaceful patio with layered green spaces where children can play and explore. The playgrounds cascade from the roof down, with each level providing a different view of the world below. Unlike traditional schools with rooftop play areas that feel like cages, Virolai Petit offers a design that nods to the grandeur of Florentine palaces, extending its embrace to the street with a unique blend of classical charm and contemporary flair. The walls of the building are a marvel,

with concrete and ceramic interlacing without the confines of a frame, allowing the textile's pattern to flow uninterrupted across the facade. This design captures the school's philosophy, where boundaries are pushed, and the traditional and the new coexist in harmony. The playground atop the building is a triangular oasis framed by the sports centre and dual Flexbrick sunscreens. These ceramic veils cast a protective shade, creating a tranquil haven amidst the urban hustle, where children's laughter mingles with the gentle rustle of leaves. The checkerboard design of the sunscreens hides a secret power – a network of photovoltaic technology that converts sunlight into green energy. These sunscreens are more than just sun barriers; they are silent generators of clean energy, shielding the young ones as they play and imbuing their surroundings with an ethos of ecological responsibility.



Project image by Sarrablo architecture studio  
Vicente Sarrablo, Jaume Colom, Jordi Roviras  
and Cristina Garcia

Image © ZAG

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**Merging monitoring data and occupant feedback enriches our understanding of user-centric indoor environments, and expands the global knowledge of our living spaces ”**



Akshith Gupta  
Researcher  
Institute for Renewable Energy, Eurac Research

SLOVENIA - Logatec

**Indoor thermal and daylighting comfort, energy performance.**

Carrying out a thermal comfort study and calculating energy saving pre and post retrofitting.



A new fire laboratory was built in the Logatec industrial estate and opened in 2022. The only one of its kind in this area of Europe, this new laboratory expands the scope of research and enables the possibility of conducting complementary research from materials to buildings. It aims to establish research at the level of European scientific excellence. The laboratory is equipped with state-of-the-art equipment which allows testing of the fire resistance of materials and structures of various sizes. The equipment make it possible to test the speed of combustion, the release of heat during combustion and the effect of air availability on the combustion process. The laboratory also carries out analyses to determine the chemical composition of combustion gases, their toxicity (acute and chronic), the impact on the environment and ecosystems, the influence of fire retardant materials, wood charring processes, stresses on different materials due to fire load and material anomalies, the behaviour of composite.

# When open innovation and opportunities meet

For the MEZeroE ecosystem to grow, it is essential to generate concrete opportunities for its stakeholders, particularly for companies. While it's certainly interesting for enterprises to define themselves as innovative and aware of the sustainable issues at stake in their sector, taking part in a serious, viable approach is another matter altogether. To do this, it's necessary that MEZeroE and its platform can meet specific and realistic industrial needs.

## Industrial expectations by Focchi

TO BE PART OF AN INNOVATIVE AND PROMISING ECOSYSTEM IN A PROACTIVE WAY, BY FEEDING BACK KEY INFORMATION LINKED TO MARKET NEEDS.

TO EXPLORE NEW OPPORTUNITIES THROUGH THE ECOSYSTEM'S TASK FORCE AND EVENTS.

TO TEST NEW SOLUTIONS, MATERIALS AND DEVICES.

## Transforming from within

In order to deploy a concrete sustainable policy and strategy in the field, it is essential to have resources within the company specifically dedicated to this dimension. "Without this, it's obvious that innovation will only be tackled superficially, in the background of the main projects", Alessandro Pracucci details. "At Focchi, by embodying this role, I am required to instil this dynamic and sustainable approach within the company. Getting employees on board with this approach requires a great deal of politics and diplomacy."

Being part of a project like MEZeroE means a lot. As a stakeholder in the adventure, Focchi embraces the specific demands and needs of the industry, a central position that should enable academic players and research centres to get closer to the economic realities in the field. With an eye on making it possible for innovation and research to break out of their silos, MEZeroE's nascent ecosystem is designed to make it possible both to cohabit and rub shoulders more closely within the same platform.



Alessandro Pracucci  
Innovation Manager  
Focchi Group

“

**Companies operating in the construction sector often have their noses to the grindstone and are reluctant to innovate. Their business is like a moving train that's hard to stop. So in order to spark their interest in adopting innovative approaches, these must be synonymous with business generation ”**

## Going beyond standards

The construction sector is currently undergoing a sustainable overhaul, marked by sustained regulatory changes in energy performance requirements. While these legal and regulatory inputs are encouraging the industry's players to focus on sustainability, there is still a need to go further.

"Standards and certifications are a good starting point," continues the Innovation Manager. "Achieving a standard is an obligation, and obtaining energy labels is an encouraging voluntary step. However, many innovative solutions, such as Building Integrated Photovoltaics (BIPV) technologies and devices, are not yet covered by any existing standards or certification. In this sense, companies positioning themselves in this field are moving forward in a grey area. This is stimulating from an exploratory point of view, but remains restrictive in terms of application and generalization in the market."

## Testing new solutions, materials and devices

It's the point that will enable companies to go beyond current norms and standards. Having testing solutions and infrastructures at your disposal gives you the opportunity to gain credibility. Because any company that claims to be innovative needs to have built something concrete that embodies its positioning. In this sense, joining the MEZeroE ecosystem is a great opportunity, not least by being able to expose its demands and needs to a whole community of key scientific, academic and research players. We're betting on catching this new train before it goes too fast, because we are certain that, in the near future, not to be part of this unique ecosystem would be synonymous with a lack of openness, solutions and opportunities.

# A forward-thinking initiative



Rafael Pardo  
CTO  
Flexbrick

**What are, in your opinion, the advantages of MEZeroE?**

For innovative products, oriented to building highly energy-efficient structures and more specifically nearly Zero-Energy Buildings (nZEB), the differential target of providing assessment and leading to certification. Also relevant is the possibility of facilitating the transfer of knowledge and aligning the testing requirements with existing facilities and providing monitoring in operational laboratories. This help in standardizing innovative solutions developed by small and medium-sized enterprises makes it possible to ensure accessibility for our type of product and enterprise.

**How do you hope the platform and the stakeholders involved in it will evolve?**

We expect this to become an ecosystem, we already enjoy it being a collaboration tool in the construction industry. We hope to have more possibilities in scaling services for modelling, testing, and monitoring nZEB solutions. We expect more knowledge management and tailored training, especially in the subjects geared by the technological centres and testing centres.

**How do you feel, about being part of MEZeroE's approach?**

As a collaborator on this project, I feel positive about being part of MEZeroE's approach. The described approach in any case needs to be more aligned with our goals in not only helping in the way to certification, but also guiding it to ensure its accomplishment. All in all, it is a forward-thinking initiative.

**In the context of the project, are the scientists/researchers and industrial players speaking the same language?**

The collaborative nature of the project has facilitated effective communication and understanding between these two

groups, fostering a more cohesive and integrated approach to achieving common objectives. We are at the middle of it and it is now that we are beginning to see those possibilities together.

**Why do we need to reshape the current system of the building industry?**

We think that it is crucial to address environmental issues, promote sustainability, and adopt innovative technologies. By fostering energy efficiency and encouraging collaboration it aims for the society to be in a more resilient and adaptable built environment, reflecting a commitment to sustainability, efficiency, and social responsibility.

**How is the European building industry likely to benefit from MEZeroE? And is it easy for them to understand and accept the potential benefits?**

We think that the acceptance of those potential benefits rely on the ease of understanding, because the industrial partners are already open to innovative approaches. Therefore we need to highlight the importance of effective communication and tangible outcomes to ensure widespread adoption. Especially those last ones, for us.

**In your area of expertise, how does the marketplace meet a need?**

We aim to implement a new paradigm for the installation of BIPV taking benefit or the advantages of our system in terms of velocity of execution and architectural integration. This will allow more buildings to access the possibility of producing energy and minimizing their needs of demanding energy from outer sources, whether in buildings with limited access to roof or retro-fitting existing facades, and at the same time providing passive solar control with architectural oriented sunscreens.

“

This help in standardizing innovative solutions developed by small and medium-sized enterprises makes it possible to ensure accessibility for our type of product”



# What they say

Arkadiusz Kwiecien  
CEO  
FlexAndRobust Systems



“

**MEZeroE allows direct contact with research and industrial partners, which can help in receiving a CE mark and developing business in the future ”**

Pawel Wargocki  
Prof. Department of Environmental and  
Resource Engineering Indoor Environment  
DTU



“

**The creation of a critical mass opens up a vast field of applications, with many options for examining different building envelope solutions ”**

Matteo Giovanardi  
Project Manager  
Focchi



“

**We must create a common innovation path to trigger a circular and sustainable transition for the entire construction industry ”**

Team Rotho Blaas  
Technical Department



“

**We would love to enhance building quality while minimizing environmental impact ”**

Laure-Emmanuelle Perret  
PV Expert, Founder of Compáz



“

**MEZeroE is a pathway to innovation into the building industry field. A multidisciplinary approach is the only way to reach our objectives and it's what makes it so interesting ”**

# Developing and building a digital innovation platform

The MEZeroE digital platform is a single entry-point that provides open access to architects, builders, industry members, and anyone interested in developing, testing, or using innovative building envelope components for nearly Zero-Energy Buildings. This platform offers three open innovation services and test beds that can help identify the most suitable innovations for stakeholders' needs. Industry players often face issues such as fragmentation and slow processes. This platform offers an effective solution.

## Accelerating the journey from idea to market

The MEZeroE digital platform has been designed to help small and medium-sized enterprises (SMEs) and larger companies use a market-driven approach for open innovation with a single entry point. It follows three phases - discovery, empowerment, and implementation of reliable test-chains and open innovation services. These aim to drive advanced building envelope component prototypes to the market as viable, robust, low-risk projects. The platform offers open and unique access to the knowledge, know-how, technologies, products and services that nZEB players can provide.

The platform aims to assist players in the building envelope sector in developing new products, exploring innovative materials and manufacturing processes, and speeding up certifica-

tion procedures. As industry players are mostly focused on revenue and product development, we strive to help them find creative ways to increase their income in a positive manner and create or improve products using open innovation. We will soon launch our lead generator, with the objective of encouraging people to sign up and contact the service providers in our platform. Our aim is to achieve a high level of engagement and generate revenue. Our focus is on making our service providers happy, finding them customers and partners, and keeping them engaged. Any company's challenge can become an open innovation challenge: sharing risks, speeding up certification procedures, improving processes, and increasing the likelihood of success will enable many more ideas to be brought to market efficiently, working together towards a common goal.

Kedar Nabhwani  
CEO  
Incurvo



## MEZeroE platform could transform the Nearly Zero-Energy Building market”

from idea to market is accelerated. We have to ensure that all stakeholders - buyers and sellers - understand each other and while this is one of our biggest challenges, it is also one of our greatest opportunities. As an example, if we are able to get the pilot lines to understand the opportunities that they can create for the industrial partners and the doors they can open with services based on collaboration, we can really change the possibilities of our marketplace and again, this will come down to finding and sharing a common language. An issue that arises is sharing intellectual property - most SMEs still think that if you share your knowledge, you lose control of it. So they are more likely to see others as competitors rather than collaborators. It is therefore important to provide constant reassurance and to maintain discretion while pooling resources.

**How can such obstacles be overcome?** The aim is to launch a Minimum Viable Product (MVP). First, we will monitor the results and see what interest there is in the market and what leads are generated. We'll need to apply a specific marketing strategy, which involves targeting companies already persuaded by open innovation and convincing skeptics of the benefits of such an approach. We need to address and reassure them on intellectual property issues and guarantee security. We will organize and participate in events where we can talk about our vision of open innovation applied to the building sector. Innovation in this sector is slower than in any other market, so diligence and patience are key. We want to help the sector see the opportunities in knowledge sharing and co-creation.

**Where are the best opportunities for the platform?** I think that our real added value lies in bringing together academic and research institutes, industries and SMEs. That's the first opportunity. Secondly, we have nine pilot lines that support and accelerate the time-to-market for new products. They all come from renowned EU research institutes and universities. On the other hand, we have industrial partners, who are looking to certify and/or improve their products. If we can get the pilot lines to communicate the opportunities they can create for industrial partners and the doors they can open with collaborative services, then we can really enhance the potential of our marketplace.

### **For people who don't know Incurvo, could you tell us a little bit about the company and the sort of work it does?**

We focus on innovating and bringing R&D products to market. We saw a gap in communication between technical and non-technical teams, so we transitioned to digital and shifted to the business side of R&D. Our services include sales optimization, technology transfer, and private finance. That's how we became involved in this project.

**So you can apply this know-how to your participation in MEZeroE?** Yes. While we have been involved in developing other digital platforms in the past, this is the first one that offers such a niche range of services and know-how, all available on a single platform. It's a complex hybrid that focuses on collaboration and open innovation. It targets every stage of the innovation timeline with the aim of accelerating the time-to-market of new products.

### **Can you elaborate on the benefits of open innovation?**

Open innovation involves bringing together areas of expertise to create value together. The idea behind it is to leverage shared knowledge and expertise. This approach is becoming increasingly popular because developing innovative solutions in isolation can be expensive and time-consuming. Hybrid markets are emerging, resulting in the creation of more and more products that combine two or more technologies, which require different types of skills. Corporate entrepreneurship is also on the rise, with companies funding entrepreneurs and startups as part of open innovation to find solutions to complex problems for which they don't have the answers. This enables them to solve these problems more quickly and effectively.

### **What is the greatest challenge in promoting the acceptance of innovation in the project?**

The main challenge is to define all the different services, possibilities and their outcomes clearly, with a sound user experience to ensure that everyone's journey

# The missing connection

Creating a new business model in the construction industry is no mean feat. Conservative, robust and already successful, the construction sector has little interest in renewing itself. At least not on a purely economic level, since the construction industry is one of the largest in the world. At the same time, it is one of the world's most polluting industries, a fact that underscores the need for a sustainable overhaul.

To this end, the MEZeroE commercial platform is taking shape. In a few months' time, its first version should be online. It is a crucial innovation, whose matchmaking role between economic players, researchers and test laboratories should lead to synergies that are both innovative and promising in a sustainable perspective.

To find out more about this, and to understand the technological heart of this new business model, David Bottai, a researcher in entrepreneurship and innovation at the Institute for Renewable Energy, Eurac Research, explains how he is trying to change the industry with the help of algorithms.



“

**The goal: to bring together, within a secure ecosystem, the key players in the construction sector, namely companies and testing laboratories. Evolving separately in their own areas and fields of expertise, these actors must take a step towards each other. To do this, it is all about establishing a new bridge between them, a missing connection ”**

David Bottai  
Junior Researcher  
Institute for Renewable Energy, Eurac Research

**What is the starting problem you're working from to develop the business model for MEZeroE's commercial platform?**

The main problem facing the construction sector today is the compartmentalization of the industry's players. Companies occupy solid positions within a robust market that is performing well. In this sense, they don't need to innovate or question their approaches. All in all, the starting point is a sector that innovates very little, is not agile, and in which everyone moves forward on their own. On this last point, the same applies to researchers and the academic world, which until now has had little contact with the realities of the market and the positioning of companies.

**So what does the platform you're developing consist of, and how should it help reinvent the industry's business model from a sustainable perspective?**

The main idea behind our platform is to build bridges between all the players involved, i.e. companies, researchers and testing laboratories. The platform algorithm can be seen as a matchmaking tool, where all potential obstacles have to come down, be they cultural barriers or a lack of knowledge of each other's capabilities and potential. By logging on to the platform, a company can easily be put in touch with an academic player or a test laboratory to test the innovation it wishes to develop in the building envelope field. The site will also provide an entry point for users whose activities are related to the construction industry, such as architects, builders and homeowners.

**Based on an open innovation approach, how can you encourage companies to use the platform when they are still very concerned about intellectual property and industrial secrecy?**

While our approach is indeed based on an open innovation model, at the same time we need to guarantee a secure and confidential environment between researchers and companies. In this sense, the model is based on open innovation, enabling industrial players to call on research centres and test laboratories to benefit from their knowledge. But to bring companies in and offer them an attractive framework, they need

to be guaranteed a high degree of confidentiality. The market is not ready for total openness, and the new products or materials that might emerge from the platform, and the knowledge that underpins them, will not be shared among all platform users.

**What feedback have you already received from the first users with whom you are developing the MVP?**

The feedback is widely varied and reflects the positioning of the different players in the industry. Some companies are motivated and attracted by the platform, in particular by what it will enable them to achieve in terms of innovation. Others are more reticent, not necessarily seeing the interest or need to reinvent themselves, or to review their positioning within their industry. As for academic players and research and testing centers, there is a definite interest and a real effort being made to approach companies and get to grips with their realities and needs.

**How do you plan to manage the platform once it's online?**

That's a good question, not least because we need to do this while maintaining strong intellectual property guarantees for users. In this sense, the most appropriate governance model for the platform is probably that of a joint venture between players equally concerned by these issues. Once again, this would be consistent with the platform's multiple positioning between economic realities and needs, and academic and scientific contributions.

**How do you plan to promote the platform and increase the number of users?**

In my opinion, it's essential to be present at as many relevant events as possible, such as trade fairs, to promote the tool to the right people. Companies are all present at these kinds of events, so our presence there is essential. Word of mouth is also a powerful tool. In terms of growth, we're aiming for several hundred users, including test centers and companies, by 2030. Then the goal is to reach several thousands of users to establish ourselves strongly within the European market.

# The catalyst for Change

## MEZeroE Digital Innovation Platform Guidance for open innovation life cycle management

Designed for stakeholders across the construction spectrum – from architects to product manufacturers, and industrial giants – MEZeroE serves as a singular web-based multilateral platform, divided into two distinct tiers: public and a private. The public section offers insights into managing the lifecycle of open innovation, presenting a comprehensive view of our service offerings and offering users guidance to support performance-based innovation processes using a common language and standard benchmarks. The private section’s personalized dashboards facilitate immediate interaction with chosen stakeholders, allowing for expert advice on open innovation and lifecycle management of products, leveraging the dynamics of ‘open innovation’ – partnerships, open resources, knowledge, expertise, and technology to foster joint innovative projects.



**“The only platform that brings together all the players in the construction industry’s value chain in a single digital place”**

Eva Coscia  
Innovation Division Manager  
R2M Solution

**You are one of the founding members of the consortium.**

**At this point, how do you feel about the progress?** I honestly think that we have progressed very well. We have different things like the testing facilities and the Living Labs. We have a lot of industrial partners that are working on their own products. There are many different aspects. But I see progress, and I think that now it’s time to put everything on the ground and set up a common strategy to make the leap from the research to the market. The platform is there and we have a set of services that has been validated. Of course, we still have some things to do. We have to populate the platform and those of us on the research side have to adopt the language and the jargon of the industry. And I’m optimistic we can do that.

**The MEZeroE project is extremely complex with many different user profiles, open innovation services, Living Labs, testbeds and more. How do you translate this complexity into a digital platform?** The main effort that we have put into the project has been to gather all the input, the requests from the different work packages and tasks that reflect different perceptions of what open innovation should provide, which has been challenging. We have set up various workshops since the beginning to understand what services are available for the different types of stakeholders. I think that we now have a well consolidated set of services in the platform. And this is a really great goal that we have achieved. What is interesting and rewarding is that we have a sort of consensus from our stakeholders about the services. The platform is a broker positioned between a consumer and a provider of services. My ambition is to have something that can be scalable in the future so we can continue to post new services.

**You’re mentioned the variety of stakeholders. Have people like you, with a very substantial research background, and the industrial partners been finding a common language that that everyone can speak and understand?** That is still

one of the most critical points – we really need to make the transition from a research-based language to a more industrial language. We have been working with our industrial partners who are engaged in helping us change the terminology that we are using. To populate the platform, we have to make it attractive for every type of stakeholder and how we communicate the benefits of the platform will be a large part of that.

**How would you summarize the key benefits of the MEZeroE platform?** I’d start with the open innovation concept. In my optimistic view, open innovation is really peer to peer. If you are a small company, you do not have the power, for example, to do research on new materials; or you might have a nice idea, but you cannot prototype it or you do not have the legal expertise to see if you are infringing any patents. So with open innovation, you can ask for support from other peers, or you can ask a supporter for specific services. And the platform should allow you, as a small company, to find these services and maybe also to get in touch with the similar entities that are in the ecosystem. And another advantage is that by entering a digital platform that has a Europe-wide reach, you can extend the boundaries of your business, of your network. It’s one of the main benefits of the digital platform that you can have more visibility, more exposure.

**We are at about the halfway point in the MEZeroE project. Is it where you expected to be?** From a technical perspective, I would say yes. I think that the platform has been implemented. We have the services in place and the testing facilities are working with industrial partners. We have the Living Labs. We have designed all the open innovation services, covering the different aspects. I think we are progressing well. There is still room for improvement, of course. We have to realize a common vision about where we want to go, which reflects the interests of our many different types of stakeholders.

Within the MEZeroE community, it is the shared values that animate and guide the work of its members. The platform’s success hinges on the swift adoption of the tool and the rate at which the user community flourishes. Partners are encouraged to set up their profiles promptly so that, upon its launch in January 2024, early users will already benefit from a rich experience and comprehensive support.

Let’s embrace the MEZeroE platform as a new chapter in construction, where collaboration, innovation, and sustainability are not just buzzwords, but the very pillars upon which we build a smarter, greener future. Join us in this endeavor; your expertise, your knowledge, your vision can shape the edifices of tomorrow.





Measuring Envelope systems  
for Zero Energy buildings



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