POLITECNICO MILANO 1863

PRESS RELEASE

—

The Politecnico di Milano Inaugurates NextBuild Living Lab: An Entire Building Becomes a Living Laboratory for Sustainable Innovation

Real-time monitoring, digital twins and participatory research: unique infrastructure for designing buildings based on health, comfort and the environment

Milan, *22 July 2025* – An entire building at the Politecnico di Milano becomes an open-air experimental laboratory for analysing, monitoring and improving the built environment in real time. The **NextBuild Living Lab**, a strategic project under the **ABC Department – Architecture, Construction Engineering and Built Environment – at the Politecnico di Milano**, was inaugurated yesterday in the presence of **Emilio Faroldi**, Executive Vice Rector of the Politecnico di Milano, and **Stefano Capolongo**, Director of the ABC Department.

The laboratory is located in the redeveloped spaces in the ABC Department on **Campus Leonardo** and forms an integrated research ecosystem. The real news? The buildings themselves become scientific instruments, with indoor and outdoor environmental sensors that constantly measure air quality, temperature, humidity, space occupancy and energy consumption. This data powers a **digital twin** of the building that virtually replicates environments and enables advanced simulations to improve comfort, safety, wellbeing and sustainability.

'*We live in a period of global challenges that require us to rethink living environments. The construction sector, which has always driven the economy and development, is called to update its design and production paradigms. The NextBuild Living Lab is a concrete response to this need*,' says **Donatella Sciuto, Rector of the Politecnico di Milano**, stressing the strategic value of the initiative. '*We are not inaugurating a laboratory, but a model to address major issues in urban sustainability, energy efficiency, building safety and social resilience. The research that comes out of environments like this is a resource for the university, the city and the territory*.'

'Today it is no longer sufficient to design high-performance buildings. We need to build spaces that can communicate with the people living there and adapt to people's real needs. The NextBuild Living Lab was created for this purpose: to turn users into actors of change at the heart of designing and managing environments,' says **Stefano Capolongo**, Director of the ABC Department at the Politecnico di Milano.

At the heart of the project is the **user experience**. Users are not only observed, but also become an active part of the research. People's daily behaviour generates data that helps improve spaces and promote **virtuous behaviour**. If, for example, the sensors detect a high level of CO_2 in a room, a 'smart pop-up' system tells the person to ventilate the room.

The **UX Lab**, located on the first floor, is used to study the relationship between the environment and individuals on a physiological and cognitive level using biometric devices, intelligent sensors

and virtual reality. The data is collected and visualized on a secure, accessible platform that benefits the entire scientific and professional community while respecting privacy.

The NextBuild Living Lab involves over 15 laboratories in the **ABCLab** system at the **Politecnico di Milano**, with skills ranging from 3D surveying to indoor comfort, from ergonomics to digital building management. It is designed not only as fixed infrastructure; a **mobile modular structure** will be built next to building 15 to replicate the model in other urban and environmental contexts.

This unique infrastructure serves the sustainable transformation of the built environment, which strengthens the role of the Politecnico di Milano as a reference in research and innovation regarding the future of cities.

CLICK HERE FOR THE LINK TO THE PHOTOGALLERY

FOR INFORMATION:

Raffaella Turati, +39 3402652568, relazionimedia@polimi.it