

Event:

ENERGY in BUILDINGS 2025

Date:

Saturday, November 15, 2025

Place:

Athens, Greece



#	Annamaria Ciccozzi Graduated in Civil Engineering and Architecture, PhD Student in Industrial Engineering	
Title:	PhD student at the Department of Industrial and Information Engineering and Economics (DIIIE), University of L'Aquila, Italy	
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Presentation title:	Evaluating Thermal Decay of Post-Earthquake Temporary Housing in L'Aquila: An Integrated IRT and BIM Approach	
Following the 2009 earthquake in L'Aquila (Italy), within the "Progetto C.A.S.E." initiative, specially designed housing modules were developed to provide safe and energy-efficient shelter for the affected communities. Although conceived as provisional solutions, these dwellings were built without a fixed timeline for their use, intended to support residents for an indefinite period. This study aims to investigate the thermal and energy degradation of temporary modules 16 years after their construction through the integrated use of the infrared thermography (IRT) technique and Building Information Modeling (BIM). The IRT technique was employed to assess the current state of the building envelopes, while BIM was utilized to create detailed digital twins of the buildings both at the time of construction and in their current degraded state. Energy simulations based on the created models quantified the impact of envelope deterioration on overall energy consumption. The study revealed a thermal transmittance deterioration of up to 37%, significantly affecting the buildings' overall energy consumption. These findings underscore the importance of continuous monitoring and the potential of integrating non-destructive diagnostic techniques with BIM for sustainable building management and effective retrofit planning.		
Short CV:	Annamaria Ciccozzi earned a degree in Building Engineering and Architecture with a thesis on the energy efficiency of the Engineering campus in L'Aquila. While working at engineering and architecture firms in L'Aquila, she completed a second-level master's degree in <i>Systemic Design for Sustainability</i>. In November 2022, she began her doctoral program in <i>Energy Efficiency in Buildings: A Multiscale Approach</i>.	

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CV:

Annamaria Ciccozzi was born in L'Aquila, Italy. She earned a degree in Building Engineering and Architecture with a thesis on the energy efficiency of the Engineering campus in L'Aquila and the integration of photovoltaics into architecture. While working at engineering and architecture firms in L'Aquila, where she applied her expertise in the energy sector, she completed a second-level master's degree in *Systemic Design for Sustainability*. In November 2022, she began her doctoral program in *Energy Efficiency in Buildings: A Multiscale Approach*. She is currently conducting research at the *Gino Parolini Technical Physics Laboratory* and the *LAS.E.R. Laboratory*.

She has participated in several conferences, including:

- *XXIII CIRIAF National Congress - Sustainable Development, Protection of the Environment and Human Health*, held in Perugia, Italy (April 13, 2023 - April 14, 2023)
- *40th UIT International Conference*, held in Assisi, Italy (June 16, 2023 - June 28, 2023)
- *XXIV CIRIAF National Congress - Sustainable Development, Protection of the Environment and Human Health*, held in Perugia, Italy (April 11, 2024 - April 11, 2024)
- *79th ATI National Congress - Energizing the Future: Innovation and Sustainable Development for Industry, Communities and Sport*, held in Genoa, Italy (September 5, 2024 - September 6, 2024)
- *42nd UIT International Conference*, held in Florence, Italy (June 23, 2025 - June 25, 2025)
- *80th National ATI Congress - Energizing the Future: Innovation and Sustainable Development for Industry, Communities, and Sport*, in Benevento, Italy (September 10, 2025 - September 12, 2025).

She is the author of several publications in international journals, including:

- *The 3D Printing Potential for Heat Flow Optimization: Influence of Block Geometries on Heat Transfer Processes*. Sustainability 2022, 14, 15830.
- *On the Use of Waste Materials for Thermal Improvement of 3D-Printed Block—An Experimental Comparison*. Buildings 2023, 13, 1136.
- *Approach to energy analysis using Building Information Modeling (BIM) software*. Proceedings of XXIII CIRIAF National Congress-Sustainable Development, Protection of the Environment and Human Health, Perugia, Italy, April 13-14, 2023.
- *Thermal optimization of 3D-printed block - Hot Box and heat flow meter experimental analysis*. Proceedings of 8th International Conference on Smart and Sustainable Technologies (SpliTech), Bol, Croatia, June 20-23, 2023.
- *Experimental analysis of insulating materials using Guarded Hot Box*. Proceedings of 40th UIT International Conference, Assisi, Italy, June 26-28 2023.
- *BIM to BEM for Building Energy Analysis: a Review of the Interoperability Strategies*. Energies 2023, 16, 7845.
- *Exploring Alternative Experimental Approaches for Wall Heat Transfer Assessment - The Enhanced Thermometric Method*. Proceedings of 9th International Conference on Smart and Sustainable Technologies (SpliTech), Bol, Croatia, June 25-28, 2024.
- *The Enhanced Thermometric Method for analyzing thermophysical properties of building envelopes – Unlocking different solutions*. Proceedings of 79th National ATI Congress, Genoa, Italy, September 4-6 2024.
- *3D printing for energy optimization of building envelope – Experimental results*. Heliyon 2024, 10, e31107.
- *On the use of 3D printing to enhance the thermal performance of building envelope – A review*. Journal of Building Engineering 2024, 95, 110284.

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- *A Workflow for a Building Information Modeling-Based Thermo-Hygrometric Digital Twin: An Experimentation in an Existing Building.* Sustainability 2024, 16, 10281.
- *BIM-BEM interoperability for energy analysis: A comparative study of different strategies.* Energy Reports 13 (2025) 4705–4718.
- *PV System Design in Different Climates: A BIM-Based Methodology.* Energies 2025, 18, 3866.