DIPARTIMENTO DI INGEGNERIA CIVILE E AMBIENTALE

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SEMINAR ANNOUNCEMENT

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Department of Civil and Environmental Engineering

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Building design strategy using passive design and integration of renewable energy technologies

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Making buildings energy efficient is believed to be an effective way to address challenges of both energy consumption and environmental impact of buildings. To design, construct and manage an energy-efficient building, a wide range of measures and strategies are currently applied. Among them are passive design principles and integration of renewable energy technologies. While for example, European residential construction has significantly advanced in this field through the adoption of various technical regulations and up-to-date sustainability measures, it still requires further advancements to meet ever stricter energy performance requirements. Unlike in Europe, Kazakhstan's residential energy efficiency is still behind. While being the global leader in terms of carbon dioxide emissions per capita, Kazakhstan is facing significant energy increase in demand due to an ongoing construction boom, considerable energy losses of aging building stock, and poor energy efficiency practices. The root causes of poor sustainability level, among others, are related to a lack of targeted innovations, respective policies and regulations, guidelines, methodologies, practical examples, technologies, and low level of awareness among the general public and the construction industry. The presentation provides an overview of solutions and strategies proposed for the construction industry to ensure sustainability of the new and existing building stock.

Reference: **Prof. Stefano Mariani** (stefano.mariani@polimi.it)

Bio-sketch

Serik Tokbolat is as a postdoctoral scholar at the Department of Civil and Environmental Engineering, School of Engineering and Digital Sciences, Nazarbayev University, Nur-Sultan, Kazakhstan.

Dr. Tokbolat completed his PhD program in Energy and Process Engineering at the Norwegian University of Science and Technology (Trondheim, Norway). He holds a MSc degree in Management in Civil Engineering from Nottingham University (UK) as well as a combined BSc and MEng degree in Civil Engineering from Eurasian National University named after L.N. Gumilyev.

Dr. Tokbolat's PhD topic was related to developing building design strategies for cold climate conditions using passive design and renewable energy technologies. Currently, he is working in the area of urban sustainability in the context of Kazakhstan focusing on energy and environment.

Among others, his research interests cover the passive design, energy efficiency of buildings, low and zero energy buildings, renewable energy integration, life-cycle assessment of buildings, drivers and barriers of sustainable construction, building envelope innovations, computational fluid dynamics (CFD), energy dynamic simulations, LEED and BREEAM certifications.