



Progetto VITALITY | Programma di Consulenza Specialistica | Seminario

Energy Geostructures: Underground Constructions Providing Renewable Energy

Abstract

This lecture focuses on energy geostructures: innovative earth-contact structures that provide combined structural support and renewable energy supply to built environments. The talk is divided into three parts. First, the lecture introduces and discusses the rising energy needs, lack of usable land for development, and ground warming that affect urban areas worldwide. Next, the presentation unveils how energy geostructures can address all these challenges by turning both existing and new underground constructions into a means to tap into geothermal and waste thermal energy. Afterward, it encompasses key developments in the understanding, analysis, simulation, and prediction of the performance of energy geostructures. Finally, the lecture presents multiple energy geostructure projects realized worldwide.

Martedì 03 Settembre 2024 - Ore 15.00
Aula Magna del Polo di Ingegneria



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Dr. Alessandro F. Rotta Loria is the Louis Berger Junior Professor at Northwestern University, where he directs SOIL: the Subsurface Opportunities and Innovations Laboratory. He is also the co-founder of GEOEG, an engineering design and innovation firm specialized in underground energy solutions, and the co-founder of enerdrap, a company developing the world's first geothermal panel. Alessandro's work lies at the intersection of Mechanics, Energy, and Electrochemistry, focusing on the subsurface. He is the co-author of the book "Analysis and Design of Energy Geostructures" and has published 2 book chapters, 2 patents, and 100+ publications in scientific journals and conference proceedings. His work has been featured by international media including the New York Times, Washington Post, Financial Times, Scientific American, CNN, BBC, Forbes, and Bloomberg, and has been presented at venues such as the Seoul Biennale of Architecture and Urbanism. As a result of his work, Alessandro has been named World Innovator Under 35 (top 100 list) by the MIT Technology Review and has been included in the 40 Under 40 list by Crain's Chicago Business. His work will soon be presented in a TED talk.



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