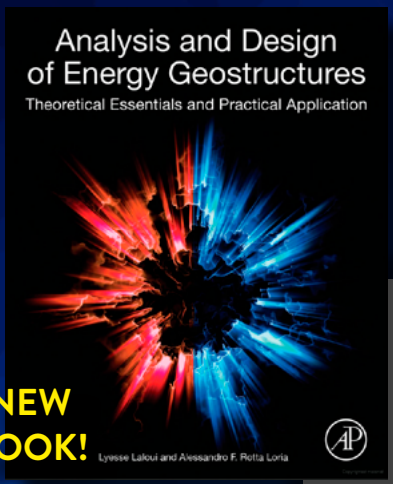

Analysis and Design of Energy Geostructures

Theoretical Essentials and Practical Application

An interdisciplinary introduction to key-concepts and project applications of energy geostructures

Key Features

- Proposes the theoretical and practical application essentials required to address the analysis and design of energy geostructures from energy, geotechnical and structural perspectives
- Presents a substantial amount of resolved exercises on key aspects governing the behavior and performance of energy geostructures to be considered in analysis and design
- Summarizes and discusses the most recent scientific and technical knowledge about energy geostructures, including energy piles, energy tunnels and energy walls

Description

Analysis and Design of Energy Geostructures gathers in a unified framework the theoretical and experimental competence available on energy geostructures: innovative multifunctional earth-contact structures that can provide renewable energy supply and structural support to any built environment. The book covers the broad, interdisciplinary and integrated knowledge required to address the analysis and design of energy geostructures from energy, geotechnical and structural perspectives. This knowledge includes (Part A) an introduction to the technology; (Part B) the fundamentals of heat and mass transfers as well as of the mechanics of geomaterials and structures required to address the unprecedented behavior of energy geostructures; (Part C) the experimental evidence characterizing the considered geostructures; (Part D) various analytical and numerical modeling approaches to capture the response of energy geostructures; and (Part E) the performance-based design and detailing essentials of energy geostructures.

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Readership:

The authors' target readership for this book includes advanced undergraduates, postgraduate students as well as profesionals such as civil engineers, mechanical engineers, energy engineers, environmental engineers, geologists, architects and urban project managers.

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