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Building better, for longer, with less: "holistic" lessons learned from a lustrum long research on Ultra High Performance Concrete @Politecnico-DICA

Abstract

The recently concluded Horizon 2020 ReSHEALience project has developed a new conceptual design approach for concrete structures exposed to challenging structural scenarios, including extremely aggressive environmental conditions. The approach combines, in a holistic life cycle thinking framework, higher and longer lasting performance with enhanced structural functionality and high value aesthetic requirements. The concept of Ultrahigh Durability Concretes (UHDC) developed and validated in the project features the possibility of engineering the structural performance over time through self-healing capacity. Thanks to this innovative conceptual design approach, concretes are no longer regarded as providers of passive protection but become active players in shaping their own performance as a function of the requirement in the operating scenario while retaining functionality and aesthetics.

Martedì 26 novembre 2024 - Ore 14.30

Aula Magna

Dipartimento di Ingegneria Civile e Ambientale

Liberato Ferrara

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Liberato Ferrara is full professor of Structural Analysis and Design at Politecnico di Milano, Italy, Rector's Delegate for relations with Latin America and Scientific Director of the Laboratory for Testing Materials, Buildings and Structures. Fulbright visiting scholar at the Center for Advanced Cement Based Materials, Northwestern University. He coordinates an international research group, conducting research on forefront topics in the domains of material concept, characterization and structural applications of cement based materials with advanced functionalities, including self-healing and self-sensing, development of structural design methodologies for applications in extreme scenarios, including fatigue sensitive structures, sustainability and circular economy in concrete construction, automated and additive technologies, also through a newly installed 3DConcrete Printing laboratory. Coordinator and PI of European projects. Author of more than 100 peer-reviewed journal papers, with h-index 40. He is Past chair of the American Concrete Institute (ACI) TC 544-Fiber Reinforced Concrete, member of several international research and standardization committees and serves as expert in the Italian High Council of Public Works.

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