

Civil Engineering Guest Speaker:

Dr. Thomas Kang , P.E., F.ACI, F.PTI

Engineering Complex – DUF2121

February 8th (Thursday), 2024 from 4:15-5:15 pm

Design, Repair and Construction of Nuclear Concrete Containment Structures



Dr. Thomas Kang is Professor at Seoul National University (SNU). He received his PhD from UCLA and his BS from SNU. Prof. Kang is a Fellow of ACI, PTI, and the Korean Academy of Science & Technology, and a member of the National Academy of Engineering of Korea. He received several prestigious awards, including Kenneth B. Bondy Award for Most Meritorious Technical Paper twice from PTI, Wason Medal for Most Meritorious Paper from ACI, and Martin P. Korn Award from PCI. He currently serves as an Editor-in-Chief for the Journal of Wind & Structures and as the Associate Editor for PTI Journal. His research interests include the design and behavior of reinforced, prestressed and post-tensioned concrete structures, as well as wind effects on structures.

Abstract: Concrete containments for nuclear reactors are not a preferred option any more in the U.S. To keep concrete containments relevant and economically viable in the future, it is imperative to provide the industry with the next generation concrete containment that offers a more competitive option in terms of cost, schedule and ease of construction. Joint ACI-ASME Committee 359 (ASME BPV Sec. III, Div. 2) has developed a preliminary road map for the next generation containment. The new design takes advantage of developments in materials, design and construction technology and has the following key attributes: 1) Use of post-tensioning (PT) single-strand high-density polyethylene (HDPE) tendons; 2) Use of high-performance concrete; and 3) Automated slip form construction. The novel concept will better address both accident pressure load as well as Safe Shutdown Earthquake loads so that concrete remains in compression with no cracks and has minimal chances for leakage, and is also expected to enhance concrete tensile capacity and address impulse/impact loads (beyond design basis accidents must be considered for the nuclear design). This talk will deal with typical construction issues with nuclear containment vessels, their repair and retrofit, and the speaker's recent research on a variety of design and construction technologies for the next generation containment vessels for nuclear power reactors.