



OFFSHORE CONSTRUCTION CHALLENGES IN VERY SHALLOW ARCTIC REGIONS

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Abstract: Offshore construction in very shallow waters is an extremely challenging and high-risk operation comprising of fabrication, load out, sea-fastening, transportation, and offshore installation of structures. These operations are usually conducted by specific marine vessels and logistics such as barges, tug boats, heavy lifting vessels, pipe laying vessels, diving, and underwater operation vessels, etc. that need a minimum water depth to be able to operate.

Arctic offshore construction projects, even in the areas with sufficient water depths are usually facing unique challenges that do not exist in non-Arctic seawaters. Some of these challenges include sensitive environments, remote locations, harsh weather, short operational window, and ice-related issues. Besides these extraordinary challenges, in very shallow waters in the Arctic region (a water depth of less than 2 m), almost neither of the regular marine vessels that are usually used in Arctic offshore constructions can operate. In this presentation, we will shortly discuss these challenges and some of the proven and potential solutions.



Dr. Hodjat Shiri, is an Associate Professor in the Department of Civil Engineering at Memorial University. Dr. Shiri has received his Ph.D. degree in offshore geotechnics from the University of Western Australia, focusing on the impact of seabed interaction on the fatigue life of subsea risers. From 2015 to 2020, Dr. Shiri was Wood Group research chair in the Arctic and harsh environment engineering, where he established a large research team at Memorial University working on the iceberg impact on subsea pipelines and structures using advanced numerical and experimental modeling. He initiated the application of artificial intelligence and machine learning technics on the assessment of ice-seabed interaction to be fed into real-time insights for decision-making on ice management operations in the later stages. Besides the academic activities, Dr. Shiri has two decades of worldwide industry experience in the fabrication, transportation, and installation of marine, coastal, and offshore structures. Recently, Dr. Shiri has initiated new research projects on developing solutions for coastal protection against climate change-induced flooding and erosion.

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