

Corrosion in SHCC Columns of Semi-submersible Offshore Floating Wind Turbine Platforms

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This research project aims to evaluate the effects of seawater corrosion on strain-hardened cementitious composite (SHCC) columns used in floating offshore wind turbines (FOWT) platforms. SHCC is a class of high-performance, fiber-reinforced cement-based materials known for their high ductility and ability to develop multiple cracks under tensile testing. This material is widely used in civil engineering applications, including bridges, dams, and road pavements. Previous studies on SHCC have employed both experimental procedures and numerical simulations based on test data, focusing on aspects such as tensile and compressive properties as well as crack propagation behavior. The goal of this project is to investigate how seawater corrosion impacts SHCC columns fabricated for semi-submersible FOWT platforms, considering various surface finish conditions and their influence on the material behavior and properties under tensile, compressive, and fatigue loads. The proposed methodology includes assessing the aging effects caused by seawater corrosion at different salinity levels in test specimens. It also involves examining how different surface finishing conditions affect the material behavior and properties, evaluating changes in mechanical properties due to various aging conditions, and studying the heterogeneity of these properties in relation to the distance from the seawater level.

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