Cite this article
Wang F and Lin L (2021)
Editorial.
Proceedings of the Institution of Civil Engineers – Maritime Engineering **174(4)**: 100–101,
https://doi.org/10.1680/jmaen.2021.174.4.100

Editorial

Maritime Engineering

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Editorial

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Welcome to the fourth issue in 2021 of the *Maritime Engineering* journal, where three papers on the topics of berthing structure behavior, turbine wake characteristics and turbine support structure, respectively. The first paper aims to determine the effects of tie rods on various types of berthing structures through numerical modelling of both the open- and closed-type berthing structures. The second one presents an academic research on the turbine wake characteristics and array arrangement effects aiming to improve the corresponding power output and utilization efficiencies. The third one provides a feasibility study on the application of the bottom supported tension leg tower (BSTLT) structure for 50 m water depth through numerical approaches.

The first paper (Premalatha *et al*., 2021) investigated the effects of tie rod anchors on the behaviors of pile-supported berthing structures, aiming to optimize the structural design accordingly. The numerical models were developed and verified against the previous experimental investigations carried by the same authors of this paper (Premalatha *et al*., 2015, 2017) and others. Thereafter, a parametric study covering 3 types of berthing structures – Type 1: vertical face berthing structure with diaphragm wall on sea side, Type 2: vertical face berthing structure with diaphragm wall on land side, and Type 3: an open pile berthing structure. Both the homogeneous layer of sand with 30% relative density and the exact layered soil profile of Chennai Port were considered for all the three structures. Maximum deflection of the middle pile and bending moments through the pile depth were analyzed in both cases of structures subjected to the mooring and berthing forces. The results showed that the tie rod has clearly effective effects on Type 3 structures (open pile berthing structures) with homogeneous soil, where 18.5% and 11.3% deflection reductions being observed in case of the mooring and berthing forces respectively. Similar behaviors were found in the layered soils, where the 26% and 12.64% deflections reductions were observed in the Type 3 structures subjected to the mooring and berthing forces respectively. In comparison, there were minor effects of tie rod on the Types 1 and 2 structures (closed-type structure) in the same soil profile.

The second paper (Hou *et al*., 2021) studied the hydrodynamic characteristics of tidal turbine wake and the effect of array arrangement. A two-bladed horizontal turbine was experimentally studied in a laboratory flume, where the wake velocities were measured and analyzed. The observed maximum and minimum wake deficit gaps decreased as the axial distance increased (Gap$\leq$0.07 while Distance$\geq 8D$, D-blade diameter). For example, when the X increased from $8D$ to $12D$, the gap decreased from 0.07 to 0.02. The numerical models were developed with the turbine parameterized by actuator disc momentum theory (Harrison *et al*., 2010; Liu *et al*., 2016) combined with Reynolds averaged Navier–Stokes equations. The numerically determined results were verified against the corresponding experimentally obtained data. The effects of the turbine arrangement and spacing were studied by considering two tidal farms, where one with three linearly aligned turbines and the other one with seven staggered aligned turbines. The velocity deficit of each turbine and the wake influence regions were analyzed. The incoming flow velocity of the downstream turbine was observed with reductions of 31% and 14% when the turbines were linearly aligned and staggered respectively. The second column had less extent of influence than that of third column for linearly aligned turbines. The lateral spaces staggered turbines could significantly affect the velocity deficits of the downstream turbines and the wake influence regions. Design suggestions were given accordingly.

The third paper was given by Ishtiyak *et al*., (2021), which presented an improved BSTLT for offshore wind turbines at the water depth of 50–60 m. An extension of the BSTLT concept proposed by Sarkar and Gudmestad (2017) was suggested by adopting inclined tethers with a monopile. A preliminary technical feasibility study was carried out through numerical sensitivity analyses on the structural natural frequencies and dynamic analyses. The water depth of 50 m was considered. The natural frequencies were observed increasing as either of the tether diameter, number of tethers and monopile diameter increased. Parameters of tether pretension, hinge locations and tether end locations were also investigated. On the basis of natural frequencies sensitivity analysis, a dynamic analysis was carried out using the decoupled approach covering 3 in-place design conditions: operating normal, operating extreme and parked conditions. The analysis results proved the feasibility of such structure within considered application parameter ranges.

Finally, with increasingly broader *Maritime Engineering* coverage and growing submissions, we welcome several new members to the editorial panel, and I would like to thank those who have been consistently dedicated to serving the journal, especially during the world's pandemic crisis. We regularly ask for fresh faces to join the editorial panel, would still welcome further additions, in particular from sustainability and marine renewable energy sectors. If you are interested or look for further information, please contact the Journal Editor, Craig Schaper (email: craig.schaper@icepublishing. com).

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