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Potential multi-function cylinder as wave attenuator

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An experimental investigation was conducted in unidirectional waves with different wave conditions and model configurations were conducted to assess the wave energy loss on cylinder obstacles. Two sizes of cylinder were used, 100 mm and 200 mm with four different porosities ranging from 0.0625-0.48, respectively. The influences of water depth, incident wave steepness and porosities were studied. The test results shown that when the percentage of porosity decreased, more wave energy was dissipated; this resulted in the decrease in transmitted wave heights. Furthermore, it was also found that lower water depth has a significant influence on the loss coefficient at bigger model size with *Kl* being more than 0.60 at a water depth 0.27 m compared to *Kl* being less than 0.40 at water depth 0.35 m for similar porosity. Overall, the bigger model (single or double cylinder) with lower porosity (P=6.25% and 14%) showed promising performance in reducing wave height at the lee of the model, having high percentage of wave energy loss and smaller model has been found to be the least effective wave attenuator model to the same environments among all three models. In a way, cylindrical structure being porous could potentially be used together or alone as a wave dampening structure at mangrove sapling replanting coastal area and/or artificial reefs for fish breeding ground.

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