

유공형 부방파제의 장력특성에 관한 실험

Experiments on Tension Characteristics of Perforated-type Floating Breakwaters

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Abstract

Floating breakwaters were treated as solid bodies without any perforation in previous studies. In this study, however, a floating breakwater is perforated to allow the partial absorption of the energy produced by incident waves and an air chamber is placed in the upper part to control the breakwater draft. A series of laboratory experiments for a floating breakwater installed with a mooring system are carried out. In general, a mooring system can be classified by the number of mooring points, the shape of the mooring lines, and the degree of line tension. In this study, a four-point mooring is employed since it is relatively easier to analyze the measured results. Furthermore, both the tension-leg and the catenary mooring systems have been adopted to compare the performance of the system. In laboratory experiments, the hydraulic characteristics of a floating breakwater were obtained and analyzed in detail. Also, a hydraulic model test was carried out on variable changes by changing the mooring angle and thickness of perforated wall. A hydraulic model was designed to produce wave energy by generating a vortex with the existing reflection method. Analysis on wave changes was conducted and the flow field around the floating breakwater and draft area, which have elastic behavior, was collected using the PIV system. From the test results the strong vortex was identified in the draft area of the perforated both-sides-type floating breakwater. Also, the wave control performance of the floating breakwater was improved due to the vortex produced as the tension in the mooring line decreased.

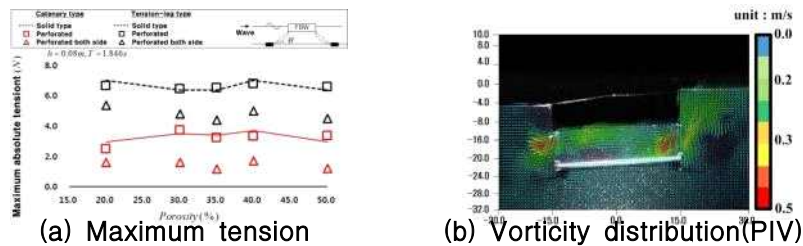


Figure. Maximum tension and vorticity distribution for floating breakwaters

Key word : Hydraulic model test, Floating Breakwater, Tension, Vorticity

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