

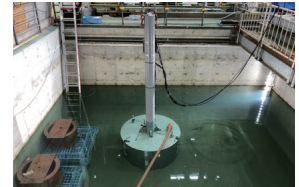
Suction Bucket Foundation Experiment

サクションバケット基礎工法 実証実験

Laboratory Test

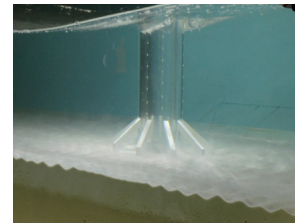
Soil tank experiment (Insertion and pull-out verification)

We conducted insertion and pull-out tests to verify penetration and pull-out only by draining and injecting water into the bucket. The suction bucket model had 1.5m diameter and 1.0m height. Flow rate, water pressure, ground resistance, and displacement were measured, and the mechanism was analyzed.



Hydraulic model experiment (Scour)

“Scouring” is caused when the soil around the foundation is washed away by currents, and it can cause the foundation to become unstable. We conducted hydraulic model experiments to understand the scour characteristics of suction bucket foundations. We also conducted similar experiments with other foundations (monopile, jacket) and studied the characteristics of each type of foundation.



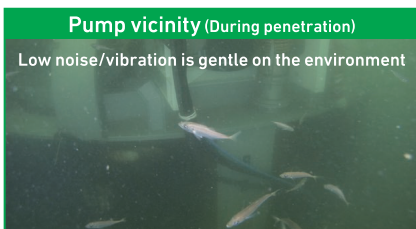
Field Demonstration Test

Subsequently, we conducted a demonstration experiment in an actual sea area to verify the workability of a larger scale model. For the penetration and pull-out work, a pump system developed in-house was installed on the bucket and the amount of water being pumped was operated and controlled from a control room on a work boat. The dimensions of two buckets were as follows: ① 4.0m diameter x 4.0m height; ② 6.0m diameter x 5.1m height. Each bucket was tested at different sites 5 times and 14 times respectively. In addition to understanding the penetration characteristics, the impact on the surrounding ground (borehole investigation) and the environment (vibration, noise, water quality) were investigated to confirm the workability of the suction bucket foundation method for commercialization.



Pump vicinity (During penetration)

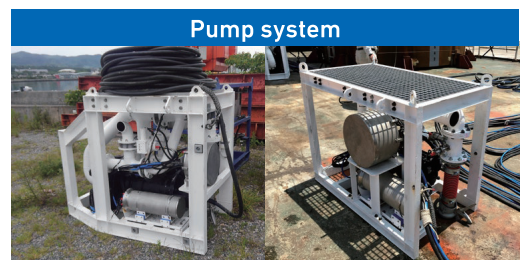
Low noise/vibration is gentle on the environment



Underwater view (During penetration)



Pump system



Field test model ② D=6.00m, L=5.10(4.60)m

