

Simulation of the pile driving noise with the vertical vibratory hammer

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This article introduces the feasibility of the pile driving with vibratory hammer to minimize the disruption for the marine mammal populations in Taiwan waters. The vibratory hammer can reduce the soil resistance and the duration of the noise via vertically vibrating the pile into the seabed. For the reason, the vibratory hammer makes lower load on the pile, produces lower noise emissions and drives piles considerably faster than the impact-driven hammer. The sound radiation from the vibratory pile driving is simulating the near field via the finite element method and coupling with the Range-dependent Acoustic Model (RAM), which is based on the parabolic equation method to resemble the radiation in far field. The numerical simulations closely match the on-site acoustic measurements from the German offshore wind farm. The result indicates the technology with the vibratory hammer has significant piling noise

reduction potential.

Keywords: Acoustic field ;Finite-element analysis; Range-dependent Acoustic Model

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