

Optimize Pressure Control to reduce noise



emissions at sea

Background

Different near field noise mitigation systems are available to reduce underwater noise from offshore pile driving for wind turbine foundations. These systems are required to reduce disturbance of marine mammals near the construction site. These systems have been designed to target specific frequencies that produce the most noise. On the market are for example systems from AdBm, IHC and Offnoise solutions.

Near field mitigation systems are combined with one or two bubble curtains that are placed away from the near field system at distance varying between 50 and 150 meters. These bubble curtains consist of rubber hoses with small holes (nozzles) through which little bubbles are emitted into the water column. The bubbles rise to the surface and create a second and sometimes even third barrier.

The bubble performance of the curtains is unfortunately often sub optimal and not realizing the predicted noise reduction that is theoretically possible.

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It is envisaged that a re-design of the hose, nozzles and possibly compressor system may result in

a better performance of the bubble curtain.

Currently the release of air from the tubes is not controllable, resulting in an unregulated bubble curtain. A robust and cost effective solution for (adjustable) nozzles and how these are to be installed in the hoses may result in better performance

The Challenge

Challenge Reduce noise emissions at sea during Offshore piling by optimizing **the pressure control** of an air bubble screen, which is both robust and cost-effective. With a specific focus on the nozzles; *how can we control the size, amount, and pressure of the bubbles by the design of the nozzles?*