



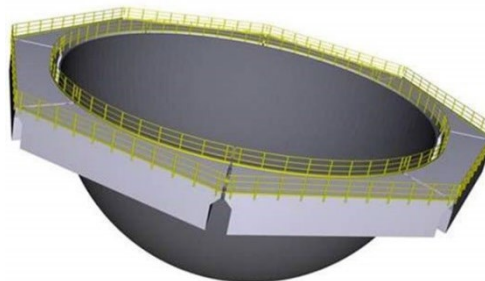
Exterior & interior waves with their effects on closed fish cages

Type of project: MSc

Project description:

The open-net-cage fish farming was pioneered in Norway in the 1960s and introduced to other countries. It is a simple and economic concept that has become popular over the last few decades. One of the biggest challenges that the aquaculture industry faces now is sealice. There are a few new fish cage concepts that have been proposed to minimize the influence of sealice on farmed fish production and the wild fishes. One of the concepts is to use the Floating Closed Containment System (FCCS). The FCCS is also expected to solve the fish escaping and organic waste problems. The other idea of minimizing the influence of sealice is to move the fish cages to more exposed areas, which then involves the design of more robust fish cage and mooring systems.

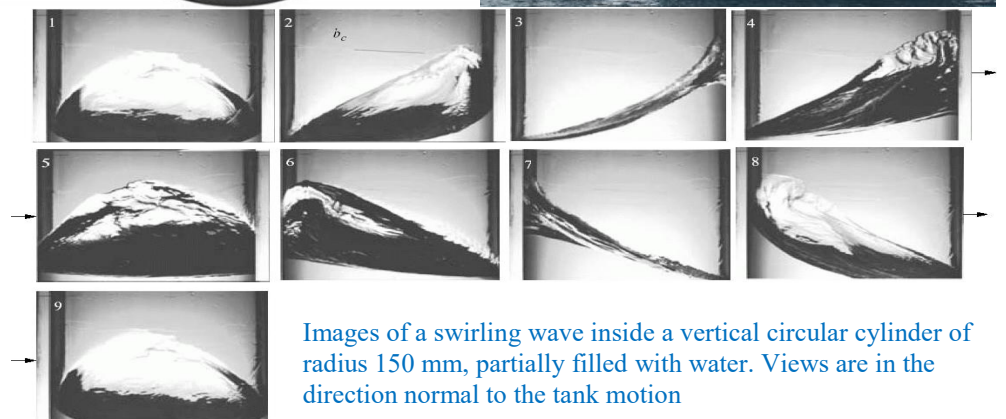
The closed fish cages involve coupled exterior and interior wave effects. The motion of the cages may excite the resonant sloshing of the liquid in the cages. In return, the fluid dynamics in the cage will influence the motion of the cage. Swirling waves (rotational waves) may be an important factor, which unfortunately has not been considered properly in the design of closed cages. This project will focus on both exterior and interior wave dynamics and their coupling effects. A special course on liquid sloshing may be offered upon request.



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Images of a swirling wave inside a vertical circular cylinder of radius 150 mm, partially filled with water. Views are in the direction normal to the tank motion

Related youtube videos:

<https://www.youtube.com/watch?v=frpqZladHM8>

<https://www.youtube.com/watch?v=1pzKeDUQXZ8>



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