

Experimental facility Delta Basin

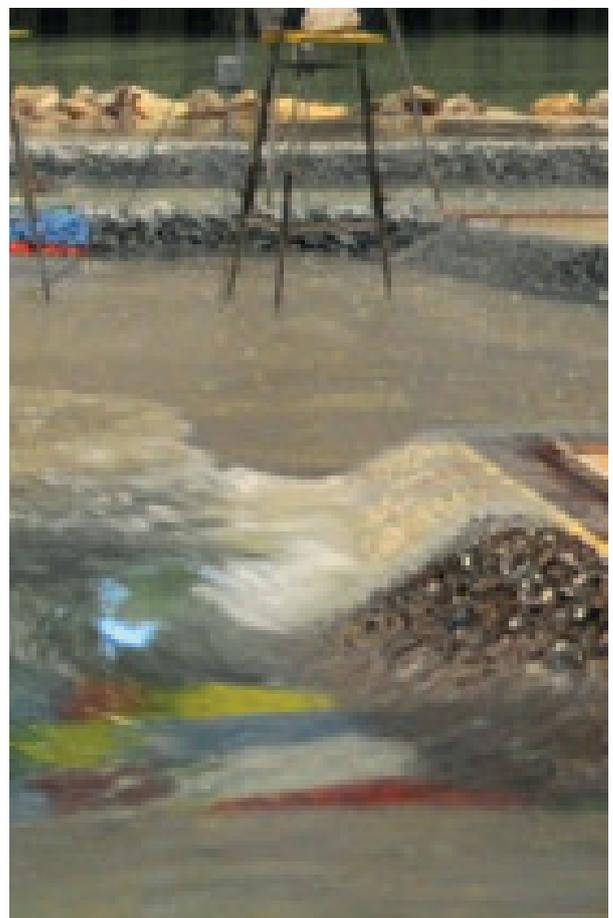
The Delta Basin (50 x 50 m) is a multidirectional wave basin, equipped with 2 multidirectional wave generators, placed at a right angle to each other. The wave generators are capable of generating both regular (periodic) as irregular (random) long-crested or short-crested waves according to both well-known frequency-directional distributions.

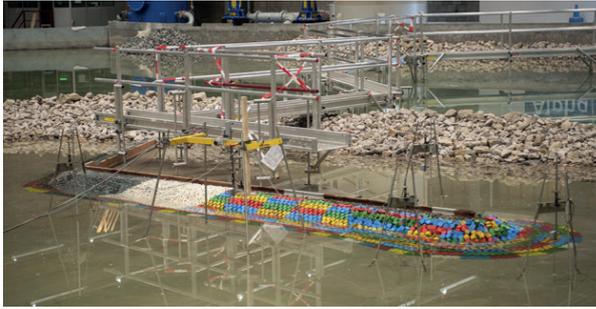
Both wave generators are equipped with online Active Reflection Compensation, which effectively eliminates re-reflections of waves from the wave board. Also wave board control for random second-order waves is operational to compensate for spurious waves. The Dalrymple Method generates a wave train at a specified location, which effectively increases the model area that can be used.

Application areas

The influence of 3D wave attack on structures can be substantial. To study phenomena related to such conditions the Delta Basin is very suitable, because of its large dimensions and the 2 multidirectional wave generators. Both waves, current and a combination of these can be generated.

The Delta Basin is used for coastal and offshore related projects. In all of these studies, aspects of armour stability, hydraulic performance, wave impact loading, and the determination of the relevant hydraulic conditions for design purposes were of primary interest.





Stability of a breakwater



Moored ship studies



Technical specifications

Wave basin

- Horizontal dimensions: 50 x 50 m
- Maximum water depth: 1.0 m

Wave generator

- Segmented piston-type wave boards
- Number of segments: 180 (100 + 80)
- Length of wave maker: 66.4 m (40 m + 26.4 m)
- Stroke: 1.2 m
- Equipped with 3D Active Reflection Compensation
- The 2 wave boards are placed at a right angle to each other

Wave characteristics

- Wave directions: between -50 and 50 degrees per wave board
- Maximum regular wave height $H_{max,r}$: 0.45 m
- Maximum significant wave height H_{m0} : 0.25 m

Features

- Lateral current

Projects

Typical studies for the Delta Basin are related to:

- Breakwaters (3D stability, breakwater roundhead)
- Wave climate studies
- Revetments
- Jetties (wave pressures and wave forces on piles and decks of jetties)
- Wave agitation into harbours
- Moored ship studies
- Scour and mobile bed studies
- Dune erosion and coastal beach protection schemes



Testing a breakwater model and studying the wave climate



More info:
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