

FLOATING BREAKWATER

Project description – “JadeWeserPort” (JWP):

Within the extension of the JWP the construction of a temporal port was planned. Due to its exposed location to the northeast this port would be affected by significant wave heights of up to 0.8 m, while for moored tugboats a comfortable wave height of 0.5 m was requested. In order to replace a cost intensive protection by a sheet pile wall (great water depths) investigations on the wave attenuation by a floating breakwater were undertaken.

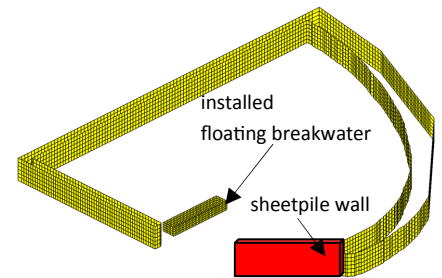


Figure 1: WAMIT setup with floating breakwater and substituted sheetpile wall

Technical Background: (BW, WAMIT):

- Boussinesq wave model to determine significant wave heights and calculate the wave disturbance coefficient (ratio of significant wave heights inside the port to those outlying).
- Considerations on wave attenuation by integration of a floating breakwater (calculation of the wave reduction factor within WAMIT)
- Combination of the BW and WAMIT results to final wave agitation inside the harbour

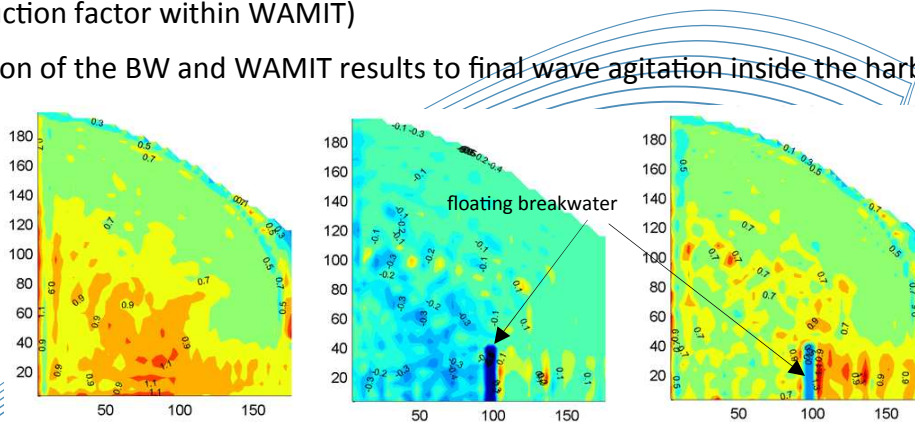


Figure 2: a) significant wave height (BW) b) wave reduction factor (WAMIT) c) resulting wave height (BW+WAMIT)

Conclusion:

- Waves from eastern directions are beyond the critical significant wave height of 0.5 m.
- The required wave conditions can be achieved by installing a floating breakwater. Wave heights were reduced by about 10–30% for northern waves and about 20% for north-eastern waves.