



Modelling of ship induced flow

The port of Amsterdam is planning new berths for inland waterway transport along the shipping canal between IJmuiden and Amsterdam (Noordzeekanaal). This canal is approximately 15 km in length and connects the port of Amsterdam with the locks in IJmuiden and the North Sea.

Measurements of the water level and flow were performed and the ship induced water movement has been modelled with the use of FINEL2D. A special module was developed to account for the influence of moving ships.

The main effects of ships moving in a channel are the return flow and the primary wave. The picture above shows a snapshot of the passing of the *Grandeur of the Seas* in the Noordzeekanaal. The contour plot shows the primary wave. A quantitative comparison of the model results with the measurements shows a fairly good agreement, lending credibility to the model.

After the validation of the model different configurations of the berths were studied in order to determine the water level variations due to the primary wave. It appears that the configuration of the berth may have a large impact on the reflection characteristics of the primary wave. Amplitudes up to 3 times the initial wave can be seen. The model is then used to optimise the berth layout in such a way that the impact of passing ships on a berthed ship are minimised.

Client
Amsterdam Port Authority

Location
Amsterdam

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Services
FINEL2D hydraulic modelling

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