

This is the 22nd [newsletter](#) of the *Knowledge Centre Manoeuvring in Shallow and Confined Water*, which aims to consolidate, extend and disseminate knowledge on the behaviour of ships in shallow and confined water. In this newsletter, we present two research projects that have been studying ship behaviour in shallow water with waves. We would also like to draw your attention to the second call for papers which was launched for the [4th MASHCON conference](#).

The Knowledge Centre participates in the project [SHOPERA](#), which stands for “Energy Efficient Safe Ship Operation”. This European project runs from 2013 to 2016 and started from concerns on sufficient propulsion and steering power in harsh weather conditions, due to the new EEDI (Energy Efficiency Design Index) regulations.



The project has three major objectives. A first objective is to further develop and refine existing hydrodynamic simulation software tools for the efficient analysis of seakeeping and manoeuvring performance. A second objective is to carry out model tests in a combined seaway and wind environment using prototypes of different ship types to validate the numerical tools. Full scale trials will also be used as a validation tool. A third objective is to develop new guidelines for the required minimum propulsion power and steering performance to maintain manoeuvrability in adverse conditions.

With respect to the second objective, the Knowledge Centre has carried out model tests in shallow water with scale models of the benchmark ships KVLCC2 and DTC. The experiments were carried out for a wide range of parameters, such as the loading condition and speed of the ships, the under keel clearance and the incoming wave characteristics. The model test results are currently being analysed and part of this research will be presented at the upcoming [MARSIM](#) conference.

In addition, selected tests carried out in calm water with the DTC container carrier are now available as open access [benchmark data](#). The benchmark data are harmonic yaw and harmonic sway tests with the bare hull of the DTC at full draft and 20 % under keel clearance at rest. The [benchmark data](#) can be obtained by mailing to info@shallowwater.be.



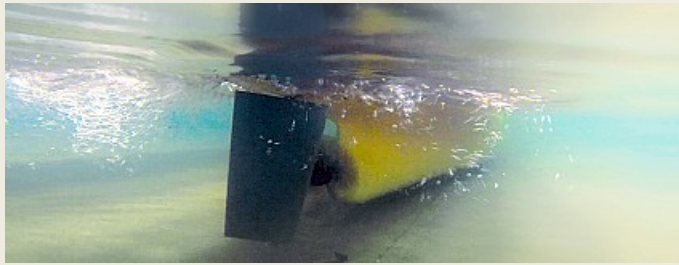
Systematic series of captive model tests have also been carried out in the [shallow water towing tank](#) for an ongoing PhD Research project. The main purpose of the research project is to incorporate wave effects into a mathematical ship manoeuvring model. Several researchers have developed such models for manoeuvring in deep water, where the problem can be split up between a

manoeuvring model (on a slowly varying time scale) and a (rapidly varying) seakeeping model to account for the wave induced motions.

In shallow water with waves, however, the wave action will directly influence the manoeuvring behaviour of the ship and all factors need to be considered at once. As a consequence, the added wave resistance and horizontal mean wave drift forces are of great interest. With new ships continuously growing larger in relation to the confined shallow water environment, not properly considering the influence of wave action on ship manoeuvring behaviour, could seriously jeopardise safety.

The captive model tests that have been carried out, have provided data for a wide range of parameters and are now being analysed to derive a mathematical ship manoeuvring model.

A second call for papers has been launched for the [4th MASHCON conference](#), which will be held in Hamburg, Germany, on 23 – 25 May 2016. The conference will pay special attention to ship bottom interaction, but all topics relating to ship manoeuvring in shallow and confined water will be discussed. The conference organisers would particularly welcome papers which focus on comparisons between the output of numerical models with [benchmark model test data](#).



Authors are invited to submit an abstract of 250 - 300 words to info@shallowwater.be before the extended deadline of 7 September 2015. The official language of the conference is English and the abstracts will be reviewed by an international scientific committee. Once accepted, authors will be expected to write and submit a full paper, which will also be reviewed by the international scientific committee. More information can be found on the [conference website](#).



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