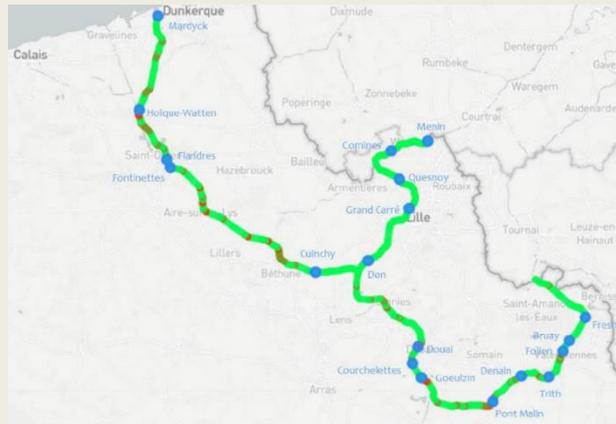
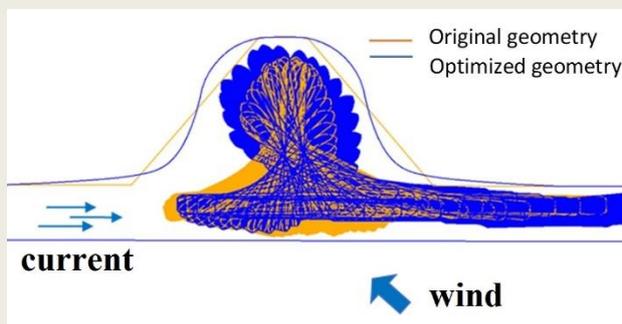
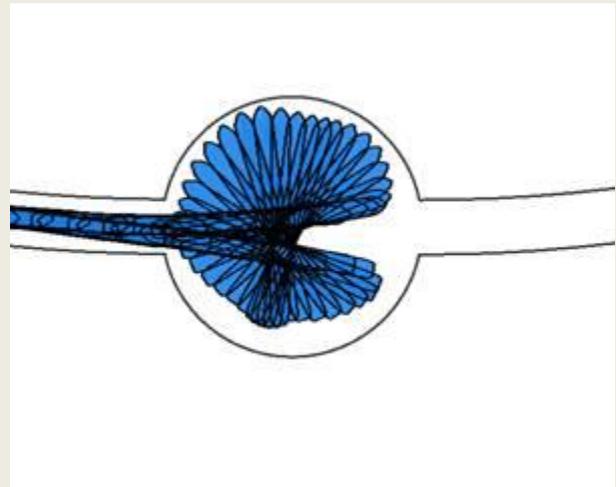


This is the 45th [newsletter](#) of the *Knowledge Centre Manoeuvring in Shallow and Confined Water*, which aims to consolidate, extend and disseminate knowledge on the behaviour of ships in shallow and confined water. In this newsletter, we bring an item on a benchmark study of turning basins for inland navigation. In addition, a first call for abstracts has now been launched for the [6th MASHCON](#) conference.

The Nord-Pas-de-Calais ECMT Class V waterway network will play a major role in linking the Canal Seine Nord Europe to the ports of Dunkirk, the inland navigation network of Belgium and its connected ports Antwerp and Rotterdam. The existing Nord-Pas-de-Calais Class V network does not fully meet the modern geometrical standards for canal design and construction. In order to prepare the network for the expected increase in traffic, Voies Navigables de France (VNF) has commissioned a comprehensive analysis of the waterway network based on nautical studies. Part of this study consists of the research and design of an optimal turning basin for ECMT class Va (110 m x 11,4 m) and Va+ (135 m x 11,4 m) vessels, which could be used as input for the Master Plan for Turning Basins for the Nord-Pas-de-Calais network.



Different concept designs can be found in guidelines and their size differs depending on the countries. In practice, the recommended dimensions can often not be met due to environmental, economic or geotechnical restrictions. In those cases, real time simulations become a useful tool to evaluate designs that are more adapted to the actual situation. In order to restrict the number of studies on case-by-case basis, VNF ordered a study of selected standard geometries for turning basins of different sizes. The main objective was to find the optimal designs that allow vessels to turn in typical hydro-meteorological conditions and restrictions encountered on the Nord-Pas-de-Calais network.



Based on a study carried out by [IMDC](#), both a circular and a trapezoidal basin were selected, with two different sizes for each. The circular geometry is built on both sides of the channel while the trapezoidal is built on one side only. Real-time simulations with a ECMT class Va and a class Va+ vessel were then carried out in different current and wind conditions. The

simulations were carried out on a [dedicated inland navigation manoeuvring simulator](#) at [Flanders Hydraulics Research](#) with experienced skippers.

A first series of simulations allowed to quantify the effect of the different hydro-meteorological conditions and to propose some tuning on the standard geometries. Optimized geometries were then proposed and tested in a second series of simulations. Each scenario was evaluated based on the analysis of the turning trajectory by the nautical expert, by using criteria related to the use of ship controls, as well as taking into account feedback from the skippers.

Based on those results, a flowchart was developed that will help VNF with the decision making for constructing new turning basins or for upgrading existing turning basins based on the characteristics of the geographical location and the local restrictions of the area considered.

The study was carried out by [Flanders Hydraulics Research](#), the [Maritime Technology Division at Ghent University](#) and [IMDC](#). Other aspects of the research that is being carried out for the Nord-Pas-de-Calais Class V network can be found in our [41st newsletter](#).

Researchers associated with the Knowledge Centre recently published:

Chen, C., Delefortrie, G. and Lataire, E. (2020). [Experimental investigation of practical autopilots for maritime autonomous surface ships in shallow water](#). Ocean Engineering, Vol. 218: 108246.

Delefortrie, G., Candries, M., Eloot, K. and Lataire, E. (2020). [Knowledge Centre for Manoeuvring in Shallow and Confined Water](#). Bulletin of the Japan Society of Naval Architects and Ocean Engineers, KANRIN: 93. November 2020.

A first call for abstracts has now been launched for the [6th MASHCON](#) conference, which will be held in Glasgow from 22 to 26 May 2022. The conference will have a non-exclusive focus on port manoeuvres, where several shallow and confined water challenges are present. A lot of these manoeuvres occur in the vicinity of moored ships, leading to passing ship effects on moored ships.



Papers which focus on the comparison between the output of numerical models and [benchmark model test data](#) are encouraged. Specifically for the [6th MASHCON](#) conference, a new set of [benchmark data](#) containing selected model test data which were obtained during the [PESCA](#) (Passing Effects in Shallow and Confined Areas) captive model test program, which was executed in the [Towing Tank for Manoeuvres in Confined Water](#) at [Flanders Hydraulics Research](#). The captive model tests present results with the KCS as passing ship and a Neo-Panamax container carrier and an Aframax tanker as moored ships. The [benchmark data](#) and accompanying explanatory [paper](#) have been updated to include the ship models in numerical form and are [available upon simple request](#).

Authors are invited to submit an abstract of 250 - 300 words to info@shallowwater.be before 1 September 2021. 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 present a full paper, which will also be reviewed by the international scientific committee.

The [6th MASHCON](#) conference is organized jointly by the [University of Strathclyde](#), [Ghent University](#) and [Flanders Hydraulics Research](#).



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