

Newsletter Shallow Water

Knowledge Centre Manoeuvring in
Shallow and Confined Water

Flanders
Hydraulics



Flanders
State of the Art



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This is the 57th 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 launch the first call for abstracts for the 7th MASHCON conference.

7th MASHCON conference

A first call for abstracts has now been launched for the [7th MASHCON conference](#), which will be held from 18 to 21 May 2025 in Bruges, Belgium. The MASHCON conferences offer researchers and experts the possibility to discuss the latest developments in research and practice related to ship manoeuvring in shallow and confined water.



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The [7th MASHCON conference](#) will pay particular attention to clean power in shallow water, dealing with aspects such as the green energy transition in shipping and near-shore emissions, manoeuvring in shallow water with Efficiency Improving Devices (EID) and auxiliary propulsion in shallow water, including wind assistance. The conference will not just concentrate on clean power, but also discuss shallow water effects on ship manoeuvring, ship - bank interaction and other confined water effects, ship - ship interaction effects and squat and other vertical motions in shallow water.

Authors are invited to [submit an abstract of 350-500 words](#) before 30 September 2024. Once accepted, authors will be expected to write and present a full paper, which will be reviewed by the international scientific committee.

The [7th MASHCON conference](#) is organized jointly by Flanders Hydraulics and the Maritime Technology Division at Ghent University.

SHINING workshop

On 29 February and 1 March 2024, the third workshop of SHINING was held at Flanders Hydraulics, involving researchers from German, Dutch and Belgian institutes. Under changing

environmental conditions, the Netherlands, Belgium and Germany are faced with an increasing need to utilise the available waterways more



efficiently. SHINING was established in 2020 by Maritime Research Institute Netherlands (MARIN), Bundesanstalt für Wasserbau (BAW), Rijkswaterstaat (RWS), University of Duisburg (DST), Ghent University (UGent) and Flanders Hydraulics (FH) in order to exchange ideas on ship handling simulations through math models, CFD and model testing. The idea is to learn from each other which settings should be employed to make manoeuvring predictions with CFD, and to learn from each other's mathematical models. The ultimate goal is to be able to build reliable mathematical models for inland shipping in medium deep and shallow water.



Smart shipping research

Over the last couple of months, researchers associated with the Knowledge Centre have become involved in two smart shipping research projects.



DDSHIP (Data-driven Smart Shipping) aims at solving bottlenecks in the maritime and inland logistic network. Smart shipping generally ranges from data-driven support of ships' maintenance cycles to fully autonomous and unmanned ships. In Flanders, remote controlled steering of inland navigation ships is supported by a data-driven path controller that is gaining more acceptance. However, it appears that after adjusting this controller for a specific vessel based on various situations (= calibration phase), major steering errors still occur in day-to-day manoeuvring. This is attributed to insufficient control of the data determining that manoeuvring behaviour. The specific objective of this research focuses on developing the methodology to bring the right data into the path controller-based manoeuvring. This should then lead to more reliable day-to-day control of the vessel so that the risks of incidents and accidents are minimised. The data expertise brought to the study covers sensing (imaging and others) and sensor fusion, path controlling and ship hydrodynamics in shallow and confined waters. The project is a joint strategic basic research of Flanders Hydraulics and the University of Antwerp and Ghent University, sponsored by the Flemish subsidy entity VLAIO (through Blue Cluster). Because of the focus on various data models, the methodology will be able to find application in computer-based piloting of seagoing vessels as well as autonomous estuarine and inland vessels, and should help the members of the Industrial Advisory Board. Are you interested in the project? International companies are invited to contact katrien.eloot@mow.vlaanderen.be (project coordinator).

DDSHIP will be presented during the Smart Port Week which is held from 10 to 14 June 2024, along with workshops on Smart Shipping on June 11.

FOREMAST is a Horizon Europe project that looks for clean and competitive solutions for all transport modes. It involves 16 different partners. Researchers associated with the Knowledge Centre will develop manoeuvrability models for confined and shallow waters and vessel train simulations in a real life environment. In addition, attention will be paid to automated techniques applied to vessels including mooring and cargo operations.

UK-Belgium Maritime Innovation Day

On 4 March 2024, Katrien Eloot attended the [UK-Belgium Maritime Innovation Day: Autonomous Vessels & Smart Shipping](#), which was organised by the British Embassy in Belgium, the Port of Antwerp-Bruges and MCA Labs. The event was held in Antwerp and brought together players from the maritime industry who are involved in the development of autonomous navigation.

Researchers associated with the Knowledge centre recently published:

Brouwers, B.; van Beeck, J.; Lataire, E. (2024). [Application of Ultrasound Image Velocimetry \(UIV\) to cohesive sediment \(fluid mud\) flows](#). *Discov. Appl. Sci.* 2024 63. ISBN 0123456789 6(3): 1–17.

Chen, C.; Delefortrie, G.; Mansuy, M.; Lataire, E. (2024). [Path following controller for autonomous ships: simulation, experiment, and application in shallow water](#). *J. Mar. Sci. Technol.* 29(1): 181–199.

Donatini, L.; Verwilligen, J.; Delefortrie, G.; Vantorre, M.; Lataire, E. (2024). [Physically accurate real-time synthesis of ocean waves for maritime simulators](#). *Appl. Ocean Res.* 143: 103866.

Sotelo, M.S.; Boucetta, D.; Van Hoydonck, W.; Praveen, D.S.C.; Vantorre, M.; Toorman, E.; Delefortrie, G. (2024). [Experimental and numerical study of the hydrodynamic forces acting on a surface-piercing hydrofoil in muddy environments](#). *Ocean Eng.* 294: 116816.

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