

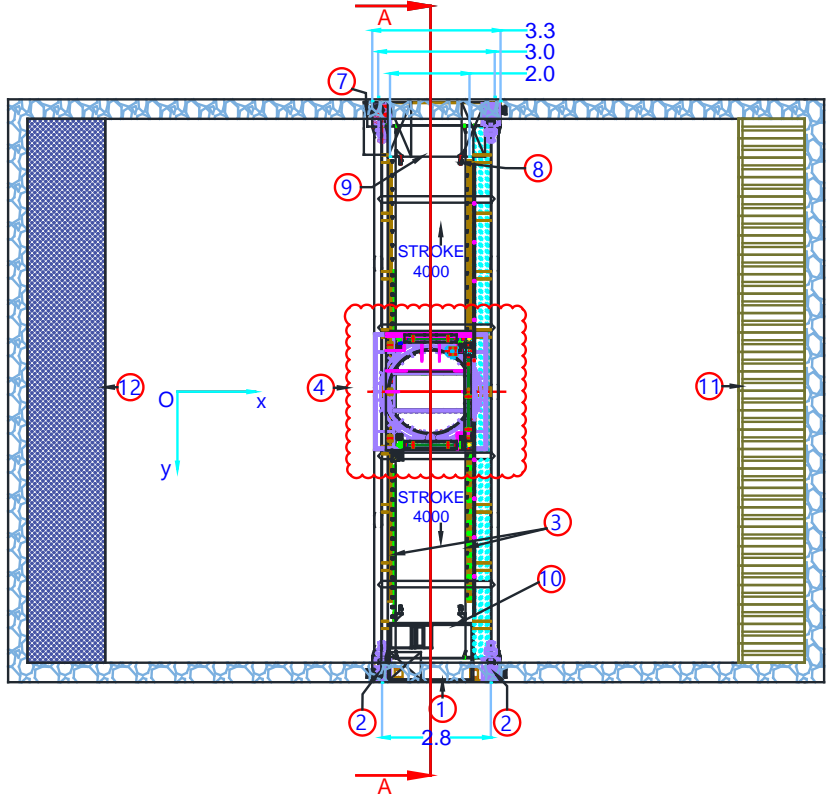
Name of organization Changwon National University	Year of information updating 2020
Year established 1969	Year of joining the ITTC -
Address 20 Changwondaehak-ro, Uichang-gu, Changwon-si, Gyeongsangnam-do, Korea	Status in the ITTC -
Contact details (phone, fax, e-mail) Changwon National University – +82 55 213 3680, +82 55 213 3689, cinter@changwon.ac.kr Ship Dynamics and Control Laboratory – +82 55 213 3683 hkyoon@changwon.ac.kr	Website http://www.changwon.ac.kr/name/main.do

Type of facility Square wave basin	Year constructed/upgraded 2011/2012 (Installation of wave maker)/ 2013 (Installation of wave absorber)/ 2018 (Installation of precise tank's bottom)
Name of facility Ship Dynamics and Control Laboratory	Location (if different from the above address)

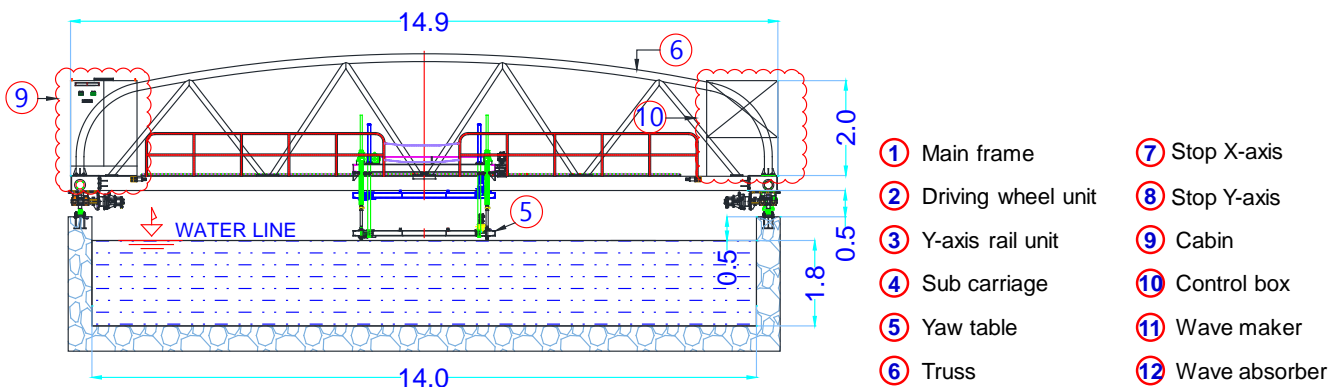
Main characteristics (dimensions of tank/basin/test section; for simulators: full mission, part task or desktop)
Tank (L x B x D) – 20 x 14 x 1.8 m

Drawings of facility

Top-view plan



Corss-section-view plan



- ① Main frame
- ② Driving wheel unit
- ③ Y-axis rail unit
- ④ Sub carriage
- ⑤ Yaw table
- ⑥ Truss
- ⑦ Stop X-axis
- ⑧ Stop Y-axis
- ⑨ Cabin
- ⑩ Control box
- ⑪ Wave maker
- ⑫ Wave absorber

Detailed characteristics (carriages, wave/current/wind generators, instrumentations, etc.)

- Towing carriage
 - Driven by AC servo motors (one for each wheel)
 - Max. carriage speed: 1.0 m/s
- Wave generator
 - 0.5m x 28 segments piston type, servo motor driven
 - Wave height: $H \leq 0.3$ m
 - Wavelength of regular wave: $\lambda \leq 3.0$ m
 - Range of generated wave periods: $0.5 \text{ s} \leq T \leq 30 \text{ s}$
 - Type of generated irregular waves: Neumann, Pierson-Moskowitz (PM), ISSC 1964, ISSC 1976, ITTC 1978, ITTC 1984, Bretschneider-Mitsuyasu (BM), JONSWAP, Ochi-Hubble, and User Defined Spectrum
- Other facility
 - Front beach for wave absorber (permeable panel type)
 - Precise tank's bottom ± 0.001 m for test in shallow water
- Instrumentation
 - Resistance dynamometers, propulsion dynamometers and rudder dynamometers
 - Motion measurement devices (Inertial Measurement Unit (IMU), Motion Capture System (OptiTrack) and potentiometer)
 - Tension gauge
- Max. model size: Ship length 1.5 m

Applications (Tests performed)

- Model tests
 - Resistance test and self-propulsion test in calm and in waves
 - Captive model test (PMM test and Circular Motion Test) in deep and shallow water
 - Seakeeping test
- Other tests
 - Test for underwater vehicle
 - Test for berthing/deberthing test for Unmanned Surface Vehicle

Published description (Publications on this facility)

Scientific publications:

- Nguyen, V.M., Nguyen, T.T.D. and Yoon, H.K (2020). A Study on Sensitivity Analysis of the Hydrodynamic Derivatives on the Maneuverability Prediction of KVLCC2 in Shallow Water by Model Test, Journal of Navigation and Port Research, Vol. 44, pp. 98-109.
- Yoon, H.K., Nguyen, V.M. and Nguyen, T.T (2018). Development of Solution for Safe Ship Considering Seakeeping Performance, The International Journal on Marine Navigation and Safety of Sea Transportation, Vol. 3, pp. 517-525.
- Nguyen, V.M., Nguyen, T.T., Seo, J.W., Yoon, H.K. and Kim, Y.G (2018). Experimental Investigation of the Hydrodynamic Force Acting on Ship Hull and Rudder in Various Wave Direction, Journal of Advanced Research in Ocean Engineering, Vol. 4, pp. 105-114.

- Nguyen, V.M., Jeon, M.J. and Yoon, H.K (2018). Experimental Investigation of the Motion Responses of a Moored Twin-Barge Model in Regular Waves in a Square Tank, *Journal of Navigation and Port Research*, Vol. 42, pp. 127-136.
- Lee, D.H., Jeon, M.J., Nguyen, V.M. and Yoon, H.K (2016). An Experimental Analysis of the Impact of Green Water on Offshore Platforms with Green Water Protectors of Various Shapes, *Journal of Advanced Research in Ocean Engineering*, Vol. 2, pp. 136- 149.
- Kang, S.H. and Yoon, H.K. (2014). Comparison of Hydrodynamic Coefficients obtained through Implementation of Diverse Methods in Square Tank, *Journal of Navigation and Port Research*, Vol. 38, pp. 11-18.

Conference presentations:

- Nguyen, V.M., Seo, J.W, Yoon, H.K. and Kim, Y.G (2019). Experiment study on hydrodynamic forces acting on ship hull and rudder behind the propeller in regular waves, *Proceeding of 11th International Workshop on Ship and Marine Hydrodynamics*, pp. 1-12.
- Nguyen, V.M., Nguyen, T.T.D. and Yoon, H.K (2019). An experiment study on the motion of floater moored near port in waves generated by a ship, *Proceeding of Autumn Annual Conference*, pp. 98-100.
- Nguyen, V.M., Nguyen, T.T.D, Mai, T.L. and Yoon, H.K. (2018). Experiment investigation of shallow water effect on the hydrodynamic forces acting on hull and rudder by model test, *Proceeding of the 13th International Conference on Hydrodynamics*, pp. 301-310.
- Nguyen, V.M., Yoon, H.K., Kim, H.D. and Kim, D.H (2018). Experimental study on scale effect on seakeeping assessment of a slow running planning boat, *Proceeding of Spring Annual Conference 2018*, pp. 1-7.
- Nguyen, V.M., Yoon, H.K. and Kim, H.D (2018). Seakeeping Assessment of a Slowly Running Planing boat based on the model test in wave tank", *Proceeding of 17th Asian Conference on Maritime System and Safety Research (ACMSSR)*, pp. 158-169.
- Nguyen, V.M., Mai, T.L., Nguyen, T.T.D. and Yoon, H.K (2018). Experimental investigation of water depth effect on hydrodynamic force acting on KVLCC2 at low speed", *Proceeding of 8th PAAMEC and AMEC*, pp. 289-295.
- Nguyen, V.M., Nguyen, T.T.D., Mai, T.L., and Yoon, H.K (2018). Experiment investigation of shallow water effect on the hydrodynamic forces acting on hull and rudder by model test, *Proceeding of the 13th International Conference on Hydrodynamics*, pp. 301-310.
- Nguyen, V.M. and Yoon, H.K (2017). Experimental Study on Force and Yaw Moment Acting on Ship in Regular Wave with Various Wave direction, *Proceeding of Autumn Annual Conference*, pp. 19-21.
- Jeon, M.J, Lee, D.H., Nguyen, V.M., Nguyen, T.T., Yoon, H.K., Kim, H.D., Kim, D.H (2016). Seakeeping model test of small speed boat for unmanned surface at slow speed and various wave directions, *Proceeding of Autumn Annual Conference*, pp. 1-6.
- Jeon, M.J., Nguyen, V.M. and Yoon, H.K (2015). Added resistance in waves in various wave direction based on model test. *Proceeding of the Asian Conference on Maritime System and Safety Research ACMSSR*, pp. 133-140.
- Jeon, M.J. Lee, D.H., Nguyen, V.M. and Yoon, H.K (2015). Estimation of hydrodynamic coefficients in wave using PMM test, *Proceeding of Asia Navigation Conference ANC 2015*, pp. 42-50.
- Jeon, M.J, Lee, D.H., Nguyen, V.M. and Yoon, H.K (2015). Estimation of Static Hydrodynamic Coefficient in Waves Using Static Drift Test, *AETA 2015*, pp. 845-853.