

Curriculum Vitae

“Joseph” Moo-Hyun Kim, Ph.D.

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EDUCATION

- *Feb. 1989* Ph.D., Ocean Engineering at MIT(Massachusetts Inst. Tech.), USA
- *Feb. 1983* M.S., Naval Architecture at Seoul National University, Korea
- *Feb. 1981* B.S., Naval Architecture at Seoul National University, Korea

EXPERIENCES

- *Director of Ocean System Simulation Lab (2016 ~)*
- *Aug. 2006 – present* Professor at Texas A&M University
- POSCO Expertise Professor (2012 ~)
- Honorary Adjunct Professor, KAIST (2009-)
- *Sep. 1996 – Aug. 2006* Associate Professor at Texas A&M University
- *Aug. 1992 – Aug. 1996* Assistant Professor at Texas A&M University
- *Aug. 1990 – Aug. 1992* Visiting Assistant Professor at Texas A&M University
- *Oct. 1988 – Aug. 1990* Postdoctoral Associate at MIT
- *Feb. 1984 – Oct. 1988* Graduate Research Assistant at MIT
- *Mar. 1981 – Feb. 1983* Graduate Research Assistant at Seoul National University
- Consultant for Exxon, Mobil, Amoco, Conoco, Murphy, Spartec, Noble & Denton UK, SOS, Hyundai, STI, ODI, BHP, Daewoo, IMP, Samsung, Reid-Middleton, Offshore Tech., DSME, PNU, etc. (more than 20 companies)

AWARDS & HONORS

- WBCC Faculty Fellow Award (2015)
- Birdwell Endowed Teaching Award (1995)
- TEES Jr Fellow (1995)
- Certificate of Appreciation for Chairing OOE Committee by ASCE-COPRI (American Society of Civil Engineers, Coastal, Ocean, Port, and River Inst.) Board of Governors (2004)
- TEES Fellow for Outstanding Research Accomplishment (2009)

- Invited speaker at Korean Economy Summit Meeting (presided by Korea President and 4 ministers) May, 2012
- Invited Key-note speaker at plenary session of 2013 ASEM Intl. Conference
- Invited Key-note speaker at 2014 KOEA (Korea-America Offshore Engineers Association) Forum.
- Best paper award 2012 by Korean Society of Ocean Engineering (with Prof. J.C. Park etc.)
- ICOSE-15 International Conference Co-Chairman 2015

PROFESSIONAL ACTIVITIES

- Editor-in-Chief: Ocean Systems Engineering Journal (since 2011)
- Chairman (elected: Oct.2002-Oct.2004) of *ASCE Ocean & Offshore Engineering Committee*
- Editor of *ASCE SPAR Monograph* (published 2012)
- Associate Editor: *Journal of Offshore Mechanics & Arctic Engineering* (2005-)
- Associate Editor: *Journal. Ocean Engineering*
- Editorial Board: *Intl. Journal of Naval Architecture and Ocean Engineering*, *Journal of Ocean Science and Technology*, *Journal of Korean Society of Coastal and Ocean Engineers*, *Journal of Korean Society of Civil Engineers*, *Intl. Journal of Ocean System Engineering*
- Reviewer for more than 150 journal and proceeding papers
- Technical Program Committee Member for International Society of Offshore and Polar Engineers (ISOPE) (1993-present)
- Organizing Committee Member for two Intl. Conferences (ASCE-CEO6 2004, NDAPMT, 1997)
- Session Organizer/Chairman for more than 30 International Conferences
- Professional Affiliation: Member of ASCE, SNAME, MTS, ISOPE, ASEE
- Graduate Advisor (2003-2004, 2009-): TAMU Ocean Engineering Program
- Undergraduate Advisor (1992-1997): TAMU Ocean Engineering Program
- Foreign Evaluator of KAIST-OSE Department (2012)

SUPERVISED STUDENTS

- 29 Ph.D. Students (18 graduated, 11 current)
- 33 Master Students (31 graduated, 2 current)
- 17 Post-doctoral Students

PUBLICATION

EDUCATIONAL PAPERS

- Ryu, S., Kim, M.H., Kinnas, S.A. and Kang, J.H., "Development of Web-based Numerical Wave Tank and Java Applets as an Advanced Tool for Teaching Wave Mechanics," *2003 ASEE Conference*, Nashville, Tennessee, 2003
- Kinnas, E.S., Kim, M.H., and Zhang, J. "Electronic Textbook with Java Applets: Waves on Web" Presented at the Special Symposium (honoring Prof. John Wehausen) at OMAE 2002, Norway, 2002

- Hardjanto, F.A., Kinnas, S.A., Hart, H., and Kim, M.H., “Visualization of wave kinematics On the world-wide Web; An interactive instructional tool” Proc. Ocean Wave Kinematics, Dynamics and Loads on Structures, ASCE/OTRC Conf., Houston, April, 1998
- Kim, M.H. and Lou, Y.K., "Dynamics of Offshore Structures Course at Texas A&M University," Proc. American Society for Engineering Education (ASEE) Conf., University of Illinois, June, 1993.

BOOKS

Editor of a book “Spar Platforms Technology & Analysis” ASCE Press, 2012

BOOK-CHAPTERS

- Book Chapter: Numerical Models in Fluid Structure Interaction (Editor S. Chakrabarti) WIT Press, CH2. 2D Numerical Wave Tank Simulations: (by Kim, M.H. and W.C. Koo), Jan. 2005
- Electronic Textbook WOW “Waves On Web” (by Kim, M.H., Kinnas, S. & Zhang, J.), 2003
- Book Chapter: CH.8 “Hydrodynamics of Offshore Structures” (by Kim, M.H.) “*Developments in Offshore Engineering: Wave Phenomena & Offshore Topics*” Gulf Publication Co., 1998
- Book Chapter: ASCE Monograph: Spar Technology and Analysis (Editor M.H. Kim) Introduction and CH6. Hull/mooring/riser coupled dynamic analysis of a classic spar including the effects of buoyancy cans and riser-guide gaps. (by Kim, M.H.), ASCE Press, 2012
- IMDC 2006 SOA Report: State of the Art Report on the Design of Offshore Oil and Gas Facilities (1 Chapter by M.H. Kim), 2006

REFEREED JOURNAL PAPERS (133)

- Jang, H.K., Kang, H.Y., and Kim, M.H., “Numerical simulation of dynamic interactions of an arctic spar with drifting level ice”, *Ocean Systems Engineering, International Journal*, Vol.6, No.4, 2016
- Kim, S.W., Kim, M.H., and Kang, H.Y., “Turret location impact on global performance of a thruster-assisted turret-moored FPSO”, *Ocean Systems Engineering, International Journal*, Vol.6, No.3, 2016
- Cifuentes, C. and Kim, M.H., “Drag coefficient formulation for high-solidity-ratio net using a Morison force model” (submitted)
- Kang, H.S., Kim, M.H., and Bhat, S.S., “Numerical analysis on Mathieu instability of top-tensioned riser in dry-tree semisubmersible”, (submitted to JOMAE)
- Kim, K.S. and Kim, M.H., “Simulation of Kelvin Helmholtz instability by using MPS method” (*Ocean Engineering J*, In Press)
- Cho, I.H. and Kim, M.H., “Effect of dual vertical porous barrier on sloshing reduction in a swaying rectangular tank” (In Press *Ocean Engineering J*)
- Kang, H.S., Kim, M.H., and Bhat, S.S., “Tension variation of hydro-pneumatic riser tensioner and implications for interfaces of dry-tree semisubmersible” (submitted to OSE)
- Kim, H.C., Kim, K.H., Hong, K.Y., and Kim, M.H., “Global performance of multi-unit wind turbine mounted on a KRISO square-type semisubmersible: numerical simulation vs. model test” (In Press *JOPE*)
- Bae, Y.H., Kim, M.H., Kim, H.C., “Performance Changes of a Floating Offshore Wind Turbine in Mooring Line Broken Condition”, *Renewable Energy Journal*, Vol.101, 364-375, 2017
- Han, D.S. and Kim, M.H., “Effect of water jetting on soil properties and spud-can penetration/extraction in various soil conditions: Numerical simulation vs. physical model test”, (submitted to SOSJ)

- Kim, S.W. and Kim, M.H., “Eco-friendly thrust allocation algorithm development using the penalty optimization method for DP-controlled offshore platforms”, (submitted to OEJ)
- Han, D.S. and Kim, M.H., “Spud-can penetration depending on soil properties; comparison between numerical simulation and model test”, (submitted to KSME)
- Kim, J.R., Koh, H.J., Bae, Y.H., Cho, I.H., and Kim, M.H., “Experimental study of wave energy converter by a dual-buoy heaving system”, (In Press JNAOE)
- Cifuentes, C. and Kim, M.H., “Hydrodynamic response of a cage system under waves and currents using a Morison-force model” (In Press OEJ)
- Kang, H.Y., Kim, M.H., “Time domain hydro-elastic analysis with efficient load estimation for random waves”, (In Press JNAOE)
- Cho, I.H. and Kim, M.H., “Hydrodynamic performance evaluation of wave energy converter with two concentric vertical cylinders by analytic solutions and model tests” *Ocean Engineering (In Press)*
- Bakti, F.P., Kim, M.H., Kim, K.S., Park, J.C., “Comparative study of standard WC-SPH and MPS solvers for free-surface academic problems” *Journal of Offshore and Polar Engineering*, Vol.26 #3 235-243, 2016
- Kim, H.C. and Kim, M.H., “Comparison of simulated platform dynamics in steady/dynamic winds and irregular waves for OC4 semi-submersible 5MW wind-turbine against DeepCwind model-test results”, *Ocean Systems Engineering, International Journal*, Vol.6, No.1, 1-21, 2016
- Kurup, N.V., Shi, S., Jiang, L., and Kim, M.H., “Numerical modeling of internal waves within a coupled analysis framework and their influence on spar platforms” *Ocean Systems Engineering, International Journal*, Vol.5, No.4, 261-277, 2015
- Kim, H.C. and Kim, M.H., “Global performance of a semi-submersible 5MW wind turbine including second-order wave diffraction effects” *Ocean Systems Engineering, International Journal*, Vol.5, No.3, 139-160, 2015
- Cifuentes, C., Kim, S.J., Kim, M.H., and Park, W.S., “Numerical simulation of the coupled dynamic response of a submerged floating tunnel with mooring lines in regular waves”, *Ocean Systems Engineering, International Journal*, Vol.5, No.2, 109-123, 2015
- Bae, Y.H. and Kim, M.H., “Influence of asymmetric aerodynamic loading on multiple unit floating offshore wind turbine”, *J. Ocean Engineering and Technology*, Vol.29 #3, 255-262, 2015
- Kim, K.S. and Kim, M.H., and Park, J.C., “Simulation of multi-liquid-layer sloshing with vessel motion by using moving particle simulations”, *J. of Offshore Mechanics and Arctic Engineering*, Vol.137, #5, 2015
- Kim, S.J. and Kim, M.H., “Dynamic behaviors of conventional SCR and Lazy-wave SCR for FPSOs in deep water, *Ocean Engineering*, Vol.106, 396-414, 2015
- Kim, S.J., Koo, W.C., and Kim, M.H., “Nonlinear time-domain NWT simulation for two types of a BBDB (backward bent duct buoy) compared with 2D wave-tank experiments, *Ocean Engineering*, Vol.108 584-593, 2015
- Han, D.S., Kim, S.J. and Kim, M.H., “Effect of water jetting parameters on the penetration behavior of jack-up spud-can in surficial sand conditions”, *Ocean Systems Engineering, International Journal*, Vol.5, No.1, 1-19, 2015
- Bae, Y.H. and Kim, M.H., “The dynamic coupling effects of a MUFOWT with partially broken blade” *Journal of Ocean and Wind Energy* Vol.2 #2, 89-97, 2015
- Cifuentes, C. and Kim, M.H., “Dynamic analysis for the global performance of a SPM-feeder-cage system under waves and currents”, *China Ocean Engineering Journal* Vol.29 #3, 415-430, 2015

- Han, D.S., Kim, S.J. and Kim, M.H., “Effect of plate slope and water jetting on the penetration depth of a jack-up spud-can for surficial sands”, *Ocean Systems Engineering, International Journal*, Vol.4, No.4, 2014
- Eom, T.S., Kim, M.H., Bae, Y.H., and Cifuentes, C, “Local dynamic buckling of FPSO steel catenary riser by coupled time-domain simulations”, *Ocean Systems Engineering, International Journal*, Vol.4, No.3, 2014
- Kang, H.Y. and Kim, M.H., “Safety assessment of Caisson transport on a floating dock by frequency- and time-domain calculations.”, *Ocean Systems Engineering, International Journal*, Vol.4, No.2, 2014
- Heo, J, Park, J.C., Koo, W.C., and Kim, M.H., “Influences of Vorticity to Vertical Motion of Two-dimensional Moonpool under Forced Heave Motion,” *J. MPE (Journal of Mathematical Problems in Engineering)* Vol.2014 Art.ID 424927 (13pages), 2014
- Kim, K.S. and Kim, M.H., and Park, J.C., “Development of MPS method for multi-liquid-layer sloshing”, *J. MPE (Journal of Mathematical Problems in Engineering)*, Vol.2014, article ID 350165, 2014
- Kim, K.S. and Kim, M.H., “Dynamic coupling between ship motion and 3-layer-liquid separator by using MPS”, *Journal of Offshore and Polar Engineering*, Vol. 24, No.2, 122-128, 2014
- Bae, Y.H. and Kim, M.H., “Coupled dynamic analysis of multiple wind turbines on a large floater” *Ocean Engineering* Vol.92, 175-187, 2014
- Bae, Y.H. and Kim, M.H., “Aero-elastic-floater-mooring coupled dynamic analysis of FOWT in maximum operational and survival conditions” *J. of Offshore Mechanics and Arctic Engineering*, Vol. 136, #2, 2014
- Bae, Y.H. and Kim, M.H., “Influence of control strategy to FOWT global performance by aero-elastic-control-floater-mooring coupled dynamic analysis” *Journal of Ocean and Wind Energy*, Vol 1, No 1, 50-58, 2014.
- Kang, H.Y. and Kim, M.H., “Hydroelastic dynamic analysis and statistical assessment of flexible offshore platforms”, *Journal of Offshore and Polar Engineering*, Vol.24, #1, p35-44, 2014
- Bae, Y.H. and Kim, M.H., “Influence of Failed Blade-Pitch-Control System to FOWT by Aero-Elastic-Control-Floater-Mooring Coupled Dynamic Analysis” *Ocean Systems Engineering, International Journal* Vol. 4, No. 4, 2013
- Lee, K.R., Koo, W.C., and Kim, M.H., “Fully nonlinear time-domain simulation of a BBDB (backward bent duct buoy) floating wave energy converter using an acceleration potential method”, *J. of Naval Architecture & Ocean Engineering*, Vol.5, #5, 513-528, 2013
- Cho, I.H. and Kim, M.H., “Enhancement of wave-energy-conversion efficiency of a single power buoy with inner dynamic system by intentional mismatching strategy” *Ocean Systems Engineering, An International Journal* Vol. 3, No. 3, 2013
- Jeong, S.M., Nam, J.W., Hwang, S.C., Park, J.C., and Kim, M.H., “Numerical prediction of oil amount leaked from a damaged tank using two-dimensional moving particle simulation” *Ocean Engineering* Vol.69, 70-78, 2013
- Cho, I.H., Koh, H.J., Kim, J.R., and Kim, M.H., “Wave scattering by dual submerged horizontal porous plates” *Ocean Engineering J.*, Vol.73, 149-158, 2013
- Lee, B.H., Jeong, S.M., Hwang, S.C., Park, J.C., and Kim, M.H., “A Particle Simulation of 2-D Vessel Motions Interacting with Liquid- Sloshing Cargo by MPS” *J. CMES: Computer Modeling in Engineering & Science*, Vol. 91 #1, 43-63, 2013
- Cho, I.H. and Kim, M.H., “Transmission of oblique incident waves by a submerged horizontal porous plate” *Ocean Engineering*, Vol.61, 56-65, 2013

- Bae, Y.H. and Kim, M.H., “Rotor-floater-tether coupled dynamics including 2nd-order sum-frequency wave loads for a mono-column-TLP-type FOWT (floating offshore wind turbine)”, *Ocean Engineering*, Vol. 61, 109-122, 2013
- Cho, I.H., Kim, M.H. and Kweon, H.M., “Wave energy converter by using relative heave motion between buoy and inner dynamic system”, *Ocean Systems Engineering, An International Journal* Vol. 2, No. 4, 2012
- Kang, H.Y. and Kim, M.H., “Hydrodynamic interactions and coupled dynamics between a container ship and multiple mobile harbors” *Ocean Systems Engineering, International Journal* Vol. 2, No. 3, 217-228, 2012
- Nam, J.W., Kim, K.S., Hwang, S.C., Heo, J.K., Park, J.C., and Kim, M.H., “Effect on vessel motion caused by mitigation of sloshing impact loads using floaters” *Journal of KSOE*, Vol.26 #4, 2012
- Koo, W.C. and Kim, M.H., “A time-domain simulation of an OWC(Oscillating Water Column) with irregular waves” *Ocean Systems Engineering, An International Journal* Vol. 2, No. 2, 147-158, 2012
- Lee, B.H., Park, J.C., Kim, M.H., and Hwang, S.C., “Two-dimensional vessel-motion/liquid sloshing interactions and impact loads by using a particle method” *J. of Offshore Mechanics and Arctic Engineering*, Vol. #, 2012
- Yang, C.K. and Kim, M.H., “The structural safety assessment of a tie-down system on a tension leg platform during hurricane events” *Ocean Systems Engineering, An International Journal* Vol. 1, No. 4, 263-283, 2011.
- Kim, K.S., Lee, B.H., Kim, M.H., Park, J.C., “Simulation of sloshing effect on vessel motions by using MPS(Moving Particle Simulation)” *J. CMES: Computer Modeling in Engineering & Sciences*, Vol.79 #3, 201-221, 2011
- Bae, Y.H. and Kim, M.H., “Discussion on Rotor-floater-mooring coupled dynamic analysis of mono-column-TLP-type FOWT (Floating Offshore Wind Turbine)”, *Ocean Systems Engineering, An International Journal* Vol. 1, No. 3, 2011
- Heo, J.K., Park, J.C., and Kim, M.H., “CFD analysis of two-dimensional floating body with moon pool under forced heave motion” , *Journal of KSOE*, Vol.25 #2, 36-46, 2011
- Lee, B.H., Park, J.C., Kim, M.H., and Hwang, S.C., “Moving Particle Simulation for Mitigation of Sloshing Impact Loads Using Surface Floaters” *J. CMES: Computer Modeling in Engineering & Sciences*, Vol.75 #2, 89-112, 2011
- Bae, Y.H. and Kim, M.H., “Rotor-floater-mooring coupled dynamic analysis of mono-column-TLP-type FOWT (Floating Offshore Wind Turbine)”, *Ocean Systems Engineering, An International Journal* Vol. 1, No. 1, 93-109, 2011
- Lee, S.J. and Kim, M.H., “The effects of inner free surfaces and multi-body hydrodynamic interactions on the motions of LNG carrier and floating terminal”, *Journal of Offshore and Polar Engineering* Vol.21 #1, pp1-8, 2011
- Lee, B.H., Park, J.C., and Kim, M.H., “Step-by-step improvement of MPS method in simulating violent free-surface motions and impact loads”, *J. Computer Methods in Applied Mechanics and Engineering*, Vol.200 1113-1125, 2011
- Kim, Y.B., Kim, M.H., Kim, Y.Y. and Kim, Y.H., “Hydrodynamic interaction analysis of floating multi-body system” *Intl. J. Ocean System Engineering*, Vol.1, #4, 198-204, 2011
- Cho, I.H. and Kim, M.H., “Wave Deformation and Blocking Performance by N Porous Bottom-mounted Vertical Circular Cylinders”, *Journal of Offshore and Polar Engineering*, Vol.20 #4, 284-291, 2010

- Koo, W.C. and Kim, M.H., “A nonlinear time-domain simulation of a land-based oscillating water column (OWC)”, *Journal of Waterway, Port, Coastal and Ocean Engineering*, ASCE, Vol.136(#5), 276-285, 2010
- Koo, W.C., Kim, M.H, and Choi, Y.R., “Numerical analysis of chamber flow and wave energy conversion efficiency of a bottom-mounted oscillating wave power device.”, *Journal of Society of Naval Architects of Korea, SNAK*, Vol. 47(#3), 388-397, 2010
- Seok, J., Park, J.C., Heo, J.K., Kang, H.Y., Bae, Y.H., Kim, M.H. and Kang, Y.K., “Stability Evaluation during Transportation of Caisson for Breakwater”, *Journal of KSOE*, Vol.24 #4, 13-22, 2010
- Yang, C.K. and Kim, M.H., “Transient effects of tendon disconnection of a TLP by hull-tendon-riser coupled dynamic analysis”, *Ocean Engineering*, Vol.37 #9, 678-687, 2010
- Yang, C.K., Bae, Y.H., Kim, M.H., and Ward, E.G., “Loads on tie-down systems for floating drilling rigs during hurricane conditions”, *Journal of Offshore and Polar Engineering*, Vol.20 #2, 1-8, 2010
- Lee, B.H., Park, J.C., and Kim, M.H., “Reply to Discussion of “Numerical simulation of impact loads using a particle method””, *Ocean Engineering*, Vol.37 #15, 1480-1481, 2010
- Lee, B.H., Park, J.C., and Kim, M.H., “Numerical simulation of impact loads using a particle method”, *Ocean Engineering*, Vol.37, 164-173, 2010
- Yang, C.K. and Kim, M.H., “Linear and nonlinear approach of hydro-pneumatic tensioner modeling for spar global performance” *J. of Offshore Mechanics and Arctic Engineering*, Vol.132 #1, 2010
- Lee, S.J. and Kim, M.H., “The effects of inner liquid motion on LNG vessel responses” *J. of Offshore Mechanics and Arctic Engineering*, Vol.132 #2, 2010
- Kim, Y.B., Kim, M.H., and Kim, Y.W., “Dynamic Analysis of Floating Bodies Considering Multi-body Interaction Effect” *J. of SNAK (Society of Naval Architects Korea)* Vol.46 #6, 659-666, 2009.
- Kim, M.H. and Zhang, Z., “Transient effects of tendon disconnection on the survivability of a TLP in moderate-strength hurricane conditions” *Intl. Journal Naval Architecture and Ocean Engineering*, Vol.1, p13-19, 2009
- Ma, S., Kim, M.H., and Shi, S., “Second-order low-frequency wave forces on a SPM offloading tanker in shallow water” *J. of Offshore Mechanics and Arctic Engineering*, Vol.131, 2009
- Tahar, A. and Kim, M.H., “Coupled dynamic analysis of floating structures with polyester mooring lines” *J. of Ocean Engineering*, Vol.35, 1676-1685, 2008
- Cho, I.H. and Kim, M.H., “Wave Absorbing System Using Inclined Perforated Plates”, *Journal of Fluid Mechanics*, Vol.608, 1-20, 2008
- Koo, W.C.* and Kim, M.H., “Numerical modeling and analysis of waves induced by submerged and aerial/sub-aerial landslides” *KSCE Journal of Civil Engineering*, Vol.12, #2 77-83, 2008
- Koo, W.C.* and Kim, M.H., “Long wave induced by subsea landslide using a 2D numerical wave tank” *Journal of Ocean Engineering and Technology KCORE*, Vol.21 (5), p.1-8, 2007
- Koo, W.C. and Kim, M.H., “Current effect on nonlinear waves and a freely floating body simulation by a 2D fully nonlinear numerical wave tank”, *Journal of Waterway, Port, Coastal, Ocean Engineering*, ASCE Vol.133(2), 136-146, 2007.
- S.J. Lee, M.H. Kim, D.H. Lee, J.W. Kim and Y.H. Kim, “The effects of LNG-tank sloshing on the global motions of LNG carriers”, *J. of Ocean Engineering*, Vol.34 #1 p.3-9, 2007
- D.H Lee, M.H. Kim, S.H. Kwon, J.W. Kim and Y.B. Lee, “A parametric sensitivity study on LNG tank sloshing by numerical simulations”, *J. of Ocean Engineering* Vol.34 #1 p.10-20, 2007
- Koo, W.C. and Kim, M.H., “Fully nonlinear wave-body interactions with surface-piercing bodies”, *J. of Ocean Engineering*, Vol.34 p1000-1012, 2007.

- Koo, W.C., Kim, M.H., Lee, D.H., and Hong, S.Y., “Nonlinear time-domain simulation of pneumatic floating breakwater”, *Int. Journal of Offshore and Polar Engineering*, 16(1), 25-32, 2006.
- Koo, W.C. and Kim, M.H., “Numerical simulation of nonlinear wave and force generated by a wedge-shape wave maker”, *J. of Ocean Engineering*, 33(8), 983-1006, 2006.
- Koo, B.J. and Kim, M.H., “Hydrodynamic Interactions and Relative Motions of Two Floating Platforms with Mooring Lines in Side-by-side Offloading Operation” *Journal of Applied Ocean Research*, Vol.27 #6, 295-310, 2005
- Kim, M.H., Koo, B.J., Mercier, R.M., and Ward, E.G. “Vessel/mooring/riser coupled dynamic analysis of a turret-moored FPSO compared with OTRC experiment.” *Journal of Ocean Engineering* Vol.32, 1780-1802, 2005
- Koo, B.J. and Kim, M.H. "Evaluation of the effect of riser support system on global spar motion by time-domain nonlinear hull/mooring/riser coupled analysis" *Journal of Ocean Engineering & Technology*, Vol.19, #5, pp 16~25, 2005
- Kim, Y.B. and Kim, M.H., “Dynamic analysis of multi-body floating platforms coupled with moored lines and risers” *J. SOTEC* Vol. 9, No.1, 11-26, 2005
- Koo, B.J. and Kim, M.H., “Motion Analysis of Two Floating Platform with Mooring and Hawser Lines in Tandem Moored Operation by Combined Matrix Method and Separated Matrix Method” *Journal of Ocean Engineering & Technology*, Vol.19, #5, pp. 1~15, 2005
- Koo, B.J., Kim, M.H., and Randall, R., “The effects of nonlinear multi-contact coupling with gap between risers and guide frame on global spar motion analysis” *Journal of Ocean Engineering*, Vol.31, 1469-1502, 2004
- Koo, W.C. and Kim, M.H., “Freely floating body simulation by a 2D fully nonlinear numerical wave tank” *Journal of Ocean Engineering*, Vol.31, 2011-2046, 2004
- Koo, W.C. and Kim, M.H., “Fully nonlinear wave-body interactions with fully submerged dual cylinders” *Journal of Offshore and Polar Engineering*, Vol.14 #3,210-217, 2004
- Kim, Y.B. and Kim, M.H., “Hull-mooring-riser coupled dynamic analysis of a turret-moored FPSO compared with OTRC experiment” *J. SOTEC* Vol. 8, No.3, 26-39, 2004
- Koo, B.J., Kim, M.H., Randall, R., “Mathieu instability of a spar platform with mooring and risers” *Journal of Ocean Engineering*, Vol.31 2175-2208, 2004
- Arcandra and Kim, M.H., “Hull/mooring/riser coupled dynamic analysis and sensitivity study of a tanker-based FPSO”, *Journal of Applied Ocean Research* Vol.25, 367-382, 2003
- Park, J.C., Kim, M.H., Miyata, H., and Chun H.-H., “Fully nonlinear numerical wave tank simulations and wave run-up prediction around 3D structures” *Journal of Ocean Engineering*, vol. 30, no. 15, pp. 1969-1996(28), October 2003,
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- Kim, M.H., Niedzwecki, J.M., Roesset, J.M., Park, J.C., Hong, S.Y. and Tavassoli, A., “Fully nonlinear multi-directional waves by a 3D viscous numerical wave tank” *Journal of Offshore Mechanics and Arctic Engineering*, Vol.123, No.3, 124-133, 2001
- J.C. Park, M.H. Kim, and H. Miyata, “Three-dimensional numerical wave tank simulations on fully nonlinear wave-current-body interactions”, *Journal of Marine Science and Technology*, Vol.6, #2, 70-82, 2001
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- Kim, M.H., Koo, W.C., Hong, S.Y., “Wave interactions with 2D structures on/inside porous seabed by a two-domain BEM” *Journal of Applied Ocean Research*, Vol.22, No.5, 255-266, Oct.2000
- Cho, I.H. and Kim, M.H., “Wave deformation by submerged circular membrane”, *Journal of Korean Society of Coastal and Ocean Engineers*, Vol.12, #2, 1997
- Archandra, Randall, R.E., and Kim, M.H., “Dynamic analysis of a semisubmersible-type bucket ladder dredge” *Journal of Marine Technology, SNAME*, Vol.36, No.3, 143-156, 1999
- Cho, I.H. and Kim, M.H., “Wave deformation by a flexible circular disk” *Journal of Applied Ocean Research*, Vol.21, No.5, 263-280, 1999
- Ran, Z., Kim, M.H., and Zheng, W., “Coupled dynamic analysis of a moored spar in random waves and currents (time-domain vs. frequency-domain analysis)” *Journal of Offshore Mechanics and Arctic Engineering*, Vol.121, 194-200, 1999
- Hong, S.Y., Choi, Y.R., Kim, D.J., and Kim, M.H., “Responses of a barge-mounted platform in waves and currents” *Journal of Offshore and Polar Engineering*, Vol.9, No.4, 283-292, 1999
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PROJECT REPORTS (85)

FUNDED RESEARCH PROJECTS

Principal Investigator for 64 Funded Projects (total \$8 million dollars excluding construction/purchase of equipment)

(66) "Multi-source multi-purpose ocean energy station"

Sponsor: TAMU-EEI

Principal Investigator: Dr. M.H. Kim (CoPIs: Drs. Chang, Kaihatu, Kameoka)

Period: July 2015-July 2016

Value: \$50,000

(65) "Development of floater-mooring-turbine coupled dynamic analysis program including wec effect PHASE3"

Sponsor: KRISO

Principal Investigator: Dr. M.H. Kim

Period: June 2015-June, 2016

Value: \$150,000 (external)

(64) "Feasibility study for submerged floating tunnel"

Sponsor: KIOST

Principal Investigator: Dr. M.H. Kim

Period: May 2014-May 2015

Value: \$30,000 (external)

(63) "Development of DP algorithm for minimum fuel consumption"

Sponsor: DSME

Principal Investigator: Dr. M.H. Kim

Period: Oct. 2014-Oct. 2015

Value: \$60,000 (external)

(62) "Development of floating offshore turbine simulation methodology for POSCO"

Sponsor: POSCO/RIST

Principal Investigator: Dr. M.H. Kim

Period: Sep. 2014-Sep. 2015

Value: \$145,000 (external)

(61) "Methodology & algorithm development for the evaluation of ultra-deepwater or arctic floating platform"

Sponsor: US-DOE RPSEA

Principal Investigator: Dr. M.H. Kim and Dr. Shan Shi

Period: June 2014-June, 2016

Value: \$200,000 (external)

(60) "Development of floater-mooring-turbine coupled dynamic analysis program including wec effect"

Sponsor: KRISO

Principal Investigator: Dr. M.H. Kim

Period: June 2013-June. 2015 (Phase1&2)

Value: \$160,000 (external)

(59) "Development of next generation intelligent spud can for jack-up platform"

Sponsor: Donga University

Principal Investigator: Dr. M.H. Kim

Period: Jun. 2013-Jun. 2015

Value: \$124,000 (external)

(58) "Numerical modeling of offshore fish cage" (Phase1&2)

Sponsor: NSF-SBIR

Principal Investigator: Dr. M.H. Kim

Period: Sep. 2012-Oct. 2015

Value: \$115,000 (external)

(57) "Semi-active MR damper to reduce vibration of TLP/Spar"

Sponsor: SHELL

Principal Investigator: Dr. M.H. Kim

Period: Oct. 2012-Oct. 2015

Value: \$256,000 (external)

(56) "Development of DP algorithm for installation barge"

Sponsor: Offshore Tech., USA

Principal Investigator: Dr. M.H. Kim

Period: July 2012-Nov. 2012

Value: \$40,000 (external)

(55) "Development of basic engineering technology for subsea SCR"

Sponsor: RIST

Principal Investigator: Dr. M.H. Kim

Period: May 2012-May 2014

Value: \$255,000 (external)

(54) "Development of mooring-anchor program for coupling with floater program for FOWT (Floating Offshore Wind Turbine)"

Sponsor: DOE (Department of Energy)

Principal Investigator: Dr. M.H. Kim

Period: Sep. 2011-Sep. 2013

Value: \$400,000 (external)

(53) "Development of design strategy/dynamic analysis tool for FOWT (Floating Offshore Wind Turbine)"

Sponsor: STX

Principal Investigator: Dr. M.H. Kim

Period: Dec. 2011-Apr. 2013

Value: \$100,000 (external)

(52) "Development of analysis method and numerical tools for flexural floating offshore plants"

Sponsor: GS E&C

Principal Investigator: Dr. M.H. Kim

Period: June. 2011-Oct. 2012

Value: \$150,000 (external)

(51) "Performance evaluation of fixed and floating offshore wind turbines"

Sponsor: POSCO

Principal Investigator: Dr. M.H. Kim
Period: Feb. 2010-Nov. 2010
Value: \$110,000 (external)
(50) “Feasibility Study of floating offshore wind turbine”
Sponsor: ABS

Principal Investigator: Dr. M.H. Kim
Period: Dec. 2009-Oct. 2014
Value: \$288,000 (external)
(49) “LNG-FPSO and LNGC side-by-side offloading with SPM buoy”
Sponsor: Keppel/ABS

Principal Investigator: Dr. M.H. Kim
Period: Aug. 2009-Aug. 2010
Value: \$60,000 (external)
(48) “Hydrodynamic performance of mobile harbor system”
Sponsor: KAIST

Principal Investigator: Dr. M.H. Kim
Period: Aug. 2009-Dec. 2009
Value: \$54,000 (external)
(47) “Stability of TLPs with damaged tendons”
Sponsor: MMS (Federal: Minerals Management Service)

Principal Investigator: Dr. M.H. Kim, J. Zhang and R. Mercier
Period: Sep. 2007-Sep. 2009
Value: \$146,311 (external)
(46) “Loads on tie-down systems on rigs”
Sponsor: API (American Petroleum Institute)

Principal Investigator: Dr. M.H. Kim and E.G. Ward
Period: Sep. 2007 – Dec. 2008
Value: \$125,000 (external)
(45) “Structural health evaluation of a steel-jacket platform”
Sponsor: SINOPEC

Principal Investigator: Dr. M.H. Kim and D. Qin
Period: Sep. 2007 – Dec. 2008
Value(M.H. Kim): \$98,799 (external)
(44) “Float-over installation by catamaran barges”
Sponsor: Aker Marine Contractors

Principal Investigator: Dr. M.H. Kim
Period: Sep. 2008 – Apr. 2009
Value: \$31,233
(43) Program development for wave diffraction/radiation for 3D and multiple floating bodies” Sponsor: EDI-ENAUTIX

Principal Investigator: Dr. M.H. Kim
Period: Aug. 2004-Apr. 2007
Value: \$116,200 (external)
(42) “Feasibility of floating quay-wall system”
Sponsor: KORDI

Principal Investigator: Dr. M.H. Kim

Period: Jan. 2006-Jun. 2009
Value: \$80,000 (external)
(41)“Assessment of drilling rig storm sea fastenings during hurricane Ivan”
Sponsor:MMS (Federal: Minerals Management Service)
Principal Investigator: Dr. M.H. Kim and S. Ward
Period: May 2005-Mar. 2006
Value: \$117,514 (external)
(40) “No-MODUs-Adrift”
Sponsor: MMS-OTRC
Principal Investigator: Dr. M.H. Kim
Period: Jun. 2006 – Aug. 2007
Value: \$80,000 (external)
(39) “The effects of LNG-tank sloshing on LNG carrier motions”
Sponsor: ABS(American Bureau of Shipping)
Principal Investigator: Dr. M.H. Kim
Period: Feb. 2006– Dec. 2008
Value: \$85,000 (external)
(38) “Dynamic analysis tool for FPSO and shuttle motions with liquid sloshing”
Sponsor: OTRC
Principal Investigator: Dr. M.H. Kim
Period: Sep. 2005 – Aug. 2006
Value: \$50,000 (external)
(37) External Research Grant
Sponsor: Offshore Dynamics
Principal Investigator: Dr. M.H. Kim
Value: \$79,900
(36)“Feasibility of floating quay-wall system” Sponsor: KORDI
Principal Investigator: Dr. M.H. Kim and H.Y. Kang
Period: Mar. 2005-Oct. 2005
Value: \$50,000 (external)
(35)“Assessment of drilling rig storm sea fastenings during hurricane Ivan” Sponsor:MMS (Federal: Minerals Management Service)
Principal Investigator: Dr. M.H. Kim and S. Ward
Period: May 2005-Mar. 2006
Value: \$117,514 (external)
(34)“Program development for wave diffraction/radiation for 3D floating bodies” Sponsor:ENAUTIX
Principal Investigator: Dr. M.H. Kim
Period: Aug. 2004-Oct.2005
Value: \$51,200 (external)
(33)“Pneumatic floating breakwater and VLFS barge interaction” Sponsor: KRISO
Principal Investigators: Dr. M.H. Kim
Period: Apr. 2004 – Dec. 2004
Value: \$30,000 (external)
(32) “FPSO/shuttle offloading simulation” Sponsor: OTRC
Principal Investigator: Dr. M.H. Kim
Period: Sep. 2004 – Aug. 2005
Value: \$45,000 (external)

- (31) Coupled Dynamic analysis of multi-floating units Sponsor: Hyundai Heavy Ind.
Principal Investigator: Dr. M.H. Kim
Period: Feb. 2004 – Jan. 2005
Value: \$30,000 (external)
- (30) “The effects of LNG-tank sloshing on LNG carrier motions” Sponsor: ABS(American Bureau of Shipping)
Principal Investigator: Dr. M.H. Kim
Period: Feb. 2004 – Dec. 2004
Value: \$27,000 (external)
- (29) “Dynamic analysis tool for moored tanker-based FPSO/shuttle including large yaw motions”
Sponsor: Minerals Management Service and OTRC
Principal Investigator: Dr. M.H. Kim
Period: Sep. 2003 – Aug. 2004
Value: \$70,000 (external)
- (28) “WINTCOL/WINPOST, development project,” supported by JIP
Principal Investigator: Dr. M.H. Kim
Period: Dec. 2002-Dec.2003
Value: \$50,000 (external)
- (27) “Comparative analyses of theme structures for various water depths Phase IV: Spar analysis-model the model test” supported by Texaco/Deepstar program
Principal Investigators: Drs. M.H. Kim & S. Ward
Period: June 2002 – Dec. 2003
Value: \$60,000 (external)
- (26) “Dynamic analysis tool for moored tanker-based FPSO/shuttle including large yaw motions” supported by Minerals Management Service and OTRC
Principal Investigator: Dr. M.H. Kim
Period: Sep. 2001 – Oct. 2003
Value: \$150,000 (external)
- (25) “Responses of tanker-based FPSO to Hurricane in the Gulf of Mexico” supported by Minerals Management Service
Principal Investigators: Drs. S. Ward & M.H. Kim
Period: Nov. 1999 – Aug. 2002
Value: \$75,000 (external)
- (24) “WINTCOL/WINPOST Development project”: sponsored by JIP
PI: Dr. M.H. Kim
Period: 3/01 – 12/02
Value: \$50,000 (external)
- (23) “Development of cyber-space model-testing tool” supported by Energy Resources Program
Principal Investigator: Dr. M.H. Kim
Period: June 2000 – July 2001
Value: \$24,563 (internal)
- (22) “Experimental study of FPSOs in various Hurricane conditions” supported by Minerals Management Service and Industry
Principal Investigators: Drs. S. Ward, P. Johnson, & M.H. Kim
Period: Sep. 1999 – Aug. 2000
Value: \$150,000 (external)
- (21) “Comparative analyses of theme structures for various water depths”

supported by Texaco/Deepstar program

Principal Investigators: Drs. M.H. Kim & S. Ward

Period: June 1999 – Feb. 2000

Value: \$170,000 (external)

(20) “Dynamic analysis tool for moored tanker-based FPSOs including large yaw motions”

supported by Minerals Management Service and OTRC

Principal Investigator: Dr. M.H. Kim

Period: Sep. 1999 – Oct. 2001

Value: \$120,000 (external)

(19) “Motion analysis of a deep-draft floater by a time-domain nonlinear coupled analysis” supported by Santai International

Principal Investigator: Dr. M.H. Kim

Period: Aug. 1998 – Apr. 1999

Value: \$9,959 (external)

(18) “Education & student research in offshore tin mining” supported by PT TIMAH

Co-Principal Investigators: Drs. B.L. Edge, M.H. Kim, D. Cox, R. Randall, H.C. Chen

Period: Sep. 1997 – Sep. 1998

Value: \$236,782 (external)

(17) “WINTCOL/WINPOST, development project,” supported by JIP

Principal Investigator: Dr. M.H. Kim

Period: Dec. 1997 – Dec. 2001

Value: \$98,000 (external)

(16) “Electronic classroom for ocean wave theory” supported by NSF

Co-Principal Investigators: Drs. J.M. Roesset, M.H. Kim, J. Zhang, Spyros Kinnas, Hillary Hart

Period: Sep. 1998 – Sep. 2001

Value: \$370,264 (external)

(15) “Numerical wave tank simulations for irregular multi-directional waves”

supported by Texas Advanced Research Program (TARP)

Co-Principal Investigators: Drs. M.H. Kim, J.M. Roesset

Period: Jan. 1998 - Jan. 2000

Value: \$128,355 (external)

(14) “Verification of numerical wave tank predictions for multi-directional seas” supported by National Science Foundation

Co-Principal Investigators: Drs. J.M. Roesset, M.H. Kim, and J.M. Niedzwecki

Period: Sep. 1997 - Sep. 1999

Value: \$398,400 (external)

(13) “Wave-current forces on a barge-mounted platform” supported by Korea Research Institute of Ships and Ocean Engineering (KRISO)

Principal Investigator: Dr. M.H. Kim

Period: Jan. 1997 - Apr. 1999

Value: \$57,800 (external)

(12) “Dynamic response analysis of a multi-column multi-module structure in waves” supported by UOU-KOSEF

Principal Investigator: Dr. M.H. Kim

Period: Dec. 1995 - Dec. 1996

Value: \$20,971 (external)

(11) “Fully nonlinear wave-body interaction computation by MEL-BEM” supported by San Diego Supercomputer Center

Principal Investigator: Dr. M.H. Kim
Period: Dec. 1995 - Sep. 1997
Value: CRAY major grant, 2500 SU CPU hrs (external)
(10) "Nonlinear motion analysis of compliant platforms in waves and currents" supported by National Science Foundation (NSF-OTRC)
Principal Investigator: Dr. M.H. Kim
Period: Sep 1996 - Sep 1999
Value: \$210,000 (external)
(9) "WINPOST, development project," supported by JIP
Principal Investigator: Dr. M.H. Kim
Period: Dec. 1995 - Oct. 1997
Value: \$91,000 (external)
(8) "Development of Flexible-Membrane Breakwaters" supported by Korea Research Institute of Ships and Ocean Engineering (KRISO)
Principal Investigator: Dr. M.H. Kim
Period: Jan 1995 – Apr. 1999
Value: \$110,000 (external)
(7) "Nonlinear motion analysis of Spar Platform in multi-directional random waves" supported by National Science Foundation (NSF-OTRC)
Principal Investigator: Dr. M.H. Kim
Period: Sep 1993 - Sep 1996
Value: \$158,600 (external)
(6) "Performance evaluation of containment booms" supported by Texas General Land Office (TGLO) and Marine Spill Response Corporation (MSRC)
Co-Principal Investigators: Drs. Richard Seymour and M.H. Kim
Period: Sep 1994 - Sep 1996
Value: \$325,595 (external, \$105,809 matching)
(5) "Development of the software WINTCOL V3.0" supported by Joint Industry Project (MOBIL, CONOCO, B&R, AKER, HYUNDAI & SHELL)
Principal Investigator: Dr. M.H. Kim
Period: May 1994 - Sep 1995
Value: \$97,000 (external)
(4) "Sum- and difference-frequency wave loads and responses of a deep-draft-column-based platform (WINTCOL II)" supported by Joint Industry Project (Shell, Mobil, Conoco, and Brown and Root)
Principal Investigator: Dr. M.H. Kim
Period: Mar. 1993 - Mar. 1994
Value: \$40,000 (external)
(3) "Deep water TLP responses in random seas" supported by Joint Industry Project (Amoco, BP, ABS, and Odeco)
Co-Principal Investigators: Drs. C.H. Kim, M.H. Kim and Jack Y.K. Lou
Period: Jul. 1991 - Oct. 1993
Value: \$368,000 (external, \$48,000 matching)
(2) "The interaction of waves with arrays of deep-draft columns (WINTCOL I)" supported by Joint Industry Project (Shell, Chevron, Mobil, Conoco, and Brown and Root)
Principal Investigator: Dr. M.H. Kim
Period: Oct. 1991 - Mar. 1993
Value: \$50,000 (external)
(1) "Nonlinear wave-current-body interaction" supported by Engineering Excellence Fund
Principal Investigator: Dr. M.H. Kim
Period: Sep. 1992 - Sep. 1994
Value: \$20,000 (internal)

NOTABLE RESEARCH ACHIEVEMENTS

- Developed computer programs for full coupled dynamic analysis of multiple wind turbines on a single floater, which is the world first.
- Developed computer programs for various kinds of WEC (wave energy converter) analysis with control.
- Developed the hydro-elasticity analysis program coupled with mooring dynamics for very large floating structures in frequency and time domain, which is the world first.
- Developed a unique DP(dynamic positioning) algorithms coupled with multi-hull/mooring/riser coupled dynamic analysis program.
- Developed a floating-wind-turbine rotor-floater-mooring coupled dynamic analysis program by combining HARP and FAST. The most advanced program in the world in this area.
- Developed a MPS (moving particle simulation) CFD program for the interaction of multiple liquids.
- Developed a simulation technique for MR-damper –controlled smart floating offshore platform
- Pioneering work in combining vessel motions and liquid-tank sloshing (CFD) to assess their interactions. The most advanced program in the world in this area.
- Developed a commercial software HARP for multi-floater/mooring/riser coupled dynamic analysis, which is now used by more than 20 companies and institutes worldwide.
- Designated by offshore industry (Deep-Star Offshore Consortium) to produce bench-mark results for coupled dynamic analyses of spars and TLPs for 3000-ft, 6000-ft, and 10000-ft water depths (2002)
- Hull/mooring/riser coupled dynamic analysis Software WINPOST distributed to 6 JIP sponsors (2002): The computer program has since been used by more than 10 offshore companies in US and worldwide and applied in various projects.
- Developed the second-order diffraction/radiation panel program WAMIT, which is currently used by more than 15 offshore companies worldwide.
- Developed HOBEM-TIOSTAMU software: Higher order BEM equivalent of WAMIT
- Developed THOBEM (Time-domain High-Order Boundary Element Method) software for wave-current-body interactions and wave drift damping for 3D floating bodies
- Developed 2D and 3D state-of-the-art fully-nonlinear NWT(Numerical Wave Tank) programs based on the potential- and viscous-fluid theory.
- First to obtain the second-order diffraction potential and introduce the importance of the second-order diffraction force in the fatigue analyses of offshore structures, such as TLP. The computation has been used as bench-mark results by many authors.
- First to introduce a concept of perforated membrane breakwater and developed analytical/numerical techniques to solve wave interactions with flexible membrane.