# Prof Maurizio Collu

Ph.D., CEng, MRINA, FHEA

Professor in Offshore Renewable Energy Engineering Naval Architecture, Ocean and Marine Engineering Department University of Strathclyde



# Highlights

- I am a Professor in Offshore Renewable Energy Engineering, and I joined the Naval Architecture, Ocean and Marine Engineering Department of the University of Strathclyde in August 2018.
- My area of expertise is applied mechanics, focusing on multidisciplinary, coupled model of dynamics of offshore renewable energy systems.
- My research in the areas of analysis and design of floating offshore wind turbines and multi-purpose
  offshore structures is recognised as excellent at international level. I am also chair of the ITTC Ocean
  Renewable Energy committee (2021-24), member of the editorial board of the Ocean Engineering and
  Wind Energy Science journals, member of the scientific advisory committee in major international
  research projects and several offshore engineering conferences.
- I have directly managed 4.5M£ of public research funding, in projects for a total value of 28.5M£, funded by the Engineering and Physical Sciences Research Council UK (EPSRC), Natural Environment Research Council UK (NERC), Newton funds UK, Innovate UK, Royal Society (UK), EETF (Scottish Government), ORE Catapult (UK), Energy FP7 and H2020 (EU).
- I have also been working closely with the private sector, with companies ranging from small start-ups to large multinational energy companies.

## Career in brief

After a full marks (100/100) 5 years degree (BSc + MSc) in Aerospace Engineering at *Politecnico di Milano (IT)*, Maurizio won a **fully funded PhD studentship at Cranfield University (2005-08)**, under the supervision of Prof. Minoo Patel, developing a novel model of dynamics for high speed marine vehicles with aerodynamic surfaces. This work led to a Royal Society paper, to a Transaction of the RINA paper (for which Maurizio received the RINA Calder Prize), and to a UK patent (GB 247 22 66).

As Postdoctoral Researcher (2008-10) he led the design of the floating support structure for the 5-10MW Vertical Axis Wind Turbine in the ETI-funded project NOVA - capturing the main results in a highly cited paper in Ocean Engineering, which was also the 2012 most downloaded paper of this journal.

As Lecturer (2010-2015) he secured £0.7m worth of research projects, plus a teaching income of ~£1m as a result of the outstanding success of the Advanced Mechanical Engineering MSc under his management. As WP leader in the EU FP7 project H2Ocean (2012-14) he led the development of a dynamics model for a hybrid wind-wave offshore renewable energy devices, managing an international team of 6 people.

As Senior Lecturer (2015-2018), he has secured £1.5m worth of research funding (1.2m as PI), through a balanced portfolio of EU and UK research council funded, industry sponsored and specialist consultancy projects, and has taken the lead of the 5 MScs in Offshore and Ocean Technology at Cranfield.

In 2018 Maurizio moved to the University of Strathclyde, where he was promoted to **Reader (Assoc. Professor)**, where he had been the PI of the EPSRC-NERC Joint UK-China Offshore Renewables Energy project INNO-MPP (£767k, 3y) managing 19 investigators from 3 UK and 3 Chinese research institutions, work

package leader of the EU H2020 "The Blue Growth Farm" project (€7m, 3.5y), both focusing on offshore hybrid multi-purpose platforms, and work package leader in the EPSRC "Home Offshore" project (£3.8m, 3y), focusing on the O&M of Offshore Wind Farms.

Promoted to **Professor** in 2021, he continued to lead the development of the numerical models of dynamics of an offshore hybrid multi-purpose platforms as WP leader in "The Blue Growth Farm" project until the end, and from December 2021 he is WP leader of a prestigious 5 years UK-funded research program Ocean REFuel, on the production of hydrogen from offshore renewable sources.

# Areas of specialisation and Bibliometrics

Offshore Renewable Energy • Offshore Wind Turbines • Offshore Multi-Purpose Platforms • Design of floating support structures for offshore renewable energy devices • Coupled model of dynamics for Offshore Renewable Energy Devices (wind, wave, tidal) • Loads on offshore structures

Wing in ground effect vehicles: design and analysis of dynamics

Bibliometrics	Scopus	Google Scholar	
h-index	26	30	
citations	2043	2933	

## Education

2005-2008

2011

Module 1 and Module 2, PGCAP in Teaching, Learning and Assessing in Higher Education, Cranfield University, UK

PHD in Dynamics of Marine Vehicles with Aerodynamic Surfaces, Cranfield University, UK

1999-2004 MSc+BSc (5 years degree) in Aerospace Engineering (1st, 100/100), Politecnico di Milano, IT

## Honors & awards

The Calder Prize, The Royal Institution of Naval Architects

# Appointments held

PRINCIPAL ACTIVITIES

o4/2021-now Professor in Offshore Renewable Energy Engineering, University of Strathclyde, Glasgow, UK
o8/2018-03/2021 Reader in Offshore Renewable Energy Systems, University of Strathclyde, Glasgow, UK
senior Lecturer in Dynamics of Offshore Structures, Cranfield University, Cranfield, UK
course Director of the 5 MSc in Offshore and Ocean Technology, Cranfield University, Cranfield, UK
o9/2010-09/2015 Lecturer in Offshore Renewable Energy MSc, Cranfield University, Cranfield, UK

09/2010-09/2015 Course Director of the Advanced Mechanical Energy MSc, Cranfield University, Cranfield, UK

10/2009-08/2010 Research Fellow, Cranfield University, Cranfield, UK

OTHER PROFESSIONAL ACTIVITIES

2022-now ITTC Liaison A for the IEC TC 114
Chair of the ITTC Specialist Committee on Offshore Renewable Energy

External examiner, University of Southampton, for the BEng and MEng in Ship Science 2017-2021 External examiner, University of Strathclyde, for the MSc in Offshore Floating Systems and Msc in Ship & 2015-2018 Offshore Structures Member of the Specialist Committee on Hydrodynamic Modelling of Marine Renewable Energy Devices, 2017-2020 Member of the Ocean Engineering Committee, ITTC 2014-2017 2017-2018 Member of the Maritime Innovation Committee, The Royal Institution of Naval Architects Member of the UK Fluids Network Special Interest Group in Marine Hydrodynamics 2017-2018 OTHER COMMITMENTS Wind Energy Science Conference (WESC) 2023: Conference Programme Chair. Glasgow, Scotland, 23-26 2023 May 2023 OMAE: Ocean renewable energy technical committee member, topic organiser, session organiser, session 2012-now chairman Scientific committee member, International Conference on High Speed Marine Vehicles (HSMV) 2014, 2017 Technical Advisory Panel, Conference on Offshore Renewable Energy (CORE) 2016-now Technical committee member, Offshore Wind and other marine renewable Energies in Mediterranean and 2017 European seas (OWEMES) Editor Associate editor of the Journal of Offshore Marine and Arctic Engineering 2019-now Managing Guest editor for the journal Ocean Engineering (Elsevier) special issue on "Progress on Offshore 2019-2020 Multi-Purpose Platforms" Guest editor for the journal Ocean Engineering (Elsevier) special issue on "Floating Wind: Engineering 2019-2020 Challenges and Opportunities" Guest editor for the journal Energies (MDPI) special issue on "Assessment and Nonlinear Modelling of Wave, 2019-2020 Tidal and Wind Energy Converters and Turbines". Link

## Editorial board member

2023-now Ocean Engineering (Elsevier) Link

## Academic roles

TEACHING (COURSE)

Offshore Wind Turbines Dynamics Modelling, University of Strathclyde 2020-now Marine Renewable Energy Systems, University of Strathclyde 2019-now Marine Environment, University of Strathclyde 2019-now Fluid Mechanics and Loading, Cranfield University 2011-2018 Renewable Energy Systems, Cranfield University 2013,2014 Renewable Energy Technologies, Markets and Policy, Cranfield University 2014 Advanced Control Systems, Cranfield University 2015,now Introduction to MATLAB, Cranfield University 2012-now

PhD Supervision (Current, as main supervisor)

Mr A Russell LIDAR-assisted control of Floating Offshore Wind Turbines

2020-2023	Ms V Sykes Floating Offshore Wind Turbines: Design and Analysis				
2020-2023	Ms K Patryniak Multidisciplinary Design, Analysis and Optimisation approach for Floating Offshore Wind Turbines				
2019-2023	Ms J McMorland Operation and Maintenance Strategies for Floating Offshore Wind Turbines and Multi-Rotor Systems				
2019-2022	Mr A Ojo Multidisciplinary Design, Analysis and Optimisation approach for Floating Offshore Wind Turbines				
2018-now	Mr C Simpson A hybrid aero-hydro-servo-elastic and thermo-electro-magnetic-mechanical digital twin model for the operation $\mathring{\sigma}$ maintenance of offshore wind turbines				
	PhD Supervision (Completed, as main supervisor)				
2015-2020	D Ward Mitigation of Loads on Floating Offshore Wind Turbines through Advanced Control Strategies				
2013-2017	M Adhynugraha Development and Validation of a Dynamics Model for an AAMV Configuration with Water Waves Consideration				
2011-2014	F Madugu Techno-economic Modelling Analysis for Microalgae Cultivation to Biofuels and Co-Products				
2011-2014	M Borg Offshore Floating Vertical Axis Wind Turbines: Development and Applications of a Coupled Model of Dynamics Best Cranfield University PhD student award 2017				
	PhD defense: external examiner				
2023	Politecnico di Milano, Italy Simone Di Carlo, A comparative dynamic analysis of floating platforms for 15 MW wind turbines				
2023	Durham University, UK Aidan J A Duffy, Modelling the Impact of Leading Edge Erosion Progression on the Electricity Produced by Wind Turbines				
2022	Norwegian University of Science and Technology (NTNU), Norway Carlos Eduardo Silva de Souza,Structural modelling, coupled dynamics, and design of large floating wind tur- bines				
2022	Universita degli studi di Cagliari, Italy Fabio Licheri, Experimental and numerical investigations of Wells turbines for wave energy conversion				
2021	Politecnico di Milano, Italy Alessandro Fontanella, Make the floating wind turbine see the waves: Advances in floating wind turbine control and scale model experiments				
2021	The University of Queensland, Australia Yun Il Chu, Development of Integrated Offshore Fish Cage and Floating Spar Wind Turbine				
2019	Universita di Ferrara, Ferrara, Italy H Bahlawan, Optimization of Hybrid Energy plants by Accounting for Life Cycle Energy Demand				
2018	Ecole Centrale de Nantes, Nantes, France  V Leroy, Unsteady Aerodynamic Modelling for Seakeeping Analysis of Floating Offshore Wind Turbines				
2018	University of Exeter, Exeter, UK G Rinaldi, Reliable and cost effective offshore operations for farm deployment and operation				
2017	University of Cantabria, Santander, Spain				
2016	M Martini, Reducing uncertainty in operations and maintenance of offshore floating wind energy University of Sheffield, Sheffield, UK T Yin, On the use of the Theory of Critical Distances to design notched metallic components against dynamic loading				

2016	IIT Madras, Chennai, India	
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 $N\,Senthil\,Kumar,\,Experimental\,\,and\,\,Numerical\,\,Investigation\,\,on\,\,Hydrodynamic\,\,Response\,\,of\,\,Buoy\,\,Form\,\,SPAR$ 

NTNU Trondheim, Norway

Z Cheng, Integrated Dynamic Analysis of Floating Vertical Axis Wind Turbines

2014 IIT Madras, Chennai, India

 $S. Saravan apriya, \ Coupled \ Dynamic \ Response \ of \ Spar \ with \ Offshore \ Wind \ Turbine$ 

## MSc defense: external examiner

University of Malta, Malta Stability Analysis of a Self-Aligning Floating Offshore Wind Turbine Concept Ms Diane Scicluna

University of Malta, Malta Load and Motion Analysis of a Floating Wind Monitoring Mast in Deep Sea Ms Marisa Micallef

# Main research projects

Years	Funding body	Project name	Role (Value ad- min by Collu)
2022-23	Innovate UK (UK)	Floating motion resistant crane for wind turbine installations and mainte-	PI (37.5 k GBP)
2021-26	EPSRC (UK)	nance Ocean REFuel - Ocean Renewable Energy Fuels (EP/W005212/1)	WP leader (1.8M GBP)
2021-21	Private company (IT)	Selection and preliminary design of a floating substructure for an offshore wind turbine	PI (27k GBP)
2018-21	EU - H2020	The Blue Growth Farm (BG-04-2017-1 774426)	WP leader (320k EUR)
2017-20	EPSRC (UK)	Investigation of the novel challenges of an integrated offshore multi-purpose platform	PI (767k GBP)
2017-18	EPSRC (UK)	Technical feasibility study to scale thermal heat generator	PI (90k GBP)
2017-20	EPSRC (UK)	HOME-Offshore: Holistic Operation and Maintenance for Energy from Off- shore Wind Farms	Co-I (280k GBP)
2016-17	EPSRC (UK)	Platforms for Tidal Energy Converters	PI (26k GBP)
2012-14	EU - FP7	H2Ocean Project - Innovative design for an economically and environmen- tally sustainable multi-use open-sea platform	WP leader ( 474k EUR)
2012-13	Private company (UK) Ltd	AAMV Phase I Feasibility assessment of an Aerodynamically Alleviated Ma- rine Vehicle for the luxury yacht mar- ket	PI (115k GBP)
2010-12	Energy Technology Institute UK	Novel Offshore Vertical Axis wind turbine (NOVA)	Floating support structure design lead
2010-11	Centre for Defence Enterprise - Ministry of Defence (UK)	CDE 12139 MOD Reducing Operational Dependency on Fossil Fuels by High Quality Biofuel Generation Using Militarized On-base Algae Ponds	PI (120k GBP)

## **Publications**

N.B. For an updated list, see University of Strathclyde publication page

#### BOOK CHAPTERS

- 1. Bachynski, E., Collu, M. (2019), *Offshore Support Structures Design*, in "Renewable Energy from the Oceans: From Wave, Tidal and Gradient systems to Marine-based Wind and Solar", editors: Sant, T, Coiro, D, The Institution of Engineering and Technology, UK.
- 2. Collu, M., Bachynsky, E. (2019), *Multi-Purpose Platforms*, in "Renewable Energy from the Oceans: From Wave, Tidal and Gradient systems to Marine-based Wind and Solar", editors: Sant, T, Coiro, D, The Institution of Engineering and Technology (IET), UK.
- 3. Collu, M. (2016), Section 2: Wind Turbine Options, in "Floating Offshore Wind Energy: The Next Generation of Wind Energy", editors: Cruz, J, Atchenson, M, Springer
- 4. Collu, M., Borg, M. (2016), *Design of floating offshore wind turbines*, in "Offshore Wind Farms: Technologies Design and Operation", editors: Ng, C, Ran, L, Woodhead publishing

#### JOURNAL ARTICLES

- 1. Patryniak, K., Collu, M., Coraddu, A., 2023. Rigid body dynamic response of a floating offshore wind turbine to waves: identification of the instantaneous centre of rotation through analytical and numerical analyses. Renewable Energy. 218, 14 p., 119378.
- 2. Sykes, V., Collu, M., Coraddu, A., 2023. A review and analysis of the uncertainty within cost models for floating offshore wind farms. Renewable and Sustainable Energy Reviews, 186, 26 p., 113634.
- 3. Sykes, V., Collu, M., Coraddu, A., 2023. A review and analysis of optimisation techniques applied to floating offshore wind platforms. Ocean Engineering. 285, Part 1, 24 p., 115247.
- 4. McMorland, J., Collu, M., McMillan, D., Carroll, J., Coraddu, A., 2023. Opportunistic maintenance for offshore wind: a review and proposal of future framework. Renewable and Sustainable Energy Reviews . 184, 15 p., 113571.
- 5. Ojo, A., Collu, M., Coraddu, A., 2023. Parametric curve comparison for modelling floating offshore wind turbine substructures. Energies. 16, 14, 24 p., 5371.
- Cheng, Y., Fu, L., Dai, S., Collu, M., Ji, C., Yuan, Z. and Incecik, A., 2022. Experimental and numerical investigation of WEC-type floating breakwaters: A single-pontoon oscillating buoy and a dual-pontoon oscillating water column. Coastal Engineering, 177, p.104188.
- 7. Ojo, A., Collu, M. and Coraddu, A., 2022. Multidisciplinary design analysis and optimization of floating offshore wind turbine substructures: a review. Ocean Engineering, 266, p.112727.
- 8. McMorland, J., Flannigan, C., Carroll, J., Collu, M., McMillan, D., Leithead, W. and Coraddu, A., 2022. A review of operations and maintenance modelling with considerations for novel wind turbine concepts. Renewable and Sustainable Energy Reviews, 165, p.112581.
- Cheng, Y., Fu, L., Dai, S., Collu, M., Cui, L., Yuan, Z. and Incecik, A., 2022. Experimental and numerical analysis of a hybrid WEC-breakwater system combining an oscillating water column and an oscillating buoy. Renewable and Sustainable Energy Reviews, 169, p.112909.
- 10. Cheng, Y., Fu, L., Dai, S., Collu, M., Ji, C., Yuan, Z. and Incecik, A., 2022. Experimental and numerical investigation of WEC-type floating breakwaters: a single-pontoon oscillating buoy and a dual-pontoon oscillating water column. Coastal Engineering, 177, p.104188.

- 11. McMorland, J., Collu, M., McMillan, D. and Carroll, J., 2022. Operation and maintenance for floating wind turbines: A review. Renewable and Sustainable Energy Reviews, 163, p.112499.
- 12. Cheng, Y., Du, W., Dai, S., Ji, C., Collu, M., Cocard, M., Cui, L., Yuan, Z. and Incecik, A., 2022. Hydrodynamic characteristics of a hybrid oscillating water column-oscillating buoy wave energy converter integrated into a  $\pi$ -type floating breakwater. Renewable and Sustainable Energy Reviews, 161, p.112299.
- 13. Patryniak, K., Collu, M. and Coraddu, A., 2022. Multidisciplinary design analysis and optimisation frameworks for floating offshore wind turbines: State of the art. Ocean Engineering, 251, p.111002.
- 14. Baldi, F., Coraddu, A., Kalikatzarakis, M., Jeleňová, D., Collu, M., Race, J. and Maréchal, F., 2022. Optimisation-based system designs for deep offshore wind farms including power to gas technologies. Applied Energy, 310, p.118540.
- 15. Fox, H., Pillai, A.C., Friedrich, D., Collu, M., Dawood, T. and Johanning, L., 2022. A Review of Predictive and Prescriptive Offshore Wind Farm Operation and Maintenance. Energies.
- 16. Cheng, Y., Xi, C., Dai, S., Ji, C., Collu, M., Li, M., Yuan, Z. and Incecik, A., 2022. Wave energy extraction and hydroelastic response reduction of modular floating breakwaters as array wave energy converters integrated into a very large floating structure. Applied Energy, 306, p.117953.
- 17. Billing, S.L., Charalambides, G., Tett, P., Giordano, M., Ruzzo, C., Arena, F., Santoro, A., Lagasco, F., Brizzi, G. and Collu, M., 2022. Combining wind power and farmed fish: Coastal community perceptions of multi-use offshore renewable energy installations in Europe. Energy Research & Social Science, 85, p.102421.
- 18. Leimeister, M., Kolios, A. and Collu, M., 2021. Development of a framework for wind turbine design and optimization. Modelling, 2(1), pp.105-128.
- 19. Walker, J., Coraddu, A., Collu, M. and Oneto, L., 2021. Digital twins of the mooring line tension for floating offshore wind turbines to improve monitoring, lifespan, and safety. Journal of Ocean Engineering and Marine Energy, pp.1-16.
- 20. Ward, D., Collu, M. and Sumner, J., 2021. A comparison of the turbine tower damping effects of a series of back twisted active pitch-to-stall blades for a spar and a semi-submersible FOWT. Journal of Offshore Mechanics and Arctic Engineering, 143(6), p.062002.
- 21. Serpetti, N., Benjamins, S., Brain, S., Collu, M., Harvey, B.J., Heymans, J.J., Hughes, A.D., Risch, D., Rosinski, S., Waggitt, J.J. and Wilson, B., 2021. Modeling small scale impacts of multi-purpose platforms: an ecosystem approach. Frontiers in Marine Science, p.778.
- 22. Ruzzo, C., Muggiasca, S., Malara, G., Taruffi, F., Belloli, M., Collu, M., Li, L., Brizzi, G. and Arena, F., 2021. Scaling strategies for multi-purpose floating structures physical modeling: State of art and new perspectives. Applied Ocean Research, 108, p.102487. https://doi.org/10.1016/j.apor.2020.102487
- 23. Arcigni, F., Abhinav, K.A., Collu, M. and Venturini, M., 2021. Analysis of tripod supported offshore wind turbines under conditions of marine growth. Ocean Engineering, 220, p.108441. https://doi.org/10.1016/j.oceaneng.20
- 24. Leimeister, M., Kolios, A. and Collu, M., 2020. Development and verification of an aero-hydroservoelastic coupled model of dynamics for FOWT, based on the MoWiT library. Energies, 13(8), p.1974. https://doi.org/10.3390/en13081974
- 25. Zhou, B.Z., Hu, J.J., Sun, K., Liu, Y. and Collu, M., 2020. Motion response and energy conversion performance of a heaving point absorber wave energy converter. Frontiers in Energy Research, 8.
- 26. Li, L., Ruzzo, C., Collu, M., Gao, Y., Failla, G. and Arena, F., 2020. Analysis of the coupled dynamic response of an offshore floating multi-purpose platform for the blue economy. Ocean Engineering, 217 https://doi.org/10.1016/j.oceaneng.2020.107943

- 27. Hu, J., Zhou, B., Vogel, C., Liu, P., Willden, R., Sun, K., Zang, J., Geng, J., Jin, P., Cui, L. and Jiang, B., Collu, M., 2020. Optimal design and performance analysis of a hybrid system combing a floating wind platform and wave energy converters. Applied Energy, 269, p.114998.
- 28. Benjamins, S., Masden, E. and Collu, M., 2020. Integrating Wind Turbines and Fish Farms: An Evaluation of Potential Risks to Marine and Coastal Bird Species. Journal of Marine Science and Engineering, 8(6), p.414.
- 29. Lin, Z., Liu, X. and Collu, M., 2020. Wind power prediction based on high-frequency SCADA data along with isolation forest and deep learning neural networks. International Journal of Electrical Power & Energy Systems, 118, p.105835.
- 30. Leimeister, M., Kolios, A., Collu, M. and Thomas, P., 2020. Design optimization of the OC<sub>3</sub> phase IV floating spar-buoy, based on global limit states. Ocean Engineering, 202, p.107186.
- 31. Ward, D., Collu, M. and Sumner, J., 2020. Analysis of the effect of a series of back twist blade configurations for an active pitch-to-stall floating offshore wind turbine. Journal of Offshore Mechanics and Arctic Engineering, 142(6).
- 32. Leimeister, M., Kolios, A. and Collu, M., 2020. Development and verification of an aero-hydro-servo-elastic coupled model of dynamics for FOWT, based on the MoWiT library. Energies, 13(8), p.1974.
- 33. Abhinav, K.A., Collu, M., Benjamins, S., Cai, H., Hughes, A., Jiang, B., Jude, S., Leithead, W., Lin, C., Liu, H. and Recalde-Camacho, L., 2020. Offshore multi-purpose platforms for a Blue Growth: a technological, environmental and socio-economic review. Science of The Total Environment, p.138256.
- 34. Lin, Z., Cevasco, D. and Collu, M., 2020. A methodology to develop reduced-order models to support the operation and maintenance of offshore wind turbines. Applied Energy, 259, p.114228.
- 35. Ward, D., Collu, M. and Sumner, J., 2019. Reducing Tower Fatigue through Blade Back Twist and Active Pitch-to-Stall Control Strategy for a Semi-Submersible Floating Offshore Wind Turbine. Energies, 12(10), p.1897.
- 36. Kong, F., Su, W., Liu, H., Collu, M., Lin, Z., Chen, H., Zheng, X. Investigation on PTO control of a Combined Axisymmetric Buoy-WEC(CAB-WEC) (2019) Ocean Engineering, 188.
- 37. Arcigni, F., Friso, R., Collu, M., Venturini, M. (2019). Harmonized and systematic assessment of microalgae energy potential for biodiesel production. Renewable and Sustainable Energy Reviews, 101,Pages 614-62, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2018.11.024
- 38. Liu, H., Ao, J., Chen, H., Liu, M., Collu, M., Liu, J. (2018). Performance Analysis of a Sea Javelin Wave Energy Converter in Irregular Wave. Journal of Coastal Research, 83, pp.932–940, ISSN 0749-0208
- 39. Ruzzo, C., Fiamma, V., Collu, M., Failla, G., Nava, V., Arena, F. On intermediate-scale open-sea experiments on floating offshore structures: Feasibility and application on a spar support for offshore wind turbines (2018) Marine Structures, 61, pp.220-237
- 40. Cevasco, D., Collu, M., Hall, M., Rizzo, C.M. On mooring line tension and fatigue prediction for offshore vertical axis wind turbines: a comparison of lumped-mass and quasi-static approaches (2018) Wind Engineering, 42(2), pp.97–107
- 41. Gueorguiev, S., Collu, M., Cao, Y Can a Wind Turbine Learn to Operate Itself? Evaluation of the potential of a heuristic, data-driven self-optimizing control system for a 5MW offshore wind turbine (2017). Energy Procedia, 137, pp.26-37.
- 42. Ruzzo, C., Failla, G., Collu, M., Nava, V., Fiamma, V., Arena, F. Output-only identification of rigid body motions of floating structures: a case study (2017), Procedia Eng., 199, pp. 930–935.

- 43. Ruzzo, C., Failla, G., Collu, M., Nava, V., Fiamma, V. and Arena, F. (2016). Operational Modal Analysis of a Spar-Type Floating Platform Using Frequency Domain Decomposition Method. Energies, 9(11), p.870.
- 44. Ruzzo, C., Fiamma, V., Nava, V., Collu, M., Failla, G., Arena, F., Progress on the experimental set-up for the testing of a floating offshore wind turbine scaled model in a field site (2016), Wind Engineering, 40 (5), pp. 455-467.
- 45. Orlandi, A., Collu, M., Zanforlin, S., Shires, A., 3D URANS analysis of a vertical axis wind turbine in skewed flows (2015), Journal of Wind Engineering and Industrial Aerodynamics, 147, pp. 77-84.
- 46. Borg, M., Collu, M. Frequency-domain characteristics of aerodynamic loads of offshore floating vertical axis wind turbines (2015) Applied Energy, 155, pp. 629-636.
- 47. Borg, M., Collu, M. A comparison between the dynamics of horizontal and vertical axis offshore floating wind turbines (2015) Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 373 (2035).
- 48. Yang, W., Yang, Z., Collu, M. Longitudinal static stability requirements for wing in ground effect vehicle (2015) International Journal of Naval Architecture and Ocean Engineering, 7 (2), pp. 259-269.
- 49. Borg, M., Collu, M. Offshore floating vertical axis wind turbines, dynamics modelling state of the art. Part III: Hydrodynamics and coupled modelling approaches (2015) Renewable and Sustainable Energy Reviews, 46, pp. 296-310.
- 50. Borg, M., Collu, M., Kolios, A. Offshore floating vertical axis wind turbines, dynamics modelling state of the art. Part II: Mooring line and structural dynamics (2014) Renewable and Sustainable Energy Reviews, 39, pp. 1226-1234.
- 51. Borg, M., Shires, A., Collu, M. Offshore floating vertical axis wind turbines, dynamics modelling state of the art. part I: Aerodynamics (2014) Renewable and Sustainable Energy Reviews, 39, pp. 1214-1225.
- 52. Borg, M., Collu, M. A preliminary comparison on the dynamics of a floating vertical axis wind turbine on three different floating support structures (2014) Energy Procedia, 53, pp. 268 279.
- 53. Collu, M., Maggi, A., Gualeni, P., Rizzo, C.M., Brennan, F. Stability requirements for floating off-shore wind turbine (FOWT) during assembly and temporary phases: Overview and application (2014) Ocean Engineering, 84, pp. 164-175.
- 54. Collu, M., Brennan, F.P., Patel, M.H. Conceptual design of a floating support structure for an offshore vertical axis wind turbine: The lessons learnt (2014) Ships and Offshore Structures, 9 (1), pp. 3-21.
- 55. Borg, M., Collu, M., Brennan, F. Use of a Wave Energy Converter as a Motion Suppression Device for Floating Wind Turbines (2013) Energy Procedia, 35, pp. 223-233
- 56. Martin, H., Spano, G., Küster, J.F., Collu, M., Kolios, A.J. Application and extension of the TOPSIS method for the assessment of floating offshore wind turbine support structures (2013) Ships and Offshore Structures, 8 (5), pp. 477-487.
- 57. Lefebvre, S., Collu, M. Preliminary design of a floating support structure for a 5 MW offshore wind turbine (2012) Ocean Engineering, 40, pp. 15-26.
- 58. Williams, A.G.W., Collu, M., Patel, M.H. Aerodynamic lift forces on multihulled marine vehicles (2010) Transactions of the Royal Institution of Naval Architects Part A: International Journal of Maritime Engineering, 152 (2), pp. A41-A50.
- 59. Collu, M., Patel, M.H., Trarieux, F. The longitudinal static stability of an aerodynamically alleviated marine vehicle, a mathematical model (2010) Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 466 (2116), pp. 1055-1075.

#### Conference articles

- 60. Saeed, K., McMorland, J., Collu, M., Coraddu, A., Carroll, J. and McMillan, D., 2022, November. Adaptations of offshore wind operation and maintenance models for floating wind. In Journal of Physics: Conference Series (Vol. 2362, No. 1, p. 012036). IOP Publishing.
- 61. Sykes, V., Collu, M. and Coraddu, A., 2022, May. A flexible, multi-fidelity levelised cost of energy model for floating offshore wind turbines multidisciplinary design, analysis and optimisation approaches. In Journal of Physics: Conference Series (Vol. 2265, No. 4, p. 042029). IOP Publishing.
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- Heo, T., Nguyen, P.T.T., Manuel, L., Collu, M., Abhinav, K.A., Xu, X., Brizzi, G., Operations and Maintenance for Offshore Platforms using Statistical Weather Window Analysis, Oceans 2020, 5-14 October 2020, Singapore (Virtual)
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- 111. Collu, M., Williams, A.G.W., Patel, M.H., Trarieux, F., Aerodynamically Alleviated Marine Vehicles (AAMV): Development of a Mathematical Framework to Design High Speed Marine Vehicles with Aerodynamic Surfaces (2009) High Performance Marine Vessels Conference (HPMV'09). RINA, Shanghai, China.
- 112. Collu, M., Patel, M.H., Trarieux, F., A Mathematical Model to Analyse the Static Stability of Hybrid (Aero-Hydrodynamically Supported) Vehicles (2008) 8th Symposium on High Speed Marine Vehicles (HSMV 2008). RINA, Naples, Italy.
- 113. Collu, M., Patel, M.H., Trarieux, F. A Unified Mathematical Model for High Speed Hybrid (Air and Water-borne) vehicles (2007). In: International Conference on Marine Research and Transportation (ICMRT07). Ischia, Naples, Italy.

#### Dataset published online

1. Cevasco, D., Collu, M., (2018) Dataset for European Installed Offshore Wind Turbines (until year end 2017). https://doi.org/10.17862/cranfield.rd.6133673

#### NEWSPAPER/MAGAZINE ARTICLES

- 1. Article on "The Sunday Times", 11 March 2018, " 'Big rig' fish farms may solve turbine issue too", linked to the INNO-MPP project
- Collu, M. (2011) Floating Offshore Wind Turbines Which Support Structure? Quick Tools to Improve Conceptual Design of a Floating Support Structure. Modern Energy Review, Vol. 3, Issue 1. TouchBriefings

# Invited seminars / talks / workshops

- Collu, M. (2023) "Overview of the latest technological advances and innovations in offshore wind energy: floating wind turbines", Marine Renewable Energy Academy, 4-8 September 2023, Burgas, Bulgaria, by British Embassy Sofia and Sofia University
- 2. Collu, M. (2023) "Introduction to the basic principles of marine renewable energy", Marine Renewable Energy Academy, 4-8 September 2023, Burgas, Bulgaria, by British Embassy Sofia and Sofia University
- 3. Collu, M. (2023) Keynote opening speech, Project "Ocean REFuel", Future Wind & Marine 2023 conference, Glasgow, February 2023
- 4. Collu, M. (2022) CSaP Policy Workshop on Offshore Floating Complexes (follow up)
  University of Cambridge, Centre for Science and Policy, and DSTL (UK), May 2022 (face-to-face)
- 5. Collu, M. (2022) Floating Offshore Wind Turbines Dynamic Modelling Advances (didattica di eccellenza)
  - Politecnico di Torino (Italy), April 2022
- 6. Collu, M. (2022) The Blue Economy / Blue Growth: what is it? A journey from the international definition to a personal experience as researcher ISSUGE Università Di Genova, Italy, April 2022 (Webinar)
- 7. Collu, M. (2022) Exploratory Session on Offshore Floating Complexes, presentation as Offshore Engineering subject matter expert in offshore floating multi-use/multi-purpose complexes University of Cambridge, Centre for Science and Policy, and DSTL (UK), January 2022 (webinar)
- 8. Collu, M. (2021) The reformed engineer What is the importance of environmental work for engineers? Perspective from an engineer (a personal experience)
  EPSRC and NERC Centre for Doctoral Training in Offshore Renewable Energy (IDCORE), 24 June 2021 (Webinar)
- 9. Collu, M. (2021) Offshore Multi-Purpose platforms: empowering aquaculture through renewable energy  $\frac{1}{2}$ 
  - Western Norway University of Applied Sciences, Bergen, 23 June 2021 (Webinar)
- 10. Collu, M. (2021) Offshore Multi-Purpose platforms: Offshore Multi-Purpose platforms: Exploiting the synergies between aquaculture and offshore renewables Blue Economy CRC (Cooperative Research Centre), Perth, 21 April 2021 (webinar)
- Collu, M. (2020) Offshore Multi-Purpose Platforms: a positive alliance between aquaculture and offshore renewables
   Chinese Marine Renewable Energy Industrial Forum, China, 15 October 2020 (Webinar)
- 12. Collu, M. (2020) Blue Growth EU strategy: finding synergies among offshore industries ISSUGE Università Di Genova, Italy, April 2020 (Webinar)
- 13. Collu, M. (2019) Are we ready for an integrated "ecosystem" of offshore industries? Offshore Multi-Purpose Platforms Stevens Institute of Technology, Hoboken, New Jersey, USA
- Collu, M. (2019) Offshore Multi-Purpose Platforms Exploiting the synergies between aquaculture and offshore renewables
   Tufts University, 25 September 2019, Boston, Massachusetts, USA
- 15. Collu, M. (2019) Offshore Multi-Purpose Platforms: finding synergies among offshore industries University of Strathclyde, NAOME Forum, 12 March 2019, Glasgow, UK
- 16. Collu, M. (2019) Offshore Multi-Purpose Platforms: finding synergies among offshore industries Australian Maritime College, University of Tasmania, 11 February 2019, Launceston, Australia

- 17. Collu, M. (2018) Integrating aquaculture and marine renewable energy generation into a single platform: the INNO-MPP project Marine Alliance for Science and Technology for Scotland, Annual Science Meeting, 31 October - 2 November 2018, Glasgow, UK
- 18. Collu, M. (2018) Blue Growth EU strategy: finding synergies among offshore industries ISSUGE Università Di Genova, Italy, 26 May 2018
- Collu, M. (2018) Project INNO-MPP: beyond floating offshore wind turbine: finding synergies among offshore industries
   Floating Offshore Wind Conference, 28-29 June 2018, ETC. venues Victoria, London, UK
- 20. Collu, M. (2016) Workshop on Offshore Floating Wind Turbine: Support Structures International Conference on Offshore Renewable Energy (CORE 2016), Glasgow, Scotland, 12 September 2016
- 21. Collu, M. (2016) Floating Offshore Wind Turbines: Intro and coupled dynamics Politecnico Di Milano, Milan, Italy, 8 April 2016
- 22. Collu, M. (2016) Floating Offshore Wind Turbines: Intro and coupled dynamics Libera Universita' di Bolzano, Bolzano, Italy, 6 April 2016
- 23. Collu, M. (2016) Floating Offshore Wind Turbines: Intro and Coupled Dynamics Universita Mediterranea di Reggio Calabria, Reggio Calabria (IT), 3 December 2015
- 24. Collu, M. (2015) Blue Growth EU strategy: the role of offshore renewable energy DITEN Università Di Genova, Italy, 10 April 2015
- 25. Collu, M. (2014) H2Ocean: development of a Wind-Wave power open-sea platform Offshore Energy 2014 Future Foundations, Amsterdam, 29 October 2014.
- 26. Collu, M. (2014) AAMV (Aerodynamically Alleviated Marine Vehicles): bridging the speed/payload gap Offshore Energy 2014 – Offshore Vessels: Market Updated, 29 October 2014.
- 27. Collu, M., Borg, M. (2014) A potential solution to lower the (too high) costs of offshore wind: Vertical Axis Wind Turbines
  MARIN (Maritime Research Institute Netherlands), NL, 27 October 2014.
- 28. Collu, M. (2013) Design of floating offshore wind turbine foundations SUPERGEN WIND 2 Training Seminar, Loughborough University, 3-4 September 2013
- 29. Collu, M. (2013) FloVAWT Coupled model of dynamics for Floating Vertical Axis Wind Turbines University of Pisa (IT), Engineering Dept., 22 April 2013
- 30. Collu, M. (2012) Floating Support Structures for Offshore Wind Turbines (Webinar)
  Indian and Chinese offshore wind stakeholders, organised by Cavendish Group international, 25 October 2012
- 31. Collu, M. (2012) FloVAWT Coupled model of dynamics for Floating Vertical Axis Wind Turbines University of Genoa (IT), 7 May 2012
- 32. Collu, M. (2010) Aerodynamically Alleviated Marine Vehicles: bridging the gap between airplanes and ships
  University of Ferrara, Italy, 1 March 2010