LUCA MALOBERTI



CURRENT POSITION

April 2026 - present **Researcher** at Naval Research & Innovation department - Fincantieri S.p.A.

1 ACADEMIC BIO AND RESEARCH INTERESTS

Luca Maloberti is a Researcher at the Naval Research & Innovation Department of Fincantieri S.p.A. He previously served as a postdoctoral research fellow at the Department of Naval, Electrical, Electronic and Telecommunications Engineering (DITEN) at the University of Genoa, where he completed his entire academic studies. He received his bachelor's degree in Naval Engineering in 2018, his master's degree in 2021, and then his PhD in Marine Science and Technology, curriculum Marine Engineering and Naval Architecture, in 2025. His academic and research background focuses on the energy transition of the maritime sector, with a strong focus on environmental sustainability and technological innovation. Since his master's degree, he has developed an interest, as well as a natural inclination, for the dialogue between academia and industry, often playing a bridging role between research and concrete application. During his Ph.D., he also supervised several master's theses as a supervisor and co-supervisor, gaining experience in managing resources, coordinating complex activities, and organizing scientific projects. His research activities focus on decarbonizing the shipping sector, addressing this through the study of hybrid propulsion configurations, the use of alternative fuels, and the development of advanced energy and environmental optimization methodologies. As part of his doctoral program, he developed a design decision support system based on a nested optimization architecture, which can identify the optimal hybrid propulsive configuration in terms of cost and greenhouse gas emissions, and define its optimal operating mode to minimize the overall environmental impact of the vessel. His master's thesis, focusing on the full-electric refitting of a motor vessel operating in the Italian lakes, was carried out in collaboration with "Gestione Governativa Navigazione Laghi" and won second place in the Seafuture Award 2023. The study was one of the first concrete contributions to support the company's energy transition, which is now committed to a gradual conversion of its fleet to hybrid propulsion. He has participated in numerous national and European research projects, spanning both civilian and military fields, and has collaborated with universities, public institutions, and industry. He has authored scientific publications in international journals and conference proceedings, and serves as a reviewer for several journals and conferences in the field.

PREVIOUS ACADEMIC AND PROFESSIONAL EXPERIENCE

November 2024 - April 2026 **Postdoctoral research fellow** at the Department of Naval, Electrical, Electronic and Telecommunications Engineering (DITEN), Polytechnic School, University of Genoa.
Description: Contributed to Fincantieri research projects NEMI and MEDEA, the PNRM MINERVA project on marine nuclear propulsion, and European COST Action DeWaTra on marine decarbonization.
Supervisor: Prof. Massimo Figari

November 2021 - November 2024 **Ph.D. Candidate** at the University of Genoa
Description: Fellowship in the XXXVII cycle of PhD in Marine Science and Technology - Marine Engineering and Naval Architecture curriculum at the Department of Naval, Electrical, Electronic and Telecommunications Engineering (DITEN), University of Genoa.
Supervisor: Prof. Raphael Zaccone

September 2021 - November 2021 **Internship** at Fincantieri S.p.A.
Description: Physical and Functional integration of Combat System.

January 2019 - March 2021 **Collaborator** at the University of Genoa.
Description: Tutor of the main basic subject; Erasmus office; Internship office; Reception at Student's Desk.

April 2017 - May 2017 **Internship** at Bureau Veritas S.p.A.
Description: Employee at Surveyor's side during on-board inspections.

EDUCATION

November 2021 - May 2025 **PhD in Marine Science and Technology - Curriculum in Marine Engineering and Naval Architecture - Marine Technology** at Department of Marine, Electrical, Electronic and Telecommunication Engineering (DITEN), Polytechnic School, University of Genoa (XXVII cicle)
Description: The PhD addresses issues of decarbonization of the maritime sector. The study focuses on innovative technologies such as hybrid propulsion, alternative fuels, and the development of power management system strategy based on optimization methods aimed at minimizing $CO_{2\,eq}$ emissions. The work is carried out by developing mathematical models representing the propulsion system components and constrained optimization methodologies. So far, These methodologies have been applied to case studies of coastal navigation navigation in marine protected areas.
Titolo: *"Towards sustainable design of zero-emission ships"*
Supervisor: Prof. Raphael Zaccone (raphael.zaccone@unige.it)

July 2021 **MSc in Marine Engineering and Naval Architecture** at the University of Genoa.
Thesis: *"Preliminary project of a Ferry for Inland Navigation: a Zero-Emission solution"*.
Supervisor: Prof. Paola Gualeni (paola.gualeni@unige.it)
Note: The thesis was awarded second prize at the *"Seafuture award 2023"*.

July 2018 **BSc in Marine Engineering and Naval Architecture** at yhe University of Genoa.
Thesis: *"Preliminary Project of a Product Carrier"*.
Supervisor: Prof. Paola Gualeni.

LICENCE

2021 Professional industrial engineering qualification

PARTECIPATION IN RESEARCH PROJECTS

April 2025 - present **Participation in the COST European Action DeWaTra** (CA23159 - Decarbonize Waterborne Transportation) sponsored by COST (European Cooperation in Science and Technology), which aims to establish an extended collaboration between European and UK universities and research centers to address the challenges of decarbonizing maritime transport. The candidate is a member of Working Group 3 (Operation of propulsion systems with alternative fuels), which is dedicated to the study of propulsion solutions based on alternative fuels, and Working Group 5 (Decision support systems for optimized ship performance), which is concerned with the development of decision support systems for improved ship operational performance.

September 2024 - present **MINERVA - Marinizzazione di Impianto Nucleare per l'EneRgia a bordo di Vascelli Armati**: The candidate has been involved in the PNRM (National Military Research Plan) project. The team is currently completing WP1.2 "Identification and analysis of installation-relevant parameters," after completing WP1.1 "State of the art." The candidate participated in and is a co-author of both delivarables. The project is a collaboration between the Italian Navy, Fincantieri, the University of Genoa, Ansaldo Nucleare, RINA and CETENA. Project leader: Prof. Raphael Zaccone (raphael.zaccone@unige.it).

November 2024 - present **MEDEA - Military Vessel DEcarbonisAtion**: The candidate has been involved in the MEDEA project, part of the "Roadmap for the Decarbonization of Military Ships" initiative, which aims to address and manage the challenges of decarbonization within the military sector in the coming years. The project aims to define a methodology for comparing various technological solutions for decarbonization to identify the most suitable ones for military naval units. The candidate has been involved from WP3 "Qualitative Characterization of Technologies," collaborating with Fincantieri, the University of Genoa, the University of Naples Federico II, and CETENA. Project leader: Prof. Massimo Figari (massimo.figari@unige.it).

November 2024 - present **NEMI - eNergy Efficiency Military Index**: The candidate has been involved in the project, part of the "Roadmap for the Decarbonization of Military Ships" initiative, which aims to address and manage the challenges of decarbonization within the military sector in the coming years. The project's goal is to define appropriate parameters for evaluating the performance of military vessels in terms of greenhouse gas emissions, as there are currently no environmental performance indicators for the military sector, despite the interest shown by NATO. The candidate has been involved in WP2 "Identification of Requirements," collaborating with Fincantieri, the University of Genoa, the University of Naples Federico II, and CETENA. Project leader: Prof. Massimo Figari (massimo.figari@unige.it)

November 2021 - December 2022 **VENTURE - a Virtual and physical ExperimeNtal Towing centre for the design of eneRgy Efficient sea-faring vessels**: The candidate has been involved in the Venture project within WP4 (Building Tomorrow's Maritime Professional and Academic Innovators) and WP2 (Enhancing Scientific and Technological Capacity). The European Union funded the project within the research and innovation program Horizon 2020, Project No. 856887. The aim of the project is the transfer to technology of the skills essential for the deployment and proper use of a naval tank by the University of Strathclyde (UK) and the University of Genoa (Italy) in Malta (Universita TA Malta and Naval Architectural Services Limited). Knowledge transfer is planned through various activities such as specialized short courses, short-term visits to partners, research conferences, student exchanges, etc. Project leader: Prof. Massimo Figari (massimo.figari@unige.it).

SPEAKER AT INTERNATIONAL CONFERENCES

June 2022 NAV 2022 - 20th International Conference on Ships and Maritime Research, 15-17 June 2022, Genoa - La Spezia, Italy. Paper presented: [5].

May 2024 MARTECH 2024 - 7th International Conference on Maritime Technology and Engineering, 14 - 16 May 2024, Lisbon, Portugal. Paper presented: [6].

November 2024 iSCSS 2024 - International Ship Control System Symposium , 5-7 November 2024, Liverpool, UK. Paper presented: [7].

September 2025 IMAM 2025 - 20th International Congress of the International Maritime Association of the Mediterranean, 28 September -3 October 2025, Chania, Crete, Greece. Paper presented: [8].

SPEAKER AT INTERNATIONAL WORKSHOPS

September 2022 VENTURE - WP4, T4.1, Annual Postgraduate Research Conference with the presentation "Towards sustainable design of zero-emission ships", 12 September 2022.

SPEAKER AT NATIONAL WORKSHOPS

June 2024 "Trasporto green via mare: soluzioni innovative per il Golfo dei Poeti e la riviera di Levante", attendance as invited speaker with the presentation "Un approccio integrato verso la decarbonizzazione del trasporto marittimo", 26 June 2024, La Spezia

April 2025 "Liguria Blu - Nautica Sostenibile per le Aree Marine Protette", attendance as invited panelist, 11 April 2025, Lavagna (GE)

AWARDS

2023 The Master's thesis *"Preliminary Design of a Ferry Unit for Inland Navigation: A Zero Emission Solution"* proposed by the Candidate was awarded as the second prize winner at the **"Seafuture Award"**, given at "Seafuture 2023", 5-8 June 2023, La Spezia, Italy.

SCIENTIFIC PUBLICATIONS

Publications in international indexed scientific journals

[1] **Luca Maloberti** and Raphael Zaccone. "An environmentally sustainable energy management strategy for marine hybrid propulsion". *Energy* (2025). DOI: 10.1016/j.energy.2025.134517.

[2] **Luca Maloberti**, Raphael Zaccone, Jacopo De Gaetano, and Ugo Campora. "A Comparison Among Innovative Hybrid Propulsion Systems to Reduce the Environmental Impact of a Small Passenger Ship". *Sustainable Energy Technology and Assessments* (2025). DOI: 10.1016/j.seta.2025.104194.

[3] Federico Basciu, Giorgio Casali, **Luca Maloberti**, Tatiana Pais, Gianmarco Vergassola, and Raphael Zaccone. "Sustainable yacht refits: Structural solutions in methanol-powered conversion". *Ocean Engineering* (2025). DOI: 10.1016/j.oceaneng.2025.120618.

[4] **Luca Maloberti** and Raphael Zaccone. "A nested optimization framework for ship hybrid propulsion systems considering equivalent CO2 emissions". *Ocean Engineering* 355 (2026). DOI: 10.1016/j.oceaneng.2026.125076.

Contributions to international indexed conferences

[5] **Luca Maloberti***, Raphael Zaccone, Paola Gualeni, and Paolo Mazzucchelli. "A Zero-Emission Ferry for Inland Waterways". *Technology And Science For The Ships Of The Future - 20th International Conference on Ships & Maritime Research - NAV 2022*. IOS Press, 2022, pp. 162–169. DOI: 10.3233/PMST220021.

[6] **Luca Maloberti***, Giorgia Adami, Massimo Figari, and Raphael Zaccone. "Evaluating alternative fuels and power systems for marine hybrid propulsion". *Proceedings of 7rd International Conference on Maritime Technology and Engineering, MARTECH 2024, 14 - 16 May 2024, Lisbon, Portugal*. CRC Press, 2024, pp. 45–54. DOI: 10.1201/9781003508779-5.

[7] Daniele Belvisi, **Luca Maloberti***, Raphael Zaccone, and Massimo Figari. "Battery Energy Storage System Sizing Strategy for Naval Vessels through Multi-Objective Optimisation". *Proceedings of the International Ship Control System Symposium*. DOI: 10.24868/11140.

[8] **Luca Maloberti***, Raphael Zaccone, Martina Angius, and Michele Martelli. "A Zero-emission Propulsion System for a Sustainable Whale Watching Catamaran". *Proceedings of the 20th International Congress of the International Maritime Association of the Mediterranean, IMAM 2025, 28 September - 3 October 2025, Crete, Greece*, 281 – 294. DOI: 10.1007/978-3-032-01620-1_22.

[9] Eleonora Zanaboni, **Luca Maloberti**$^{\diamond}$, Guglielmo Lomonaco, and Raphael Zaccone. "Preliminary feasibility study of nuclear propulsion systems for civil ships for the transport of passengers or goods". *Proceedings of the 5th International Conference on Modelling and Optimisation of Ship Energy Systems, MOSES 2025, 8 - 10 September 2025, Genoa, Italy*.

Publications under review

[10] Eleonora Zanaboni, Veronica Vigna, and **Luca Maloberti**. "Time-domain simulation tool for propulsion performance assessment of a nuclear powered naval vessel". *Proceedings of the International Ship Control System Symposium*.

* contribution presented by the Candidate at the conference.

$^{\diamond}$ conference awaiting Scopus indexing.

AUTHOR METRICS

Scopus indices at 22/06/2026

Citation: 63

Documents: 8

h-index: 5

Google Scholar indices at 22/06/2026

Citation: 89

Documents: 8

h-index: 6

EDITORIAL ACTIVITY

from 2026 Reviewer for Energies

from 2025 Reviewer for Journal of Marine Science and Engineering

from 2025 Reviewer for Journal of Electrical and Computer Engineering

from 2024 Reviewer for Journal of Marine Engineering & Technology

from 2024 Reviewer for Sustainable Energy Technology & Assessment

from 2024 Reviewer for the international conference ISOPE Conference, Symposium and Journal

TEACHING ACTIVITIES

Teaching assistant activities

A.A. 2023/2024 *Marine plants*, code 84416, in the Marine Engineering and Naval Architecture Bachelor Degree program (L-9) at the University of Genoa - 15 hours.

A.A. 2022/2023 *Marine plants*, code 84416, in the Marine Engineering and Naval Architecture Bachelor Degree program (L-9) at the University of Genoa - 12 hours.

A.A. 2021/2022 *Marine plants*, code 84416, in the Marine Engineering and Naval Architecture Bachelor Degree program (L-9) at the University of Genoa - 12 hours.

Tutoring activities

A.A. 2021/2022 Tutoring for students in the bachelor's degree in naval engineering - 88 hours.

MSc THESIS SUPERVISION

A.A. 2023-2024 **Candidate:** Martina Angius
Degree program: MSc in Yacht Design
Title: *"H_2ydroWhale: Design of a catamaran for whale watching activity with hydrogen propulsion"*
Supervisors: Prof. Michele Martelli, Luca Maloberti.

A.A. 2022-2023 **Candidate:** Sofia Bencini
Degree program: MSc in Yacht Design
Title: *"Project of a hydrogen powered passenger ferry, designed for the navigation in marine protected areas"*
Supervisors: Prof. Michele Martelli, Luca Maloberti
Note: Thesis carried out in collaboration with Distretto Ligure delle Tecnologie Marine - DLTM and Consorzio Marittimo Turistico Cinque Terre - Golfo dei Poeti. The thesis was awarded the prize "Architetto Gianfranco Ricco".

A.A. 2022-2023 **Candidate:** Laura Nicoli
Degree program: MSc in Yacht Design
Title: *"Net0 boat: study of a hybrid propulsion system for protected marine waters"*
Supervisors: Prof. Michele Martelli, Luca Maloberti
Note: Thesis carried out in collaboration with Distretto Ligure delle Tecnologie Marine - DLTM.

A.A. 2021-2022 **Candidate:** Jacopo De Gaetano
Degree program: MSc in Marine Engineering and Naval Architecture
Title: *"An innovative natural gas electric repowering with reduced environmental footprint for a small passenger ship"*
Supervisors: Prof. Ugo Campora, Prof. Raphael Zaccone, Luca Maloberti.

A.A. 2021-2022 **Candidate:** Elena Salvatore
Degree program: MSc in Marine Engineering and Naval Architecture
Title: *"Feasibility Study of a Full-Electric Ferry"*
Supervisors: Prof. Raphael Zaccone, Luca Maloberti, Prof. Paola Gualeni, Ing. Sergio Divano
Note: Thesis carried out in collaboration with Gestione Governativa Navigazione Laghi e ABB S.p.A.

Genoa, 22/06/2026

