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# Alessandro MORABITO
## Mechanical Engineer

## About me

Experienced mechanical engineer with 9+ years in hydropower and applied energy research field. Seeking opportunities to apply interdisciplinary expertise to drive sustainable business development. Passionate about delivering innovative solutions to challenging engineering problems.

## Skills

• CAD: CatiaV5, Solid Edge, AUTODESK Inventor
• Data Management: Office, LaTeX, MATLAB, Python
• Simulation Software: ANSYS Fluent and Workbench, NUMECA Open/Turbo
• CFD tools: SpaceClaim, ICEM, CFD-Post, Autogrid5, CFView

• IEC.60193 Knowledge • Data analysis • Cost-benefit analysis • LCOE • LCA • DOE • Design Optimization • Data synthesis & communication • Teamwork • Lean Project management • Waterfall method • Cross-cultural awareness

## Languages

Invited Chairman and speaker at international conferences and seminars.

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|---|---|
| Italian | Native speaker |
| English | Highly proficient |
| French | Professional proficient |
| Spanish | Basic speaking |
| German | Basic knowledge |

## Experience

**2021 - 2024**   **Research Associate & Project Manager**    EPFL, Switzerland
• Lead complex 3D CAD design and Computational Fluid Dynamics (CFD) analyses to simulate and understand intricate water-flow conditions and system performances.
• Develop analytical and numerical models to support feasibility analysis for hydropower plant operations with cross-functional engineering teams. Perform the monitoring of the operational parameters, constraints and risk identification.
• Implementation of hydraulic short-circuit (HSC) for pumped-storage power plants participating in the ancillary service market in a 210 MW hydropower plant.
• Partnered with the machine learning team for the prediction of components damage due fatigue in hydropower generation.
• Redact reports, write scientific papers, and experience in applying for funding.

**2014 - 2021**   **Energy Engineer& Industrial Consultant**    ATM-ULB, Belgium
• Designed and delivered a first-of-its-kind micro-pumped hydro energy storage installation integrated into a SmartGrid – (Smart-Water prj)
• Managed technical-economic calculations to define the required investments for prosumers and examine new business cases to support the energy transition: the Belgian case – (EPOC 2030-2050 prj)
• Conducted performance and flexibility analysis to facilitate engagement in the electric grid balance of drinking water distributors. Evaluated Belgian potential and orchestrated technical implementation - FlexWATTer prj
• Engaged in the analysis and thermodynamics modelling of Compressed air energy storage (CAES) systems and thermal storage – (CAES-CET prj)

**2016**   **Design Engineer Intern**    Ensival-Moret, Belgium
Developed a numerical model specifically designed to assist in the well-informed selection of commercial centrifugal pumps for use in generating mode. This model incorporates both economic and technical considerations.

## Education

**Ph.D. in Engineering Sciences and Technology**    Université libre de Bruxelles, Belgium
• Research goals focused on alternative hydropower technologies.
• Organized and planned experimental and numerical tests.
Thesis titled *Experimental and numerical analysis of a Pump as Turbine in micro Pumped Hydro Energy Storage*.
• Teaching assistant of M.Sc. courses of *Turbomachinery* and *Aircraft propulsion and gas turbine engine*. Supervised and guided master students in their thesis work.

**M.Sc. in Science of Management**    Vrije Universiteit Brussel, Belgium
Developed a broad overview of all aspects of modern business management: financial and managerial accounting, supply chain, HR, business and corporate strategy, strategic marketing, corporate finance and investments.
Thesis titled *Business Model For Energy Management Enterprises*

**M.Sc. in Energy Engineering**    Politecnico di Milano, Italy
Specializing in power generation and thermo-fluid dynamics. To cite some of the classes: Energy Conversion A, Heat And Mass Transfer, Refrigeration, Heat Pumps And Thermal Power Systems And Components B, Chemical Plants And Processes.

**Additional Training**
• Sustainability and Corporate ESG | Practical Implementation, Prof. Eng. M.Oliveira, UFPR, Online
• Multi-objective optimization problems and algorithms, Udemy, Online
• Centrifugal and Axial Pumps Design, Performance and Problem Solving, NREC-concept, Germany
• Deepening in renewable energy technologies, ULPGC, Spain

## Publications
Authorship and co-authorship in 10+ international journal and conference papers. A detailed list is provided at **G**Scholar or **in**.