

AMEDEO CERUTI

Chemical Engineer and Energy Systems Researcher

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EDUCATION

Sep. 2019 – **M. Sc. Chemical Engineering,**
Oct. 2021 Technical University of Munich (TUM) – Munich, Germany

2014 – 2019 **B. Sc. Chemical Engineering,**
Polytechnic University of Catalonia BarcelonaTech (UPC) – Barcelona, Spain

EXPERIENCE

Mar. 2022 – PhD Candidate, **Chair of Energy Systems (LES TUM)** – Prof. Spliethoff

- Topic: Sustainable energy systems.
- Modeling and optimization under uncertainty of renewable and sector-coupled energy systems with focus on the heat sector and district heating.
- Lecture assistant for solar thermal power plants.

Oct. 2021 – **Researcher, Sustainable Process Systems Engineering Lab (SUPERlab ETH**
Mar. 2022 **Zürich)** – Prof. Guillén Gosálbez

- Topic: Sustainable chemical process systems engineering.
- Simulation, optimization, and environmental impact assessment of chemical product synthesis routes.
- Co-authored a published paper on PVC manufacturing routes (<https://doi.org/10.1016/j.chempr.2022.02.012>).

May – Sep. 2021 Research Project, **Chair of Energy Systems (ES TUM)** – Prof. Spliethoff

- Topic: Entrained flow gasification reactor modelling with MATLAB.
- OOP implementation of a solid-gas pyrolysis model with heat and mass transfer, reducing over 78 % the simulation time.

Nov. 2020 – **Master Thesis, Chair of Process Systems Engineering (AVT RWTH Aachen**
May 2021 **University)** – Prof. Mitsos

- Title: *Bayesian Optimization und Diffusion Maps for Autonomous Decision Making in Chemistry.*
- Single-, multi-objective and constrained optimization of reaction systems with data-driven machine learning methods with python.
- Cooperation with research groups of RWTH Aachen, University of Cambridge and Johns Hopkins University.

- Feb. 2020 – Mar. 2021 Student Research Assistant, **Institute for Machine Tools and Industrial Management (IWB TUM)** – Prof. Reinhart
- Developed and optimized cell finishing processes for novel Lithium-ion batteries, researched with both model-based and experimental methods.
 - Co-authored a published conference paper on Li-ion cell manufacturing (<https://doi.org/10.1016/j.procir.2021.11.177>).
- May – Sep. 2020 Research Project, **Chair for Technical Chemistry 1 (TC1 TUM)** – Prof. Hinrichsen
- Modelled a three-phase chemo-enzymatic reaction system for the epoxidation of oleic acid and its downstream process.
- Feb. – June 2019 Bachelor Thesis, **Isophytol Cluster (BASF)** – Ludwigshafen, Germany
- Title: *Application of a soft sensor for distillate composition estimation to a dividing wall column control system.*
 - Applied data-driven models to a dividing wall distillation column.
- Oct. 2018 – Feb. 2019 Research Internship, **Cetaqua – Water Technology Centre (SUEZ)** – Barcelona, Spain
- Developed an indicator framework to assess the circular economy of the water cycle in Spanish municipalities.
 - Calculated the carbon footprint of the company according to ISO 14064.
- Jul. – Oct. 2018 Internship, **Innovative and Prototype Solutions (BASF)** – Ludwigshafen, Germany
- Automated design and multi-objective optimization of pressure vessels in accordance with DIN EN 13445 and AD-2000.

LANGUAGES

Spanish, German, Italian, Catalan	First language
English	Proficient

SOFTWARE SKILLS

Languages	Python (pytorch, pandas, scipy), MATLAB, R, VBA
CAD	SolidWorks, Inventor
Optimization	MAiNGO, Pyomo, GAMS, SIEMENS HEEDS
CAE	Aspen Plus, ANSYS, CAPE-OPEN interface standard

OTHER PROJECTS

2020	Attended „ <i>Gaussian Process Summer School</i> “ at Sheffield University.
2019	Organized the „ <i>PSE Summer School</i> “ in Barcelona, Spain.
2017 – 2018	President, UPC AIChE Student Chapter
2017	Attended the „ <i>10th World Congress of Chemical Engineering</i> “ in Barcelona, Spain
2014 – 2016	Professional Water Polo player in Spain