# University Academic Curriculum Vitae

**Personal information**

Name: Stefano Piazzi
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**Education since leaving school**

- 2011/2014, Bachelor's Degree in Environmental and Land Engineering (University of Trento)
- 2014/2017, Master's Degree in Energy Engineering (University of Trento/Free University of Bozen-Bolzano)
- 2017/2020, Ph.D. in Sustainable Energy and Technologies (Free University of Bozen-Bolzano) XXXIII Cycle - Title: "Biomass to Fischer-Tropsch fuels and hydrogen: an integrated analysis for designing gasification-based systems" - Supervisor: Prof. Marco Baratieri
- 2017, Licensed to practice as an engineer, Sector B – Industrial Engineering (University of Trento)

**Present appointment**

- Research assistant, disciplinary sector IIND-07/A
- Start of appointment: 01.02.2023
- Employer: Free University of Bozen-Bolzano, Faculty of Engineering
- Area of Research: the research work focuses on biomass gasification and the subsequent conversion of producer gas to biofuels and hydrogen.
- Activities: the teaching and research activities are relevant to the IIND-07/A sector. The main research work deals with the conversion of solid fuels (biomass and wastes) for the production of energy, biofuels (e.g. Fischer-Tropsch fuels, biomethane and hydrogen) and biomaterials and the treatments of wastes for removal of micropollutants (e.g. PFAS). Experimental analysis as well as techno-economic modeling are carried out for the characterization of the overall plant performances and for the sustainable valorization of the feedstocks.

**Professional experience**

Chronological list of all previous employments

| From / to | Job title | Name of company | Responsibilities |
|---|---|---|---|
| 2025/Today | RTD Junior | Free University of Bozen-Bolzano | - Research in the field of bioenergy, biofuels, hydrogen and waste treatments at the experimental and modeling level<br>- Academic teching<br>- Preparation of research project proposal. |
| 2022/2025 | Co-founder Co-CEO | BiSTEMS srl (startup company) | - Engineering and procurement related |

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| | | | to the design and installation of innovative biomass gasification plants that aim at the production of advanced biofuels.<br>- Consulting in the development of renewable energy or R&D projects. |
| 2021/2025 | Research assistant | Free University of Bozen-Bolzano | - Experimental activities as well as techno-economic modeling on different biomass-to-X systems. |

**Experience in academic teaching**

*Lectures*

2025 - 2026

Free University of Bozen-Bolzano, Faculty of Science and Technology

- Lecturer of the course “Applied Energetics”, within the Master in Energy Engineering – 28 hours
- Lecturer of the course “Engineering energetics”, within the Bachelor in Industrial and Mechanical Engineering – 34 hours

2024 - 2025

Free University of Bozen-Bolzano, Faculty of Science and Technology

- Lecturer of the course “Applied Energetics”, within the Master in Energy Engineering – 20 hours
- Lecturer of the course “Engineering energetics”, within the Bachelor in Industrial and Mechanical Engineering – 34 hours
- Teaching Assistant of the course “Thermo-mechanicals measurements” (Lecturer: Prof. Francesco Patuzzi), within the Master in Industrial Mechanical Engineering – 6 hours

2023 - 2024

Free University of Bozen-Bolzano, Faculty of Science and Technology

- Teaching Assistant for the course “Power Production, CHP and District Heating Systems” (Lecturer: Prof. Marco Baratieri), within the Master in Energy Engineering – 15 hours
- Teaching Assistant for the course “Thermo-mechanicals measurements” (Lecturer: Prof. Francesco Patuzzi), within the Master in Industrial Mechanical Engineering – 6 hours

2022 - 2023

Free University of Bozen-Bolzano, Faculty of Science and Technology

- Teaching Assistant for the course “Power Production, CHP and District Heating Systems” (Lecturer: Prof. Marco Baratieri), within the Master in Energy Engineering – 15 hours

2021 - 2022

Free University of Bozen-Bolzano, Faculty of Science and Technology

- Teaching Assistant for the course “Power Production, CHP and District Heating Systems” (Lecturer: Prof. Marco Baratieri), within

the Master in Energy Engineering – 15 hours

2019 – 2020
Free University of Bozen-Bolzano, Faculty of Science and Technology
- Teaching Support for the course “Power Production, CHP and District Heating Systems” (Lecturer: Prof. Marco Baratieri), within the Master in Energy Engineering – 15 hours

*Thesis supervision, co-supervision and tutoring*
*2025/2026*
- Supervisor of the Bachelor Thesis (*ongoing work*): Experimental work on a newly designed lab-scale gasification system, candidate: Osenstätter Raphael Anton, Bachelor in Industrial Engineering
- Co-supervisor of the Bachelor Thesis (*ongoing work*): modeling work on a gasification system coupled to a Stirling engine, candidate: Angelo Gottardi, Bachelor in Industrial Engineering

*2024/2025*
- Supervisor of the Bachelor Thesis: “Dalla biomassa legnosa all’idrogeno rinnovabile: ottimizzazione del processo di gassificazione e water-gas shift”, candidate: Alessandro Vanzo, Bachelor in Industrial Engineering

2022/2023
- Co-supervisor of the Master Thesis: “Modelling of an integrated and flexible biomass gasification and renewable power-to-gas process for advanced biofuels production”, candidate: Jenny Ress, Master in Energy Engineering
- Co-supervisor of the Master Thesis: “Renewable hydrogen production from biomass using gasification activated carbon”, candidate: Anton Schuh, Master in Energy Engineering
- Co-supervisor of the Master Thesis: “Application of a small-scale PSA system for sustainable hydrogen production via biomass gasification”, candidate: Mattia Soravia, Master in Energy Engineering

2021/2022
- Co-supervisor of the Master Thesis: “Techno-economic analysis of biomass-based hydrogen production systems”, candidate: Claudio Bertamini, Master in Energy Engineering

2019/2020
- Co-supervisor of the Master Thesis: “Investigation on the hydrogen production potential of a small-scale solar-driven gasifier”, candidate: Damiano Valentini, Master in Energy Engineering

2016/2017
- Co-supervisor of the Master Thesis: “Gassificazione di biomassa: analisi prestazionale e ottimizzazione di impianti commerciali in condizioni di esercizio”, candidate: Alessio Valentini, Master in Environmental and Land Engineering

**Research and scholarships**

*Summary of current research and scholarship:*

- 2025 – Today
  Fixed-term researcher junior (RTDa)
  Free University of Bolzano, Faculty of Engineering
  Title of the research: “Thermochemical conversion of biomass and wastes”
  Activities related to the project: The activity is aimed at evaluating energy and process aspects related to: - energy production from biomass, with a special focus on thermochemical conversion processes (pyrolysis, gasification, carbonization, liquefaction, combustion) and their coupling with biochemical processes for the production of biofuels; - sustainable use of the resource, with a special focus on the valorization of waste biomass or waste. The research methods, both experimental and theoretical, are applied to the processes investigated at both laboratory and pilot scales.
  Supervisor of the research: Prof. Marco Baratieri

*Summary of research and scholarship during the previous five years:*

- 2023 – 2025
  Research assistant
  Free University of Bolzano, Faculty of Engineering
  Title of the project: “Biomass and biofuels: thermochemical conversion processes, energy efficiency, and sustainable use of the resource”
  The research activity have focused on the 1) design and setup of a new gasification pilot-plant that aims at the production of electricity with a Stirling engine, heat and clean biochar that can be used in agriculture as soil improver, using residual biomass (both dry and wet); 2) support in the analysis of the emission of an internal combustion engine, run with diesel fuel and producer gas; 3) support in the analysis of pollutants emissions from a newly designed biomass stove; 4) analysis of the tar cracking behavior of a catalytic char-bed; 5) on-site monitoring of different biomass-to-X full- and pilot-scale plants (gasification and hydrothermal plants); 6) support in the experimental activity of a lab-scale biochemical reactor that aims at the production of biomethane and/or polyhydroxyalkanoates (PHA) through syngas fermentation; 7) design and testing of lab-scale producer gas cleaning, including a PSA system for pure hydrogen production.
  Supervisor of the research: Prof. Marco Baratieri

- 2022 – 2023
  Research assistant
  Free University of Bolzano, Faculty of Science and Technology
  Title of the project 1: “Biochar polymer composites with specific properties for innovative applications in material technology (BioPolyComp)”
  Activities related to project 1: Characterization of different char (both from gasification and pyrolysis) for the production of thermoplastic polymers
  Title of the project 2: AgroAlimentary and agroForestry by-products: Thermochemical Evolution pRocess (AFTER)
  Activities related to project 2: Design support and setup of a new gasification pilot plant
  Supervisor of the research: Prof. Marco Baratieri

- 2021 – 2022
  Research assistant
  Free University of Bolzano, Faculty of Science and Technology
  Title of the project: “AgroAlimentary and agroForestry by-products: Thermochemical Evolution pRocess (AFTER)”
  Activities: Design support and setup of a new gasification pilot plant
  Supervisor of the research: Prof. Marco Baratieri

*International research experiences:*

- Period: 09/2016 – 12/2016
  Location: Queen’s University of Belfast
  Title of the project: “Char combustion and co-combustion”
  Supervisor: Prof. Xiaolei Zhang

*List of research grants and contracts as participant*

| Period | Funding Body | Title |
|---|---|---|
| 06/2024 – 09/2025 | Italian Ministry for Education and Scientific Research, MUR (PNRR – M4C2 - NEST) | Optimization of small-scale oxy-steam gasification and catalytic water-gas shift for renewable hydrogen production (OSMOSYS), PI: Marco Baratieri |
| 09/2023 – 09/2025 | Italian Ministry for Education and Scientific Research, MUR (PRIN 2022) | Decarbonized and CirculAR hydrogeN prOducTion through biomass and waste gasification (CARNOT), PI: Marco Baratieri |
| 09/2023 – 08/2025 | European Regional Development Fund of the European Union and Autonomous Province of Bozen-Bolzano (ERDF 2021-2027) | Recupero di nutrienti dal processo HTC (RFD), PI: Francesco Patuzzi |
| 10/2023 – 10/2026 | European Regional Development Fund of the European Union and Autonomous Province of Bozen-Bolzano (ERDF 2021-2027) | Sustainable heating systems for decarbonizing buildings (SustainHEAT), PI: Massimiliano Renzi |
| 01/2023 – 06/2026 | Italian ministry of the Environment and Energy Security, MASE (PNRR 2022) | Biomass-to-Hydrogen (B2H2), PI: Marco Baratieri |
| 09/2022 – 02/2024 | European Commission, Interreg Alpine Space Programme | Implementation pathways for sustainable Green Carbon production in the Alpine Region (Alps4GreenC), PI: Marco Baratieri |
| 2021-2025 | Funded by the European Union in the framework of the Horizon 2020 Research and Innovation Programme under grant agreement No. 101037031 | A FRONTrunner approacTransition to a circular & resilient future: deployment of systemic solutions with the support of local clusters and the development of regional community-based innovation schemes (FRONTSH1P), PI: Marco Baratieri |
| 2022 | Austrian Research Promotion Agency, FFG (Produktion der Zukunft – 32. Ausschreibung) | Biochar polymer composites with specific properties for innovative applications in material technology (BioPolyComp), PI: Marco Baratieri |
| 2019-2022 | Italian Ministry of Education, University and Research (PRIN 2017) | BIOmasses Circular Holistic Economy APproach to EneRgy equipments (BIO-CHEAPER), PI: Marco Baratieri |
| 2020-2022 | UNIBZ internal funding (RTD call 2020) | SMall-scale producer gas Upgrading for Biofuels (SMUP), PI: Francesco Patuzzi |
| 2018-2020 | UNIBZ internal funding (RTD call 2018) | CHAR re-Circulation for improving the Conversion yields in fixed-bed biomass gasification systems (CHAR-RCC), PI: |

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| | | Francesco Patuzzi |
| 2016-2018 | UNIBZ internal funding, (CRC call 2016) | BIOmass-to-LIQuid as a strategy to enhance gasification potential in a biorefinery perspective (BIO2LIQ), PI: Marco Baratieri |
| 2016-2018 | Provincia Autonoma di Bolzano (L.P., 13.12.2006, N. 14) | Novel EXTension of biomass poly-GENERATION to small scale gasification systems in South-Tyrol (NEXT GENERATION), PI: Marco Baratieri |

*Third party research contract*

| **Period** | **Company** | **Title** |
|---|---|---|
| 02/2025 – 06/2025 | Hoppe AG | Use of Alternative Fuel for Aluminum Smelting (Fuel4Alum), PI: Marco Baratieri |
| 12/2024 – 03/2025 | Yanmar R&D Europe SrL | Post-treament of char for PAH reduction (CHAR-PST), PI: Francesco Patuzzi |
| 11/2024 – 05/2025 | Eco-center | Declorination of ashes from Waste-to-Energy plant (AshCL), PI: Marco Baratieri |
| 2024 | AGSM AIM Energia S.p.A. | Sewage Sludge Combustion (SSC) for PFAS (PFC) destruction, PI: Marco Baratieri |
| 10/2022 – 03/2023 | KWB Energiesysteme GmbH | Test of biomass boilers fed with agricultural residues (BOIL-RES), PI: Marco Baratieri |
| 06/2023 – 11/2023 | Palazzetti Lelio S.p.A. | GAsification for improved combustion in a biomass STOVE – Part 2 (GASTOVE_2), PI: Marco Baratieri |
| 2022 | Yanmar R&D Europe SrL | On-site monitoring of Yanmar gasifier and validation of an in-house method for tar sampling and quantification (ONMYA), PI: Marco Baratieri |
| 2022 | HBI s.r.l. | On-site monitoring of HBI integrated hydrothermal carbonization and gasification plant in Fusina (VE) (HBI_2), PI: Francesco Patuzzi |
| 2021 | HBI s.r.l. | On-site monitoring of HBI integrated hydrothermal carbonization and gasification plant (HBI), PI: Francesco Patuzzi |
| 2021 | Energy Agency South Tyrol – CasaClima | Green Hydrogen for the Alps, PI: Marco Baratieri |
| 2020-2021 | Sauber | AgroForesty by-products: ThERmochemical evolution process (AFTER), PI: Marco Baratieri |
| 10/2019 – 09/2020 | Palazzetti Lelio S.p.A. | GAsification for improved combustion in a biomass STOVE (GASTOVE), PI: Marco Baratieri |
| 2018 | Yanmar R&D Europe SrL | KINetics analysis of char bed Gasification (KING), PI: Marco Baratieri |
| 2018 | Yanmar R&D Europe SrL | Pre-design assessments of different reactor concepts (PRE-DES), PI: Marco Baratieri |
| 2017-2018 | Yanmar R&D Europe SrL | Analysis of European small scale GASification technologies and identification of new SOLUTIONs (GASSOLUTION), PI: Marco Baratieri |

**Publications**

*Journal articles in refereed academic journals:*

1. *S. Piazzi*, D. Antolini, M. Scatto, E. Santello, M. Baratieri - Potential to use biomass gasification char as an additive for the production of LDPE polymers. Renewable Energy – *Manuscript submitted and under review*
   Journal Impact Factor: 9.1 (2024)

2. *S. Piazzi*, L. Menin, J. Ress, D. Antolini, M. Baratieri - Oxy-steam gasification in biomass-to -biomethane and -hydrogen processes: a thermo-economic assessment. Renewable Energy – *Manuscript submitted and under review*
   Journal Impact Factor: 9.1 (2024)
3. V. Benedetti, *S. Piazzi*, M. Scatto, E. Santello, M. Kollmer, G. Itskos, K. Atsonios, F. Patuzzi, M. Baratieri - Gasification of wood packaging waste and valorization of char in polymer composites. Waste Management (2025).
   DOI: 10.1016/j.wasman.2025.115128
   Journal Impact Factor: 7.1 (2024)
4. L. Menin, A. Paolillo, *S. Piazzi*, D. Antolini, F. Ravazzolo and M. Baratieri - Biomass Derived Combined Heat and Power from Decentralized Small-Scale Gasification: Updated Cost Conditions for the Italian Mountain Context and Competitiveness in Future Energy Markets. Waste and Biomass Valorization (2025)
   DOI: 10.1007/s12649-025-02948-3
   Journal Impact Factor: 2.8 (2024)
5. R. Bartali, D. Valentini, *S. Piazzi*, E. Cordioli, M. Baratieri, M. Bolognese, L. Pratticò, D. D'Souza, J. González-Aguilar, M. Romero, G. Coser, L. Crema - Modelling a hydrogen production system using solar hierarchical volumetric receivers and a steam gasification reactor. Sustainable Energy Fuels, 2025, 9, 513-526
   DOI: 10.1039/D4SE00779D
   Journal Impact Factor: 4.1 (2024)
6. A. Abdelaal, D. Antolini, *S. Piazzi*, F. Patuzzi, A. Villot, C. Gerente, M. Baratieri. Steam reforming of tar using biomass gasification char in a Pilot-scale gasifier. Fuel, vol. 110, 2023
   DOI: 10.1016/j.fuel.2023.128898
   Journal Impact Factor: 7.4 (2023)
7. R. Booroah, D. Antolini, *S. Piazzi*, E. Cordioli, F. Patuzzi, M. Baratieri. Investigations into the performance and emissions of a small-scale CHP system using producer gas obtained from gasification of forest residues. Journal of the Energy Institute, vol. 110, 2023
   DOI: 10.1016/j.joei.2023.101354
   Journal Impact Factor: 5.7 (2023)
8. P. Postacchini, L. Menin, *S. Piazzi*, A. Grimalt-Alemany, F. Patuzzi, M. Baratieri. Syngas biomethanation by co-digestion with brewery spent yeast in a lab-scale reactor. Biochemical Engineering Journal, vol. 193, 2023
   DOI: 10.1016/j.bej.2023.108863
   Journal Impact Factor: 3.9 (2023)
9. D. Antolini*, *S. Piazzi**, L. Menin, F. Patuzzi, M. Baratieri (*Dual-first authorship). High hydrogen content syngas for biofuels production from biomass air gasification: Experimental evaluation of a char-catalyzed steam reforming unit. International Journal of Hydrogen Energy, vol. 47, no. 64, pp. 27421-27436, 2022
   DOI: 10.1016/j.ijhydene.2022.06.075
   Journal Impact Factor: 7.139 (2021)
10. *S. Piazzi*, F. Patuzzi, M. Baratieri. Energy and exergy analysis of different biomass gasification coupled to Fischer-Tropsch synthesis configurations. Energy, vol. 249, 2022
    DOI: 10.1016/j.energy.2022.123642
    Journal Impact Factor: 8.857 (2021)
11. F. Patuzzi, D. Basso, S. Vakalis, D. Antolini, *S. Piazzi*, V.

Benedetti, E. Cordioli, M. Baratieri. State-of-the-art of small-scale biomass gasification systems: an extensive and unique monitoring review. Energy, vol. 223, 2021
DOI: 10.1016/j.energy.2021.120039
Journal Impact Factor: 8.857 (2021)

12. *S. Piazzi*, L. Menin, D. Antolini, F. Patuzzi, M. Baratieri. Potential to retrofit existing small-scale gasifiers through steam gasification of biomass residues for hydrogen and biofuels production. International Journal of Hydrogen Energy, vol. 46, no. 13, pp. 8972-8985, 2021
DOI: 10.1016/j.ijhydene.2021.01.004
Journal Impact Factor: 7.139 (2021)
13. *S. Piazzi*, S.S. Ail, V. Benedetti, F. Patuzzi, M. Baratieri. Fuel-lean combustion synthesized cobalt catalysts for Fischer-Tropsch reaction. Catalysis Today, vol. 379, pp. 105-113, 2020.
DOI: 10.1016/j.cattod.2020.06.088
Journal Impact Factor: 6.766 (2020)
14. *S. Piazzi*, X. Zhang, F. Patuzzi, M. Baratieri. Techno-economic assessment of turning gasification-based waste char into energy: A case study in South-Tyrol. Waste Management, vol. 105, pp. 550–559, 2020.
DOI: 10.1016/j.wasman.2020.02.038
Journal Impact Factor: 7.145 (2020)

*Conference papers:*

1. L. Menin, A. Paolillo, S. Piazzi, D. Antolini, D. Rossi, F. Ravazzolo and M. Baratieri, Biomass combined heat and power for renewable power provision in mountain environments: techno-economic assessment of cost factors and competitiveness under current and projected energy market conditions, in: Journal of Physics: Conference Series, Volume 2893, The 79th ATI Annual Congress 04/09/2024 - 06/09/2024 Genoa, Italy
DOI: 10.1088/1742-6596/2893/1/012008
2. *S. Piazzi*, D. Antolini, L. Menin, F. Patuzzi, M. Baratieri, Experimental Analysis of Producer Gas Upgrade Over a Char Bed Reactor for Enhanced Hydrogen Yield, in: 30th Eur. Biomass Conf. Exhib., pp. 790-793, 2022
DOI: 10.5071/30thEUBCE2022-4CV.5.7
3. *S. Piazzi*, L. Menin, D. Antolini, F. Patuzzi, M. Baratieri, Studies on conversion of biomass-residues to syngas for biofuels through steam gasification, in: 28th Eur. Biomass Conf. Exhib., pp. 440 - 444, 2020
DOI: 10.5071/28thEUBCE2020-2CV.3.19
4. *S. Piazzi*, S.S. Ail, V. Benedetti, F. Patuzzi, M. Baratieri, Studies on conversion of biomass derived syngas to liquid fuels via Fischer-Tropsch synthesis, in: 27th Eur. Biomass Conf. Exhib., pp. 1262–1265, 2019
DOI: 10.5071/27thEUBCE2019-3CV.3.7.

*Other publications:*

*1.* L. Menin, *S. Piazzi*, D. Antolini, A. Gasparella, M. Baratieri. Green Hydrogen for the Alps - A meta-study on renewable hydrogen uses, production, and policy priorities. EUSALP - Action Group 9 – Energy.
*https://www.alpine-region.eu/publications/green-hydrogen-alps-meta-study-renewable-hydrogen-uses-production-and-policy-*

*priorities*

**Further data**

*Oral Presentations at International Conferences:*

- 80° congresso nazionale ATI 2025 - Techno-economic modeling of hydrogen and biomethane production via biomass gasification - *S. Piazzi*, L. Menin, J. Ress, M. Baratieri
- 33rd European Biomass Conference & Exhibition (EUBCE) 2025 - Techno-economic modeling of hydrogen and biomethane production via biomass gasification - *S. Piazzi*, L. Menin, J. Ress, M. Baratieri
- 79° congresso nazionale ATI 2024 - Renewable hydrogen production from biomass using gasification activated carbon - *S. Piazzi*, A. Schuh, V. Benedetti, E. Arato, M. Baratieri
- 9th International Conference on Sustainable Solid Waste Management (CORFU2022) 2022 - Small-scale producer gas upgrading: hydrogen yield enhancement over a char bed reactor - S. Piazzi, D. Antolini, L. Menin, M. Baratieri, F. Patuzzi
- 5th International Conference Catalysis for Renewable Sources: Fuel, Energy, Chemicals (CRS-5) 2019 - Influences of supported catalyst synthesis method on the conversion of biomass-derived syngas to biofuels via Fischer-Tropsch synthesis - *S. Piazzi*, S. S. Ail, V. Benedetti, F. Patuzzi, M. Baratieri
- 7th International Conference on Engineering for Waste and Biomass Valorisation (WasteEng) 2018 - Energy Conversion of Gasification Residual Char: Combustion and Co-firing Scenarios in Northern Italy - *S. Piazzi*, X. Zhang, F. Patuzzi, M. Baratieri

*Poster Presentations at International Conferences:*

- 33rd European Biomass Conference & Exhibition (EUBCE) 2025 - Activated carbon derived from biomass gasification for hydrogen production - *S. Piazzi*, A. Schuh, V. Benedetti, E. Arato, M. Baratieri
- 33rd European Biomass Conference & Exhibition (EUBCE) 2025 - Optimization of small-scale oxy-steam gasification and catalytic water-gas shift for renewable hydrogen production - *S. Piazzi*, D. Antolini, L. Menin, F. Patuzzi, M. Baratieri
- 29th European Biomass Conference & Exhibition (eEUBCE) 2021 - A first and second law thermodynamic analysis of different biomass gasification coupled to Fischer-Tropsch synthesis - *S. Piazzi*, F. Patuzzi, M. Baratieri
- 28th European Biomass Conference & Exhibition (eEUBCE) 2020 - Studies on conversion of biomass-residues to syngas for biofuels through steam gasification - *S. Piazzi*, L. Menin, D. Antolini, F. Patuzzi, M. Baratieri
- 27th European Biomass Conference & Exhibition (EUBCE) 2019 - Studies on conversion of biomass-derived syngas to liquid fuels via Fischer-Tropsch Synthesis - *S. Piazzi*, S. S. Ail, V. Benedetti, F. Patuzzi, M. Baratieri
- 26th European Biomass Conference & Exhibition (EUBCE) 2018 - Combined generation of fuels and electricity from woody biomass gasification - A techno-economic analysis - S. S. Ail, *S. Piazzi*, D. Basso, F. Patuzzi, S. Kumar, M. Baratieri
- World Sustainable Energy Days (WSED) 2018 - Systematic assessment of turning gasification-based waste char to energy: a case study in South Tyrol (Italy) - *S. Piazzi*, X. Zhang, F. Patuzzi,

M. Baratieri

*Oral Presentations at workshops/seminar as invited speaker:*

- The MILLENNIUM CLEAN and SUSTAINABLE POWER workshop 2025 (Genova) - Optimization of small-scale oxy-steam gasification and catalytic water-gas shift for renewable hydrogen production
- Biochar Day 2025 - Energia ed agricoltura circolare (Taormina) - Produzione di idrogeno rinnovabile da biomassa mediante char da gassificazione attivato
- Re-think Circular Economy Forum I 2023 (Taranto) - Potentials of biomass waste valorization for the transition to low carbon circular economy (Round table)

**Entrepreneurship**

In 2022 I have co-founded together with two colleagues the startup BiSTEMS srl, which had the aim to develop a novel gasification system for the production of advanced biofuels and biochemicals, e.g. biomethane. The startup was awarded in December 2022 as the most promising Italian startup in the industrial sector at the PNI 2022 (Premio Nazionale Innovazione). At the beginning of 2025 the startup has been closed.

**Statement of interest**

The research experience gained during my Post-Doc, PhD program and in the previous years is related with the design and operation of biomass to biofuels systems at the lab- and pilot-scale. I have experience in the overall characterization of the process, which includes both the mass and energy fluxes analysis and the feedstock and products characterization, including both solid/liquid materials characterization and online/offline gas analysis. These analyses have been carried out also on full-scale gasification plants. Moreover, the experience I have in the design of lab- and pilot-scale setup can help in the design of new systems for the conversion of biomass to liquid/gaseous biofuels. Whether of interest, I can also contribute to the presentation of the obtained results at international conferences and/or their publication in scientific journals. Finally, I have gained experience also in the development of techno-economic models to analyze the feasibility of a technology of interest, using different software, e.g. Aspen Plus, DWSIM, Matlab and Python.

**Language competence**

**Italian:** Mother tongue
**English:** C1 (Internal C1 exam from unibz Language Centre)
**German:** B1 (Internal B1 exam from unibz master course)

**Driving license**

Type A and B

The undersigned gives his consent to his personal data being processed, within the limits of the legislative decree 196/2003, for formalities connected with the present procedure.

Date
28.10.25

Signature