University Academic Curriculum Vitae

Personal information Name: Stefano Piazzi

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)
- 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) to producer gas through the gasification process and its subsequent conversion to liquid and gaseous biofuels, i.e. Fischer-Tropsch fuels, biomethane and hydrogen. 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. The main activities are: 1) biomass, char and other solid characterization. i.e. physical-chemical and characteristics; 2) design and testing of lab-scale setup both for the gasification process and the producer gas upgrade to hydrogen; 3) design and testing of lab-scale producer gas cleaning, including a PSA system for pure hydrogen production 4) characterization of the products and the by-products of all the processes, i.e. producer gas, char and tar.

The research activity also 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.

Professional experience

Chronological list of all previous employments

	romotogical list of all previous employments				
From / to	Job title	Name of company	Responsibilities		
2022/2025	Co-founder	BiSTEMS srl	- Engineering and		
	Co-CEO		procurement related		
			to the design and		
			installation of		
			innovative biomass		
			gasification plants		
			•		
			that aim at the		
			production of		
			advanced biofuels.		
			- Consulting in the		
			development of		
			renewable energy or		
			R&D projects.		
2021/-	Research	Free University of	- Experimental		
	assistant	Bozen-Bolzano	activities as well as		
			techno-economic		
			modeling on		
			different biomass-to-		
			X systems.		
			- Preparation of		
			research project		
			proposal.		

Experience in academic teaching

Lectures

2024 - 2025

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

- Lecturer of the course "Applied Energetics", within the Master in Energy Engineering
- Lecturer of the course "Engineering energetics", within the Bachelor in Industrial and Mechanical Engineering
- Teaching Assistant of the course "Thermo-mechanicals measurements", within the Master in Industrial Mechanical Engineering

2023 - 2024

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

- Teaching Assistant for the course "Power Production, CHP and District Heating Systems", within the Master in Energy Engineering
- Teaching Assistant for the course "Thermo-mechanicals measurements", within the Master in Industrial Mechanical Engineering

2022 - 2023

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

• Teaching Assistant for the course "Power Production, CHP and District Heating Systems", within the Master in Energy Engineering

2021 - 2022

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

• Teaching Assistant for the course "Power Production, CHP and District Heating Systems", within the Master in Energy Engineering

2019 - 2020

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

• Teaching Support for the course "Power Production, CHP and District Heating Systems", within the Master in Energy Engineering

Thesis supervision, co-supervision and tutoring 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 smallscale 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:

• 2023 - Today

Research assistant

Free University of Bolzano, Faculty of Science and Technology Title of the project: "Biomass and biofuels: thermochemical conversion processes, energy efficiency, and sustainable use of the resource

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:

• 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

• 2017 – 2020

PhD in Sustainable Energy and Technologies – XXXIII Cycle Free University of Bolzano, Faculty of Science and Technology Title: "Biomass to Fischer-Tropsch fuels and hydrogen: an integrated analysis for designing gasification-based systems" Supervisor: Prof. Marco Baratieri

03/2017 – 09/2017

Research Support Activity

Free University of Bolzano, Faculty of Science and Technology Title of the project: "Aspen Plus® modelling of co-combustion scenarios of biomass and gasification char"

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	Italian	Ministry	for	Optimization	n	of	small-scale	оху-

_	Education and	steam gasification and catalytic
09/2025	Scientific Research,	water-gas shift for renewable
00/2020	MUR (PNRR -	hydrogen production (OSMOSYS),
	M4C2 - NEST)	PI: Marco Baratieri
02/2025	Third party contract	Use of Alternative Fuel for
_	(Hoppe AG)	Aluminum Smelting (Fuel4Alum), PI:
06/2025		Marco Baratieri
12/2024	Third party contract	Post-treament of char for PAH
-	(Yanmar R&D	reduction (CHAR-PST), PI:
03/2025	Europe SrL)	Francesco Patuzzi
11/2024	Third party contract	Declorination of ashes from Waste- to-Energy plant (AshCL), PI: Marco
05/2025	(Eco-center)	Baratieri
2024	Third party contract	Sewage Sludge Combustion (SSC)
2024	(AGSM AIM Energia	for PFAS (PFC) destruction, PI:
	S.p.A.)	Marco Baratieri
09/2023	Italian Ministry for	Decarbonized and CirculAR
_	Education and	hydrogeN prOducTion through
09/2025	Scientific Research,	biomass and waste gasification
	MUR (PRIN 2022)	(CARNOT), PI: Marco Baratieri
09/2023	European Regional	Recupero di nutrienti dal processo
-	Development Fund	HTC (RFD), PI: Francesco Patuzzi
08/2025	of the European	
	Union and Autonomous	
	Province of Bozen-	
	Bolzano (ERDF	
	2021-2027)	
10/2022	Third party contract	Test of biomass boilers fed with
_	(KWB	agricultural residues (BOIL-RES),
03/2023	Energiesysteme	PI: Marco Baratieri
	GmbH)	
06/2023	Third party contract	GAsification for improved
-	(Palazzetti Lelio	combustion in a biomass STOVE -
11/2023	S.p.A.)	Part 2 (GASTOVE_2), PI: Marco
09/2022	European	Baratieri Implementation pathways for
_	Commission,	sustainable Green Carbon
02/2024	Interreg Alpine	production in the Alpine Region
	Space Programme	(Alps4GreenC), PI: Marco Baratieri
2021-	Funded by the	A FRONTrunner approacTransition
2025	European Union in	to a circular & resilient future:
	the framework of the	deployment of systemic solutions
	Horizon 2020	with the support of local clusters and
	Research and	the development of regional
	Innovation	community-based innovation
	Programme under	schemes (FRONTSH1P), PI: Marco Baratieri
	grant agreement No. 101037031	Daratien
2022	Third party contract	On-site monitoring of Yanmar
2022	(Yanmar R&D	gasifier and validation of an in-house
	Europe SrL)	method for tar sampling and
		quantification (ONMYA), PI: Marco
		Baratieri
2022	Austrian Research	Biochar polymer composites with

	D	
	Promotion Agency,	specific properties for innovative
	FFG (Produktion der	applications in material technology
	Zukunft – 32.	(BioPolyComp), PI: Marco Baratieri
	Ausschreibung)	
2022	Third party contract	On-site monitoring of HBI integrated
	(HBI s.r.l.)	hydrothermal carbonization and
	,	gasification plant in Fusina (VE)
		(HBI_2), PI: Francesco Patuzzi ` ´
2021	Third party contract	On-site monitoring of HBI integrated
	(HBI s.r.l.)	hydrothermal carbonization and
	(gasification plant (HBI), PI:
		Francesco Patuzzi
2021	Energy Agency	Green Hydrogen for the Alps, PI:
2021	South Tyrol –	Marco Baratieri
	,	Iviaico baralleri
2040	CasaClima	DIO Cincular Halistia
2019-	Italian Ministry of	BIOmasses Circular Holistic
2022	Education,	Economy APproach to EneRgy
	University and	equipments (BIO-CHEAPER), PI:
	Research (PRIN	Marco Baratieri
	2017)	
2020-	FUB internal funding	SMall-scale producer gas Upgrading
2022	(RTD call 2020)	for Biofuels (SMUP), PI: Francesco
		Patuzzi
2020-	Third party contract	AgroForesty by-products:
2021	(Sauber)	ThERmochemical evolution process
		(AFTER), PI: Marco Baratieri
10/2019	Third party contract	GAsification for improved
_	(Palazzetti Lelio	combustion in a biomass STOVE
09/2020	S.p.A.)	(GASTOVE), PI: Marco Baratieri
2018-	FUB internal funding	CHAR re-Circulation for improving
2020	(RTD call 2018)	the Conversion yields in fixed-bed
	, ,	biomass gasification systems
		(CHAR-RCC), PI: Francesco
		Patuzzi
2018	Third party contract	KINetics analysis of char bed
	(Yanmar R&D	Gasification (KING), PI: Marco
	Europe SrL)	Baratieri
2018	Third party contract	Pre-design assessments of different
	(Yanmar R&D	reactor concepts (PRE-DES), PI:
00.17	L LUIUNE OILI	i Marco Baratieri
2017-	Europe SrL) Third party contract	Marco Baratieri Analysis of European small scale
2017- 2018	Third party contract	Analysis of European small scale
2017- 2018	Third party contract (Yanmar R&D	Analysis of European small scale GASification technologies and
	Third party contract	Analysis of European small scale GASification technologies and identification of new SOLUTIONs
	Third party contract (Yanmar R&D	Analysis of European small scale GASification technologies and identification of new SOLUTIONs (GASSOLUTION), PI: Marco
2018	Third party contract (Yanmar R&D Europe SrL)	Analysis of European small scale GASification technologies and identification of new SOLUTIONs (GASSOLUTION), PI: Marco Baratieri
2018	Third party contract (Yanmar R&D Europe SrL) FUB internal	Analysis of European small scale GASification technologies and identification of new SOLUTIONs (GASSOLUTION), PI: Marco Baratieri BIOmass-to-LIQuid as a strategy to
2018	Third party contract (Yanmar R&D Europe SrL) FUB internal funding, (CRC call	Analysis of European small scale GASification technologies and identification of new SOLUTIONs (GASSOLUTION), PI: Marco Baratieri BIOmass-to-LIQuid as a strategy to enhance gasification potential in a
2018	Third party contract (Yanmar R&D Europe SrL) FUB internal	Analysis of European small scale GASification technologies and identification of new SOLUTIONs (GASSOLUTION), PI: Marco Baratieri BIOmass-to-LIQuid as a strategy to enhance gasification potential in a biorefinery perspective (BIO2LIQ),
2018 2016- 2018	Third party contract (Yanmar R&D Europe SrL) FUB internal funding, (CRC call 2016)	Analysis of European small scale GASification technologies and identification of new SOLUTIONs (GASSOLUTION), PI: Marco Baratieri BIOmass-to-LIQuid as a strategy to enhance gasification potential in a biorefinery perspective (BIO2LIQ), PI: Marco Baratieri
2018 2016- 2018 2016-	Third party contract (Yanmar R&D Europe SrL) FUB internal funding, (CRC call 2016)	Analysis of European small scale GASification technologies and identification of new SOLUTIONs (GASSOLUTION), PI: Marco Baratieri BIOmass-to-LIQuid as a strategy to enhance gasification potential in a biorefinery perspective (BIO2LIQ), PI: Marco Baratieri Novel EXTension of biomass poly-
2018 2016- 2018	Third party contract (Yanmar R&D Europe SrL) FUB internal funding, (CRC call 2016) Provincia Autonoma di Bolzano (L.P.,	Analysis of European small scale GASification technologies and identification of new SOLUTIONs (GASSOLUTION), PI: Marco Baratieri BIOmass-to-LIQuid as a strategy to enhance gasification potential in a biorefinery perspective (BIO2LIQ), PI: Marco Baratieri Novel EXTension of biomass poly-GENERATION to small scale
2018 2016- 2018 2016-	Third party contract (Yanmar R&D Europe SrL) FUB internal funding, (CRC call 2016)	Analysis of European small scale GASification technologies and identification of new SOLUTIONs (GASSOLUTION), PI: Marco Baratieri BIOmass-to-LIQuid as a strategy to enhance gasification potential in a biorefinery perspective (BIO2LIQ), PI: Marco Baratieri Novel EXTension of biomass poly-GENERATION to small scale gasification systems in South-Tyrol
2018 2016- 2018 2016-	Third party contract (Yanmar R&D Europe SrL) FUB internal funding, (CRC call 2016) Provincia Autonoma di Bolzano (L.P.,	Analysis of European small scale GASification technologies and identification of new SOLUTIONs (GASSOLUTION), PI: Marco Baratieri BIOmass-to-LIQuid as a strategy to enhance gasification potential in a biorefinery perspective (BIO2LIQ), PI: Marco Baratieri Novel EXTension of biomass poly-GENERATION to small scale

Publications

Journal articles in refereed academic journals:

- 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)
- 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 Manuscript submitted and under review Journal Impact Factor: 7.1 (2024)
- 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)
- 4. 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)
- 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)
- 6. 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)

- 7. 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)
- 8. D. Antolini*, *S. Piazzi**, L. Menin, F. Patuzzi, M. Baratieri (*Dualfirst 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)
- 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)
- 10. 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)

 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)

12. *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)

13. *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:

- 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: technoeconomic 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
- 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

 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:

 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-

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 12.09.25 Signature