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Origin

Medellin, Colombia

Bio

I am a Mechanical Engineer of the Faculty of Mines of the National University of Colombia, Campus Medellín (valedictorian 2011) ; and Master (2014) and Doctor (with honors 2018) in Mechanical Engineering with emphasis on Energy and Fluids from the Polytechnic School of the University of São Paulo, Brazil. I have more than ten years of experience in teaching, research and consulting in universities and in partnership with multinational enterprises willing to improve their energy conversion processes in a sustainable way. I am author of 70+ technical contributions to international journals, books and conferences. Currently working in the area of Synthesis and Optimization of Industrial, Chemical and Power Generation Processes..

Languages

Spanish, English, Portuguese, French

Funding entities

My research has been supported by the Aditya Birla Group and Energie Schweiz through Novelis Sierre company in Switzerland ; the Swiss Federal Office of Energy - SFOE through the International Energy Agency - IEA Annex 58 and the GIRAIG consortium ; the Brazilian Agency of Petroleum, Natural Gas and Biofuels - ANP ;

the Swiss Government Excellence Scholarship for Young Scientists and Artists - ESKAS; the Colombian Ministry of Science, Technology and Innovation - MINCIENCIAS; the Petrobras Research, Development and Innovation Center - CENPES through the Foundation for the Support to the University of Sao Paulo - FUSP.

Awards

- ABCM Embraer Award 2019 for Best Research Thesis in Mechanical Engineering in the Category Doctorate (PhD)
- Honorable Mention in Outstanding Thesis USP Award 2020
- Best technical article of international ECOS 2016 Conference
- Best technical article of international ECOS 2024 Conference
- Best technical poster of international ESCAPE 2024 Conference
- Best technical poster of international EUBCE 2024 Conference
- Mechanical Engineering Valedictorian 2011, Faculty of Minas, National University of Colombia
- Co-supervision of Lander Cortvriendt MSc thesis honored with the IAR-CIT Master's thesis prize, EPFL & KU Leuven.

Associations

- Colombian Association of Electrical and Mechanical Engineers - ACIEM
- American Institute of Chemical Engineers - AIChE
- Recognized Researcher of the Colombian Ministry of Science, Technology and Innovation - MINCIENCIAS

Expertise fields

- Exergy and Energy Integration of Chemical and Industrial Processes
- Cogeneration and Polygeneration, Refrigeration and Heat Pumping Systems
- Technical, Economic and Environmental Analyses
- Refineries, Biorefineries, Fertilizers Complexes, Hydrogen and Synthetic Fuels (SNG, DME, MeOH, FT, H₂, Power-to-X)
- Second law of Thermodynamics and Irreversible Thermodynamics
- Combustion, Heat Transfer, Computational Fluid Dynamics, Reaction design
- Modeling and Optimization of Energy Conversion Systems
- Material Science and Manufacture
- Programming (Python, Lua, Java, Javascript, MATLAB, LINGO, GAMS, AMPL, HTML, CSS, R)

IPESE research, teaching and mentoring activities

- Novelis Aditya Birla Aluminium Production Process Decarbonization NETZERO Lab - OIKEN, Novelis, EPFL, HESSO, Swiss Federal Office of Energy <https://www.novelis.com/net-zero-lab-valais/>
- Development of the Pinch-Small tool for the Swiss Confederation mandated by the Swiss Federal Office of Energy - EPFL General Coordinator
- IETS IEA Technology Collaboration Programme Task XXIV "Process integration for industry decarbonization" - EPFL Manager <https://iea-industry.org/tasks/process-integration-for-industry-decarbonization/>
- TRILateral research for optimal Investments in Adequate cross-border infrastructure (TRILATE) - Ugent, ULiège, EPFL, VITO, Veolia, Fluxys, INEOS <https://www.ugent.be/ea/emsme/en/research/eelab/ecm/trilate>
- Annex 58 IEA - High Temperature Heat Pump Project - OST, Vaud-HEIG, CSD Ingénieurs, EPFL, Swiss Federal Office of Energy <https://heatpumpingtechnologies.org/annex58/documents/>
- Decarbonization of Agro-food and Biofuels production assets- Louis Dreyfus Company
- Energy audit and process integration of Donze Baume plant - Richemont Company
- Support, Knowledge and Technology transfer of OSMOSE optimization platform - Buhler Group
- Energy integration of ZIBAC Lacq & Bordeaux Industrial Clusters - Terega FR

- EU project “Advancing industrial decarbonisation by assessing the future use of renewable energies in industrial processes” <https://op.europa.eu/s/y5GF>
- Support to other EU projects : Metharen, Presshyous, Niagara.
- Master of Advanced Studies EPFL-HESSO <https://www.formation-continue-unil-epfl.ch/formation/sustainable-energy-systems-engineering-mas/>
- Co-supervision of BSc, MSc and PhD students : projects in collaboration with Hermes, Morand, ELSA, Buhler, CREMO, Gustav Spiess, Novelis, Oiken, SFOE, IEA, Richemont, Terega, Louis Dreyfus, CIMO.
- Teaching Assistant ME-451 Advanced Energetics <https://edu.epfl.ch/coursebook/fr/advanced-energetics-ME-451>
- Web co-development ECOS International Society <https://ecosinternationalsociety.org/>

Graphical abstract

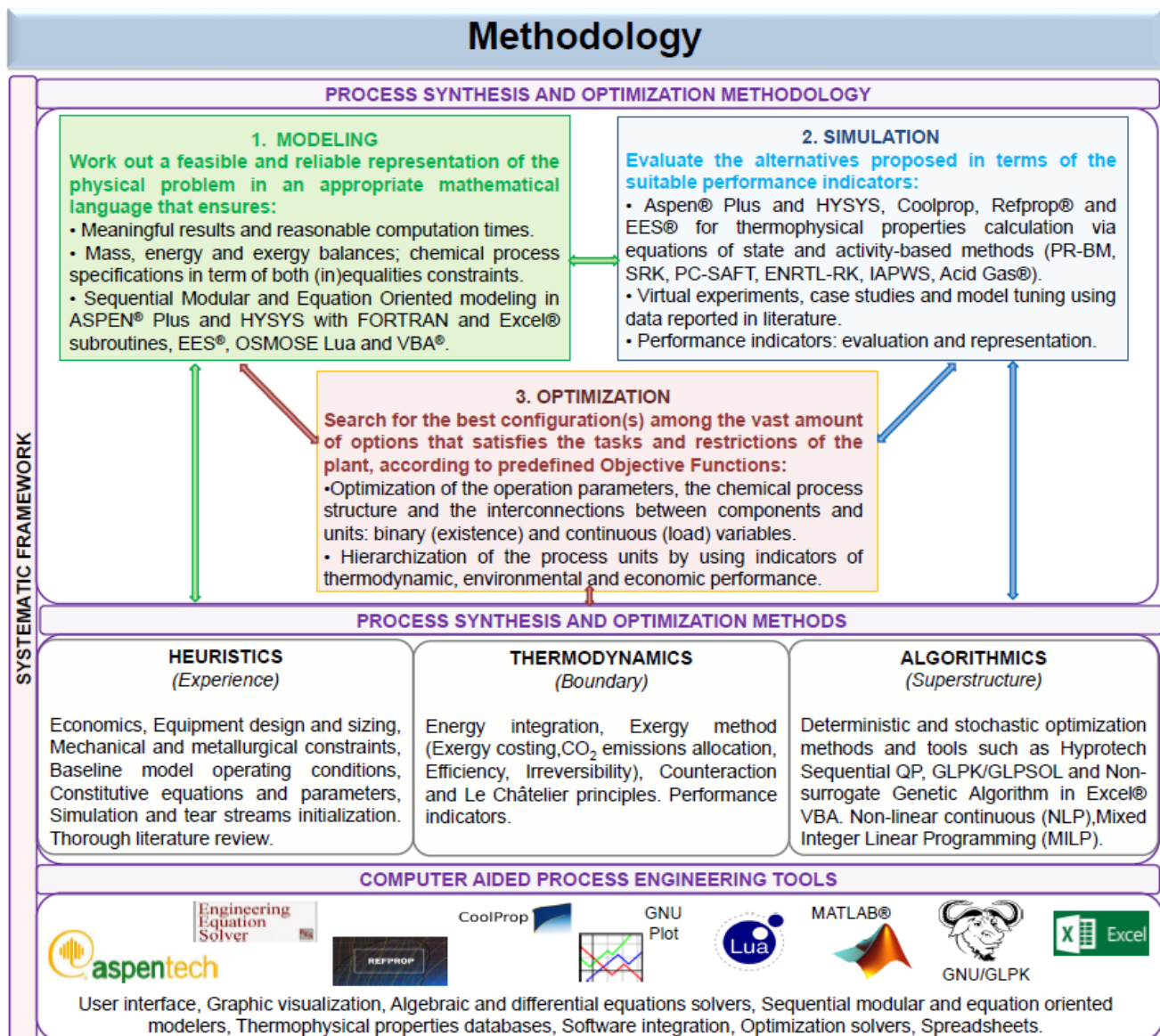


FIGURE 1 – Methods and Tools

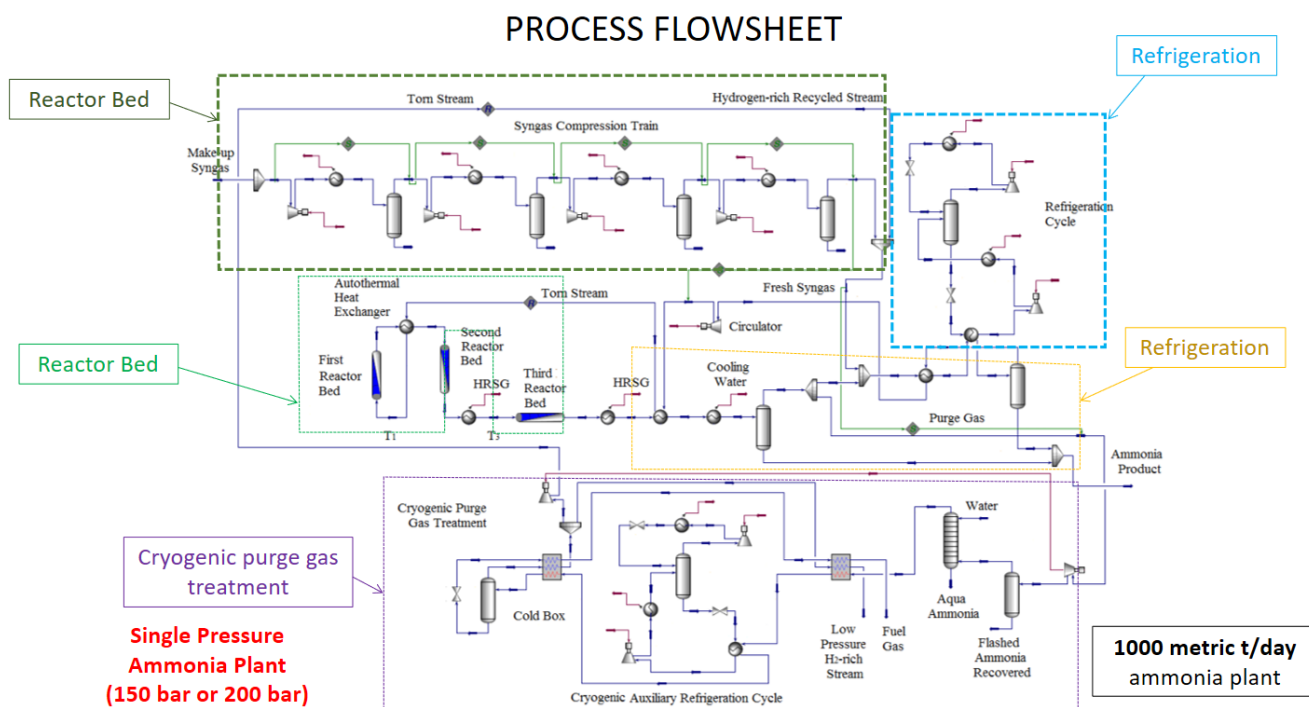


FIGURE 2 – Process modeling

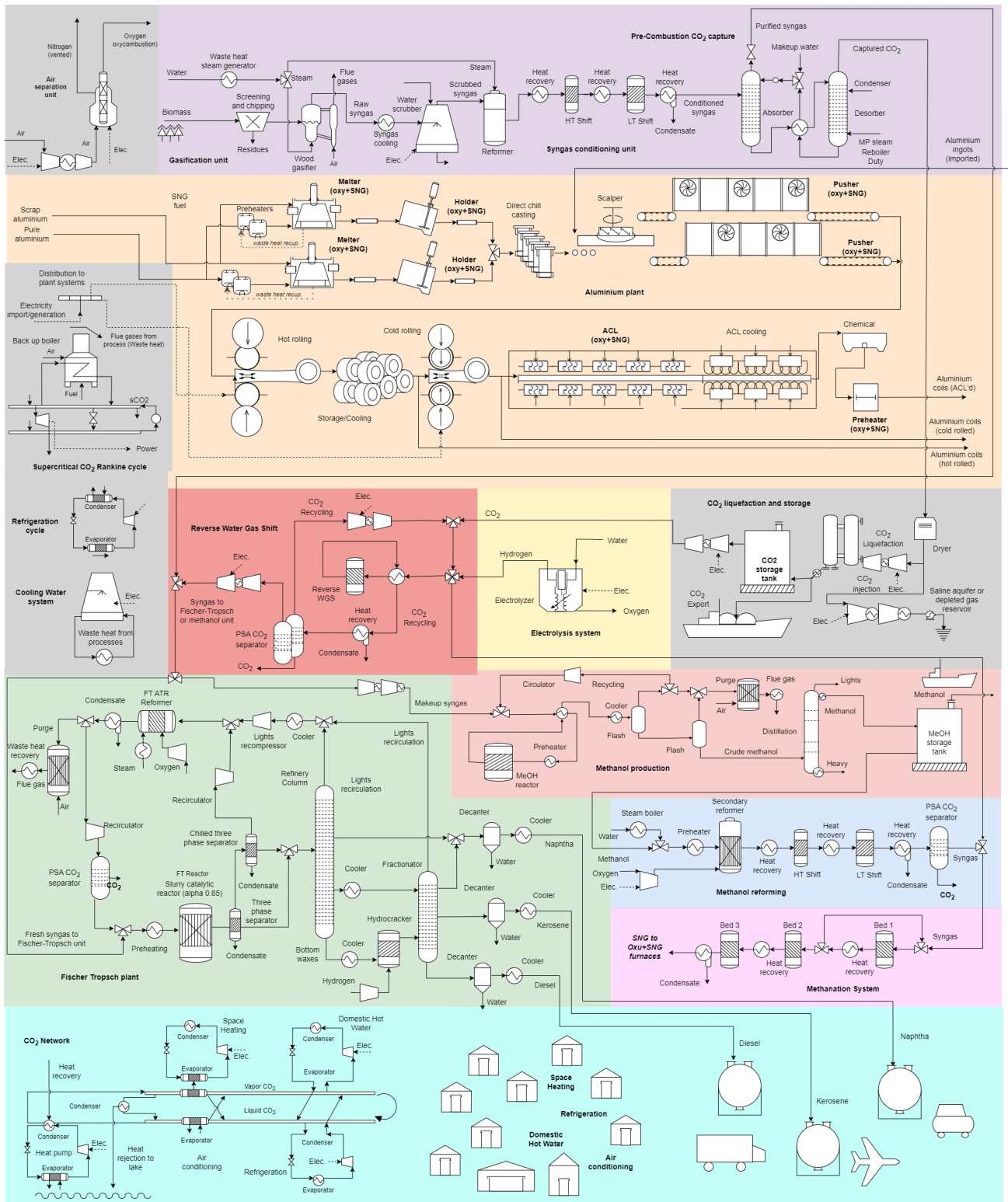


FIGURE 3 – Process integration

Publications in peer-reviewed journals

1. SILVA, J.A.M., FLÓREZ-ORREGO, D., OLIVEIRA, S., An exergy based approach to determine production cost and CO₂ allocation for petroleum derived fuels, *Energy (Oxford)*, v.67, pp.490–495, 2014.
2. FLÓREZ-ORREGO, D., SILVA, J.A.M., OLIVEIRA, S., Renewable and Non-Renewable Exergy Cost and Specific CO₂ Emission of Electricity Generation : The Brazilian Case, *Energy Conversion and Management*, v.85, pp.619–629, 2014.
3. FLÓREZ-ORREGO, D., SILVA, J.A.M., VELASQUEZ, H., OLIVEIRA JR, S., Renewable and Non-Renewable Exergy Costs and CO₂ Emissions of Fuels Production for Brazilian Transportation Sector, *Energy (Oxford)*, v.88, pp.18–36, 2015.
4. FLÓREZ-ORREGO, D., SILVA, J.A.M., OLIVEIRA JR, S. Exergy and Environmental Comparison of End Use of Vehicle Fuels : The Brazilian Case, *Energy Conversion and Management*, v.100, pp.220–231, 2015.
5. FLÓREZ-ORREGO, D., OLIVEIRA JR, S. On the efficiency, exergy costs and CO₂ emission cost allocation for an integrated syngas and ammonia production plant, *Energy (Oxford)*, v.117, Part 2, pp.341–360, 2016.
6. FLÓREZ-ORREGO, D., OLIVEIRA JR, S. Modeling and optimization of an industrial ammonia synthesis unit : An exergy approach, *Energy (Oxford)*, v.137 (15), pp.234–250, 2017.
7. FLÓREZ-ORREGO, D., OLIVEIRA JR, S. Exergy assessment of single and dual pressure industrial ammonia synthesis units, *Energy (Oxford)*, v.141 (15), pp.2540–2558, 2017.
8. SANTOS, R.G., FARIA, P. R., FLÓREZ-ORREGO, D., SANTOS, J.J.C.S., SILVA, J.A.M., Thermo-economic Modeling for CO₂ Allocation in Steam and Gas Turbine Cogeneration Systems, *Energy (Oxford)*, v.117, Part 2, pp.590–603, 2016.
9. FLÓREZ-ORREGO, D. HENRIQUES, I. B., NGUYEN, T., MENDES DA SILVA, J., MADY, C.E., PEL-LEGRINI, L.F., GANDOLFI, R., VELÁSQUEZ, H., BURBANO, J.C., LATTOUF, R., DE OLIVEIRA JUNIOR, S., The contributions of Prof. Jan Szargut to the exergy and environmental assessment of complex energy systems, *Energy (Oxford)*, v.161, pp.482–492, 2018.
10. SILVA ORTIZ, P., FLÓREZ-ORREGO, D., OLIVEIRA JUNIOR, S., MARÉCHAL, F., MACIEL FILHO, R., Exergetic, Environmental and Economic Assessment of Sugarcane First-Generation Biorefineries. *Journal of Power Technologies* v.99 (2) pp.67–81, 2019. ISSN : 2083-4187, E-ISSN : 2083-4195
11. NAKASHIMA, R., FLÓREZ-ORREGO, D, OLIVEIRA JUNIOR, S., Integrated Anaerobic Digestion and Gasification Processes for Upgrade of Ethanol Biorefinery Residues, *Journal of Power Technologies* 99 (2) pp.104–114, 2019. ISSN : 2083-4187, E-ISSN : 2083-4195.
12. FLÓREZ-ORREGO, D, NASCIMENTO SILVA, F., OLIVEIRA JUNIOR, S., Syngas Production with Thermo-Chemically Recuperated Gas Expansion Systems, *Energy (Oxford)*, v.178, pp.293–308. 2019.
13. FLÓREZ-ORREGO, D, OLIVEIRA JUNIOR, S. Comparative Exergy and Economic Assessment of Fossil and Biomass-Based Routes for Ammonia Production, *Energy Conversion and Management*, v.194, pp.22–36. 2019.
14. VELASQUEZ, H.I, OROZCO, J. C., MAYA, J., FLÓREZ-ORREGO, D., LOPERA, S. Exergy analysis of the Colombian energy matrix : A view from its economic sectors and energy resources, *International Journal of Sustainable Energy Planning and Management*, v.22, pp.39–60, 2019.
15. NASCIMENTO SILVA, F., FLÓREZ-ORREGO, D, OLIVEIRA JUNIOR, S. Exergy assessment and energy integration of advanced gas turbine cycles on an offshore petroleum production platform, *Energy Conversion and Management*, v.197, Article 111846, 2019.
16. FLÓREZ-ORREGO, D, SHARMA, S. OLIVEIRA JUNIOR, S., MARECHAL, F. Combined exergy analysis, energy integration and optimization of syngas and ammonia production plants : A cogeneration and syngas purification perspective, *Journal of Cleaner Production*, v.244, Article 118647, 2020.
17. NASCIMENTO SILVA, F., FREIRE, R., FLÓREZ-ORREGO, D., OLIVEIRA JUNIOR, S., Comparative assessment of advanced power generation and carbon sequestration plants on offshore petroleum platforms, *Energy (Oxford)*, v. 203, Article 117737, 2020.
18. NAKASHIMA, R., FLÓREZ-ORREGO, D, OLIVEIRA JUNIOR, S., Sugarcane bagasse and vinasse conversion to electricity and biofuels : an exergoeconomic and environmental assessment, *International Journal of Exergy*, v.33, No.1, pp.44–75, 2020.

19. RIBEIRO DOMINGOS, M. E. G., FLÓREZ-ORREGO, D., TELES DOS SANTOS, M., OLIVEIRA JR, S. Exergy and environmental analysis of black liquor upgrading gasification in an integrated Kraft pulp and ammonia production plant, *International Journal of Exergy*, v.35, No.1, pp.35-64, 2021.
20. SILVA ORTIZ, P., FLÓREZ-ORREGO, D., OLIVEIRA JUNIOR, S., MACIEL FILHO, R., OSSEWEIJER, P., POSADA, J., Unit exergy cost and specific CO₂ emissions of the electricity generation in the Netherlands, *Energy (Oxford)*, v.208, Article 118279. 2020.
21. FLÓREZ-ORREGO, D., ALBUQUERQUE, C., SILVA, J.A.M., FREIRE, R., OLIVEIRA JR., S. Optimal design of power hubs for offshore petroleum platforms. *Energy (Oxford)*. v.235, pp. 121353. 2021
22. FLÓREZ-ORREGO, D., FREIRE, R., SILVA, J.A.M., ALBUQUERQUE, C., OLIVEIRA JR., S., Centralized power generation with carbon capture on decommissioned offshore petroleum platforms. *Energy Conversion and Management*. v. 252, p. 115110, 2022.
23. FLÓREZ-ORREGO, D., ALBUQUERQUE, C., SILVA, J.A.M., FREIRE, R., OLIVEIRA JR., S. Offshore Utility Systems for FPSOs : A Techno-Environomic Assessment Considering the Uncertainty About the Natural Gas Price. *Frontiers in Chemical Engineering* 4 (853749). 2022
24. DOMINGOS, M. E. G., FLOREZ-ORREGO, D., Teles dos Santos, M., Oliveira Junior, S., Maréchal, F. (2022). "Techno-economic and environmental analysis of methanol and dimethyl ether production from syngas in a kraft pulp process." *Computers & Chemical Engineering* : April 28, 107810.
25. SILVA ORTIZ, P., FLOREZ-ORREGO, D., PINTO MARIANO, A., KAFAROV, V., OLIVEIRA JR., MACIEL FILHO, R. Exergy assessment of renewable electricity from sugarcane straw for improved energy integration of sugarcane biorefineries. *International Journal of Exergy*. V. 38, No. 2, 2022.
26. TELINI, R., FLOREZ-ORREGO, D., OLIVEIRA JR., S., Techno-economic and environmental assessment of ammonia production from residual bagasse gasification : a decarbonization pathway for nitrogen fertilizers. *Frontiers in Energy Research*, v.10, Article 881263.
27. FLOREZ-ORREGO, D., SHARMA, S., NABAVI, S. Editorial of the Research Topic : "Integration and Optimization in the Chemical Process Industry", *Frontiers in Chemical Engineering*, 961022, 2022.
28. PARGAS-CARMONA, L., SILVA, J.A.M., SANTANNA, A., FLOREZ-ORREGO, D., ALBUQUERQUE, C., OLIVEIRA JUNIOR, S., Optimal selection of utility plants in oil and gas offshore platform, *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 45 :2448, 2023.
29. DOMINGOS, M. E. G., FLÓREZ-ORREGO, D., TELES DOS SANTOS, M., OLIVEIRA JUNIOR, S., MARÉCHAL, F. (2023). " Multi-time integration approach for combined pulp and ammonia production and seasonal CO₂ management " *Computers & Chemical Engineering* : v.176, 108305.
30. VARGAS, G., FLOREZ-ORREGO, D., OLIVEIRA JR, S., Comparative exergy and environmental assessment of the residual biomass gasification routes for hydrogen and ammonia production, *Entropy MDPI*, 25(7)1098. 2023
31. ANDAYESH, M., FLOREZ-ORREGO, D., GERMANIER, R., GATTI, M., MARECHAL, F., Improved Waste Heat Management and Energy Integration in an Aluminum Annealing Continuous Furnace Using a Machine Learning Approach, *Entropy MDPI*, 2023, 25(11), 1486.
32. DOMINGOS, M. E. G., FLÓREZ-ORREGO, D., TELES DOS SANTOS, M., OLIVEIRA JUNIOR, S., MARÉCHAL, F. " Process modeling and integration of hydrogen and synthetic natural gas production in a kraft pulp mill via black liquor gasification" *Renewable Energy* : v.219, part 1, 2023, pp. 119396.
33. FLÓREZ-ORREGO, D., DOMINGOS, M. E. G., MARÉCHAL, F. Techno-economic and environmental analysis of high temperature heat pumps integration into industrial processes. *Sustainable Energy Technologies and Assessments*, v. 60, 2023, 103560.
34. DOMINGOS, M. E. G., FLÓREZ-ORREGO, D., MARÉCHAL, F. Decarbonizing the fertilizers sector : an alternative pathway for urea and nitric acid production. *International Journal of Energy Resources Technology ASME Transactions*, 2024, 146(3) : 030907 (13 pages).
35. CALAME, N., ARPAGAU, C. FLOREZ-ORREGO, D., MARECHAL, F., KRUMMENACHER, P., BLESS, F., ROGNON, F., BERTSCH, S. Joining Forces to Encourage High-Temperature Heat Pumps in Swiss Industries. *Heat Pumping Technologies Magazine*. Vol. 42 No. 1/2024, pp. 1-6.
36. DARDOR, D., FLÓREZ-ORREGO, D., TERRIER, C., RIBEIRO DOMINGOS, M., PLATTEAU, C., SILVA, J.C., LOPEZ, M., MARÉCHAL, F., ROSMOSE : A web-based decision support tool for the design and optimization of industrial and urban energy systems. *Energy*, v. 304, 30 September 2024, 132182.

37. CORTVRIENDT, L., FLOREZ-ORREGO, D., MARÉCHAL, F., BONGARTZ, D., Data-driven systematic methodology for predicting optimal heat pump integration based on temperature levels and refrigerants. *Energy Conversion and Management*, Volume 326, 15 February 2025, 119495

Publications in international conferences

1. OLIVEIRA JR, S., RAMIREZ, W., FLOREZ-ORREGO, D., VELASQUEZ, H., Thermodynamics analysis, performance numerical simulation and losses analysis of a low cost Stirling engine V-Type. 24th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2011, Novi Sad, Serbia, July 4-7, 2011, pp. 3767-3778, ISBN : 978866055-016-5.
2. FLOREZ-ORREGO, D., LOPEZ, D., RAMIREZ, W., VELASQUEZ, H., Experimental and CFD study of a single phase cone-shaped helical coiled heat exchanger : An empirical correlation. 25th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2012, Perugia, Italy, June 26-29, 2012. Vol. 1, pp. 302-320, ISBN online : 97888-6655-322-9.
3. FLOREZ-ORREGO, D., SILVA, J.A.M., OLIVEIRA JR., S., Renewable and Non-Renewable Exergy Cost and Specific CO₂ Emission of Electricity Generation : The Brazilian Case. 26th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2013, Guilin, China, July 15-19, 2013.
4. FLÓREZ-ORREGO, D., SILVA, J.A.M., VELASQUEZ, H., OLIVEIRA JR., S., Renewable and Non-Renewable Exergy Costs and CO₂ Emissions of Fuels Production for Brazilian Transportation Sector. 27th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2014, Turku, Finland, June 15-19, 2014. ISBN online : 978952-123099-8.
5. FLÓREZ-ORREGO, D., SILVA, J.A.M., OLIVEIRA JR., S., An Exergy and Environmental Comparison of End Use of Vehicle Fuels in Brazilian Transportation Sector. 15th Brazilian Congress of Thermal Sciences and Engineering - ENCIT 2014, Belem, PA, Brazil, November 10-13, 2014.
6. FLÓREZ-ORREGO, D., OLIVEIRA JR., S., On the Allocation of the Exergy Costs and CO₂ Emission Cost for an Integrated Syngas and Ammonia Production Plant. 28th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2015, Pau, France, June 28th to July 3rd, 2015.
7. FLÓREZ-ORREGO, D., OLIVEIRA JR., S., Exergy Modeling and Optimization of an Ammonia Production Plant. 29th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2016, Portoroz, Slovenia, June 19th- 23rd, 2016.
8. FLÓREZ-ORREGO, D., OLIVEIRA JR., S., Exergy Assessment of Single and Dual Pressure Ammonia Production Plants, 4th International Conference on Contemporary Problems of Thermal Engineering - CPOTE 2016, Gliwice, Poland, September 14-16, 2016.
9. FLÓREZ-ORREGO, D., SHARMA, S., OLIVEIRA JR., S., MARECHAL, F., Combined Exergy Analysis and Energy Integration for Design Optimization of Nitrogen Fertilizer Plants. 30th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2017, San Diego, United States of America, July 2nd – 6th, 2017.
10. FLÓREZ-ORREGO, D., NASCIMENTO SILVA, F., OLIVEIRA JR., S., Syngas Production with Thermo-Chemically Recuperated Gas Turbine Systems : An Exergy Analysis and Energy Integration Study. 31st International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2018, Guimaraes, Portugal, June 17th – 22nd , 2018.
11. OROZCO LOAIZA, C., MAYA LOPEZ, J., VELASQUEZ, H.I., FLÓREZ-ORREGO, D., Exergy analysis of the Colombian energy matrix : A view from its economic sectors and energy resources, 31st International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2018, Guimaraes, Portugal, June 17th – 22nd, 2018.
12. FLÓREZ-ORREGO, D., NGUYEN, T., SILVA, J.A.M., OLIVEIRA JR., S., The contributions of Prof. Jan Szargut to the exergy and environmental assessment of fuels and chemicals production, 31st International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2018, Guimaraes, Portugal, June 17th – 22nd, 2018.

13. NASCIMENTO SILVA, F., FLÓREZ-ORREGO, D., OLIVEIRA JR., S., Exergy Assessment and Energy Integration of an Oxycombustion Gas Turbine Cycle to an Offshore Petroleum Platform, 5th International Conference on Contemporary Problems of Thermal Engineering - CPOTE 2018, Gliwice, Poland, 18th - 21st September, 2018.
14. FLÓREZ-ORREGO, D, MARÉCHAL, F., OLIVEIRA JUNIOR, S. Comparative Exergy and Economic Assessment of Fossil and Biomass-Based Routes for Ammonia Production, 5th International Conference on Contemporary Problems of Thermal Engineering - CPOTE 2018, Gliwice, Poland, 18th - 21st September, 2018
15. NAKASHIMA, R., FLÓREZ-ORREGO, D, OLIVEIRA JUNIOR, S. Integrated Anaerobic Digestion and Gasification Processes for Upgrade of Ethanol Biorefinery Residues, 5th International Conference on Contemporary Problems of Thermal Engineering - CPOTE 2018, Gliwice, Poland, 18th - 21st September, 2018.
16. SILVA ORTIZ, P., FLÓREZ-ORREGO, D., OLIVEIRA JUNIOR, S., MARÉCHAL, F., MACIEL FILHO, R., Exergetic, Environmental And Economic Assessment Of Sugarcane First-Generation Biorefineries, 5th International Conference on Contemporary Problems of Thermal Engineering - CPOTE 2018, Gliwice, Poland, 18th - 21st September, 2018.
17. NASCIMENTO SILVA, F., FREIRE, R., FLÓREZ-ORREGO, D., OLIVEIRA JR., S., Comparative assessment of advanced power generation and carbon sequestration cycles for offshore petroleum platforms. 32nd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2019, Wroclaw, Poland, June 23rd – 28th, 2019. ISBN 978-83-61506-51-5.
18. RIBEIRO DOMINGOS, M. E. G, FLÓREZ-ORREGO, D., TELES DOS SANTOS, M., OLIVEIRA JR., S., Exergy and Environmental Analysis of Black Liquor Upgraded Gasification in an Integrated Kraft Pulp and Ammonia Production Plant. 32nd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2019, Wroclaw, Poland, June 23rd – 28th, 2019. ISBN 978-83-61506-51-5.
19. NAKASHIMA, R., FLÓREZ-ORREGO, D., OLIVEIRA JR., S., Exergoeconomic and environmental assessment of production and end use of sugarcane residues derivatives. 32nd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2019, Wroclaw, Poland, June 23rd – 28th, 2019. ISBN 978-83-61506-51-5.
20. RIBEIRO DOMINGOS, M. E. G., FLÓREZ-ORREGO, D., TELES DOS SANTOS, M., OLIVEIRA JR., S., Process integration enhancement via black liquor gasification in the Kraft pulp industry. I Brazilian Congress on Process Systems Engineering – PSE-BR 2019, Rio de Janeiro, May 20 – 22, 2019.
21. FLÓREZ-ORREGO, D. Process synthesis and optimization of syngas and ammonia production in nitrogen fertilizers complexes : Exergy, energy integration and CO2 emissions assessment. 25th International Brazilian Congress on Mechanical Engineering - COBEM 2019. Uberlandia, Brazil. Universidade Federal de Uberlândia. October 20-25, 2019. DOI : 10.13140/RG.2.2.12718.66889
22. SILVA ORTIZ, P., FLOREZ-ORREGO, D., OLIVEIRA JR., S., MACIEL FILHO, R., OSSEWEIJER, P., POSADA, J., Unit exergy cost and specific CO2 emissions of the electricity generation in the Netherlands, 14th Conference on sustainable development of energy, water and environment systems, SDEWES 2019, Dubrovnik, Croatia October 1 – 6, 2019.
23. FLÓREZ-ORREGO, D., FREIRE, R., SILVA, J.A.M., ALBUQUERQUE, C., OLIVEIRA JR., S., Centralized power generation with carbon capture on decommissioned offshore petroleum platforms. 33rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2020, Osaka, Japan, June 29th – July 3rd, 2020.
24. FREIRE, R., FLÓREZ-ORREGO, D, SILVA, J.A.M., ALBUQUERQUE, C., OLIVEIRA JR., S. Optimizing the power hub in multi-platform offshore oil and gas production. 33th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2020, Osaka, Japan, June 29th – July 3rd, 2020.
25. OROZCO LOAIZA, C., VELASQUEZ, H.I., CANO, N. A., FLÓREZ-ORREGO, D., Exergy analysis of alluvial gold mining process. 33rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2020, Osaka, Japan, June 29th – July 3rd, 2020.
26. FLÓREZ-ORREGO, D., FREIRE, R., SILVA, J.A.M., ALBUQUERQUE, C., OLIVEIRA JR., Optimal design of power hubs for offshore petroleum platforms using a systematic framework. 6th International

Conference on Contemporary Problems of Thermal Engineering - CPOTE 2020, Krakow, Poland, 21st-24th September, 2020.

27. SILVA ORTIZ, P., FLOREZ ORREGO, D., PINTO MARIANO, A., KAFAROV, V., OLIVEIRA JR., MACIEL FILHO, R. Exergy assessment of renewable electricity from sugarcane straw for improved energy integration of sugarcane biorefineries. 6th International Conference on Contemporary Problems of Thermal Engineering - CPOTE 2020, Krakow, Poland, 21st-24th September, 2020.
28. FLÓREZ-ORREGO, D., LOURENÇO, L. F., LEMES, F., FREIRE, R., SILVA, J.A.M, ALBUQUERQUE NETO, C., ZIMMERMANN SILVA, V., MARTHA DE SOUZA, G., MONARO, R., SALLES, M., OLIVEIRA JR., S., Offshore power generation for FPSOs in different scenarios of carbon taxation. Rio Oil & Gas Conference, Rio de Janeiro, Brazil, 30th November – 3rd December, 2020.
29. TELINI, R., FLOREZ-ORREGO, D., OLIVEIRA JR., S., Exergoeconomic analysis of ammonia production from residual bagasse gasification, 18th Brazilian Congress of Thermal Sciences and Engineering – ENCIT 2020, Online, November 16th -20th, 2020. Brazilian Society of Mechanical Engineering and Sciences – ABCM, Universidade Federal do Rio Grande do Sul.
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- Co-supervision of MSc dissertation. Heat transfer modeling and waste heat management in the furnaces of secondary aluminium production. École Polytechnique Fédérale de Lausanne, Switzerland ; Novelis Switzerland ; Politécnico de Milano, Italy, Candidate : Mohammed Andayesh, Supervisors : Daniel Florez-Orrego, Manuele Gatti. August 2024.
- Co-supervision of semester project. Waste heat recovery potential from enhanced cooling of hot aluminium coils. École Polytechnique Fédérale de Lausanne, Switzerland ; Novelis Switzerland, Candidate : Nour Boulos. January 2024.
- Co-supervision of MSc dissertation. Biomass gasification process as an alternative pathway to decarbonize the aluminium production industry. École Polytechnique Fédérale de Lausanne, Switzerland ; Novelis Switzerland, Candidate : Lorenzo Aimone. July 2023.
- Co-supervision of semester project. Study of the potential reduction of the carbon footprint of Hermes leather production, École Polytechnique Fédérale de Lausanne, Suiza ; Hermes Luxury goods company, Candidate : Tsingos Vassilis, July 2023.
- Co-supervision of MSc dissertation. Data-Driven Systematic Methodology for the Prediction of Optimal Heat Pump Temperature Levels and Refrigerants in Process Integration, École Polytechnique Fédérale de Lausanne, Switzerland and UK Leuven, Belgium ; Candidate : Lander Cortvriendt. August 2024.

- Co-supervision of MSc dissertation. Donzé-Baume (Richemont) site energy efficiency and process integration, École Polytechnique Fédérale de Lausanne, Switzerland ; Richemont Switzerland, Candidate : Arthur Ardelea. January 2024.
- Co-supervision of master project. Waste heat recovery potential from enhanced cooling of hot aluminium coils. École Polytechnique Fédérale de Lausanne, Switzerland ; Novelis Switzerland, Candidate : Nour Boulos. July 2024.
- Co-supervision of semester project. Energy integration of an aluminium casting house for reduced fuel consumption and combined heat and power production. École Polytechnique Fédérale de Lausanne, Switzerland ; Novelis Switzerland, Candidate : Eren Ozdemir. July 2024.
- Co-supervision of PhD thesis : LDC company decarbonization strategies. École Polytechnique Fédérale de Lausanne, Switzerland ; Loius Dreyfus Switzerland, Candidate : Vibhu Baibhav. March 2024 - present.

Hobbies

Biking, Swimming and Hiking. Literature and Science communication. Music (as much as possible) and Theater.