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Other significant output

Currently, I am a project collaborator in the *International Energy Agency* (IEA) as a member of Chapter Brazil (Task 39). The main objective of this collaboration is to develop and implement a methodology to evaluate biofuels production in developing countries. I am also collaborating in research with academic institutions focused on exergetic, technical-economic and environmental assessment of bioenergy/low carbon systems (*acting as an energy consultant*). Listed below are some of the output/roles responsible obtained from my participation on collaborations and associations¹ in for research groups/institutes in Brazil and abroad.

BOX 1 | Significant output s in the energy sector

- At least six years' experience in applied techno-economic analysis of large-scale energy models.
- A good understanding of the energy sector (production of energy, transformation, end-uses, energy policy priorities and challenges).
- Responsible for drafting reports and/or individual chapters of reports with input from modelers/analysts and technical experts in a way that key messages are accessible to a non-expert audience and policy-makers.
- Participate in meetings of IEA standing committees; participate in relevant meetings of the Life Cycle Initiative; provide support for the development of reports and sectoral analyses.
- Maintain contacts with members of national delegations, other international organisations, representatives of industry, and other institutions involved in energy market assessments (*actively networking participation focus on energy transition and bioenergy*).

Additionally, I have participated as an evaluator/reviewer of academic papers submitted to international congresses: i). *Participation in the poster evaluation committee submitted to the BBEST 2017 congress* (Campos do Jordão-SP, Brazil); ii). *Review of papers (Peer Review Process) submitted to the EUBCE 2019 event* (Copenhagen, Denmark); iii). *Review of papers (Peer Review Process) submitted to the SDEWES 2020 event* (Cologne, Germany).

¹ Member of the *Life Cycle Initiative*: Since 2020 collaborating in LCA and circular economy; Member of the *International Energy Agency* (IEA), Chapter Brazil: Since 2019 working in the analysis of biofuels production and use in non-IEA countries/emerging economies; *International Association for Energy Economics* (IAEE), Brazilian Group: Participation in the Future of Energy: Global Challenges, Diverse Solutions - A Latin America Perspective meeting and Member of the Renewable Energy Systems group (2009-2011).

BOX 2 | *Presentations at International conferences (last 5 years)*

- ✓ Análisis de inventarios del ciclo de vida en la producción de biocombustibles avanzados en economías emergentes. *IV Congreso Nacional sobre Cambio Climático. Sistema Guatemalteco de Ciencias sobre el Cambio Climático* (SGCCC), 03 de agosto de 2021, Guatemala (*invited speaker*).
- ✓ *BIOENERGY: Challenges and Opportunities*. Facultad de Ciencias Químicas. Departamento de Biotecnología, Universidad Autónoma de Coahuila. 3er Ciclo de Conferencias de Biotecnología, Bioenergía y Bioproductos (Virtual event). 29 de octubre de 2020, Mexico (*invited speaker*).
- ✓ EXERGY EFFICIENCY OF MARINE BIOFUEL PRODUCTION FROM RESIDUAL LIGNOCELLULOSIC BIOMASS USING THERMOCHEMICAL CONVERSION TECHNOLOGIES. *15TH Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES 2020*. September 1-5, Cologne – Germany (*Virtual event*).
- ✓ COMPARATIVE TECHNO-ECONOMIC AND EXERGETIC ANALYSIS OF GASIFICATION TECHNOLOGIES. *15TH Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES 2020*. September 1-5, Cologne – Germany (*Virtual event*).
- ✓ 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*. October 1-6, Dubrovnik – Croatia.
- ✓ EXERGY-BASED PERFORMANCE ANALYSIS FOR BIOJET FUEL PATHWAYS IN BRAZIL. *33rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems - ECOS 2019*. June 23-28, Wrocław, Poland.
- ✓ EXERGY ASSESSMENT AND TECHNO-ECONOMIC OPTIMIZATION OF BIOETHANOL PRODUCTION ROUTES. *33rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems - ECOS 2019*. June 23-28, Wrocław, Poland.
- ✓ TECHNO-ECONOMIC ANALYSIS AND EXERGO-ENVIRONMENTAL PERFORMANCE OF FIRST-GENERATION BIOREFINERIES. *III Conferencia Internacional de Biocombustibles*. February 28 – March 1, 2019. Medellín, Colombia.
- ✓ EXERGY ANALYSIS OF THE INTEGRATION OF POWER-TO-GAS SYSTEMS TO BRAZILIAN SUGARCANE BIOREFINERIES: MOVING TOWARDS MAXIMUM ENERGY CONVERSION, MINIMUM WASTE AND ZERO CO₂ EMISSIONS. *26TH European Biomass Conference and Exhibition - EUBCE 2018*, May 14-18, 2018. Copenhagen, Denmark.
- ✓ ANALYSIS OF ENVIRONMENTAL PROCESS PERFORMANCE METRICS OF INTEGRATED FIRST- AND SECOND-GENERATION BIOETHANOL PRODUCTION PLANTS THROUGH BIOCHEMICAL AND THERMOCHEMICAL CONVERSION PATHWAYS. *ECO-BIO 2018 'Team up to accelerate the global bioeconomy'*, March 4-7, 2018. Dublin, Ireland.
- ✓ EXERGETIC, ENVIRONMENTAL AND ECONOMIC ASSESSMENT OF SUGARCANE FIRST-GENERATION BIOREFINERIES. *5TH International Conference Contemporary Problems of Thermal Engineering - CPOTE 2018*, September 18-21, 2018. Gliwice, Poland.
- ✓ HEAT INTEGRATION OF BIOETHANOL PRODUCTION PROCESS: TARGETING THE COST REDUCTION, ENVIRONMENTAL IMPACT AND ENERGY CONSUMPTION. *Brazilian BioEnergy Science and Technology Conference - BBEST 2017*, October 17-19, 2017. Campos do Jordão, Brazil.

Organisation of International conferences.

Since the first years of my professional training, I have participated in and organized events (at *Regional-National and International level*) as given in BOX 3.

BOX 3 | Main organized events

- 2002 - Semana Técnica de Ingeniería en Energía e Ingeniería Mecatrónica. Facultades de Ing. Mecatrónica e Ing. en Energía - UNAB (Bucaramanga, Colombia), *Regional event*.
- 2005 - Tendencias Tecnologías Energéticas. Semana Técnica de Ingeniería en Energía (Bucaramanga, Colombia), *Regional event*.
- 2006 - Seminario Taller sobre Gas Natural Licuado (LNG). ECOPETROL – UNAB (Bucaramanga, Colombia), *International workshop*.
- 2006 - Seminario Taller sobre Campos Maduros (Reservoir Engineering Aspects of Mature Field Development). ECOPETROL – UNAB (Bucaramanga, Colombia), *International workshop*.
- 2007 - Seminario Taller sobre Mantenimiento, Integridad de Equipos y Confiabilidad Operacional –ECOPETROL – UNAB 'La cultura de confiabilidad en la corporación de hoy' (Bucaramanga, Colombia), *International workshop*.
- 2007 - Seminario Taller 'Aspectos Sustantivos para el Aprendizaje Personal e Institucional y su Gestión' ECOPETROL – UNAB (Bucaramanga, Colombia), *International workshop*.
- 2007 - Tercera Jornada Técnica del Programa Ingeniería en Energía 'Energía y Desarrollo Sostenible' (Bucaramanga, Colombia), *Regional event*.
- 2008 - Seminario Taller 'Estrategias, conceptos y tecnología de avanzada para la gestión de proyectos' ECOPETROL – UNAB (Bucaramanga, Colombia), *International workshop*.
- 2012 - 1ER Encuentro Iberoamericano de Programas de Ingeniería Energética. Facultad de Ingenierías Físico-mecánicas (Bucaramanga, Colombia), *International workshop*.

Research expeditions that the experienced researcher has led

SPRINT Call. FAPESP process: 2019/23416-4 (*in progress*)

Currently, I am leading collaborative research (as a researcher associated) focus on the Production of microalgae-based tires under the biorefinery concept involving the techno-economic-environmental assessment of conversion of the microalga *Botryococcus braunii* into 1,3-butadiene. Thus, I am organizing the process meetings and the research expeditions/missions are considered between the institutions involved, FEQ/Unicamp (Brazil) and Universidad de Antioquia, UDEA (Colombia).

Funding received so far

- FAPESP process: 2015/20630-4 (*in progress*)
Researcher associated at the Faculty of Chemical Engineering, FEQ/Unicamp.
Project research: Biorefinery development integrated to a bioethanol sugar cane plant with zero CO₂ emission: routes to convert renewable resources to bio-products and bio-electricity
Thematic project BIOEN/The São Paulo Research Foundation, FAPESP (Brazil).
- SPRINT Call. FAPESP process: 2019/23416-4 (*in progress*)
Researcher associated at the FEQ/Unicamp, Brazil.
Project research: Production of microalgae-based tires: Techno-economic-environmental assessment of conversion of the microalga *Botryococcus braunii* into 1,3-butadiene.
Partner Institution: Universidad de Antioquia, UDEA (Colombia).
- MOBILITY CALL 02-2020. FAEPEX-Unicamp process: 2284/20
Researcher associated at FEQ/Unicamp (*exchange expected in March 2022*)
Project research: The role of natural gas in complementing renewable sources in Brazil during the transition to a zero-carbon energy system: Techno-economic-environmental assessment
Partner Institution: Cardiff University, School of Engineering, Wales (UK).
- Coimbra Group Scholarship Programme for Young Professors and Researchers from Latin American Universities 2021. **Individual fellowship**, 2 months at KU Leuven (*exchange expected in April 2022*). Project research: Process intensification strategies for designing low-emission and energy-efficient separation systems of bioenergy
Partner Institution: Department of Chemical Engineering, KU Leuven (Belgium).

Supervising and mentoring activities

During my Post-doctoral at UNICAMP, I was acting in the Co-supervision of a scientific project (*bachelor in Chemical Engineering*) related to integrating processes between a sugarcane plant and a microalgae biomass production plant aiming to obtain biodiesel and electricity. Title: *Technical-economic and exergetic analysis of the integrated sugar-energy biorefinery and a microalgae biomass production plant*. Student: Murilo dos Santos Gabriel (FEQ/UNICAMP, Brazil) Funding: CNPq (PIBIC/UNICAMP, August 2019-July 2020).

During my doctoral studies at Polytechnic School-USP. I supported/supervised the Scientific Initiation project; Title: “*Study of bioethanol production processes from the enzymatic hydrolysis of sugarcane bagasse*”. Student Araceli Correa Pérez (*Mechanical Engineering, University of São Paulo, Brazil*, June 2015-July 2016).

PEER-REVIEWED PAPERS

- [1] *EXERGY AND ECONOMIC ASSESSMENT OF RENEWABLE ELECTRICITY GENERATION FROM SUGARCANE STRAW FOR IMPROVED EFFICIENCY OF SUGARCANE BIOREFINERIES*
Pablo Silva Ortiz, Daniel Flórez-Orrego, Adriano Pinto Mariano, Vyacheslav Kafarov, Silvio de Oliveira, Rubens Maciel Filho
Int. J. Exergy, Vol. 38, No. 2 (2022), <https://www.inderscienceonline.com/doi/abs/10.1504/IJEX.2022.123606>
- [2] *COMPARATIVE TECHNO-ECONOMIC AND EXERGETIC ANALYSIS OF CIRCULATING AND DUAL BED BIOMASS GASIFICATION SYSTEMS*
Pablo Silva Ortiz, Simon Maier, Ralph-Uwe Dietrich, Adriano Pinto Mariano, Rubens Maciel Filho, John Posada
Front. Chem. Eng. (2021), Open Access. <https://www.frontiersin.org/articles/10.3389/fceng.2021.727068/full>
- [3] *GRAPHICAL ANALYSIS OF PLANT-WIDE HEAT CASCADE FOR INCREASING ENERGY EFFICIENCY IN THE PRODUCTION OF ETHANOL AND SUGAR FROM SUGARCANE*
Jean-Christophe Bonhivers, Pablo Silva Ortiz, Christopher Reddick, Carlos Vaz Rossell, Adriano Pinto Mariano, Rubens Maciel Filho
Process Integr Optim Sustain (2021), Springer. <https://doi.org/10.1007/s41660-020-00149-0>
- [4] *UNIT EXERGY COST AND SPECIFIC CO₂ EMISSIONS OF THE ELECTRICITY GENERATION IN THE NETHERLANDS*
Pablo Silva Ortiz, Daniel Flórez-Orrego, Silvio de Oliveira Jr., Rubens Maciel Filho, Patricia Osseweijer, John Posada
Energy, 118279, 2020. <https://doi.org/10.1016/j.energy.2020.118279>
- [5] *EXERGY ASSESSMENT AND TECHNO-ECONOMIC OPTIMIZATION OF BIOETHANOL PRODUCTION ROUTES*
Pablo Silva Ortiz, François Maréchal, Silvio de Oliveira Jr.
Fuel (279), 118327, November 2020. <https://doi.org/10.1016/j.fuel.2020.118327>
- [6] *MASS AND HEAT INTEGRATION IN ETHANOL PRODUCTION MILLS FOR ENHANCED PROCESS EFFICIENCY AND EXERGY-BASED RENEWABILITY PERFORMANCE*
Pablo Silva Ortiz, Rubens Maciel Filho, John Posada
Processes 7 (10), 670, 2019. <https://doi.org/10.3390/pr7100670>
- [7] *EXERGETIC, ENVIRONMENTAL AND ECONOMIC ASSESSMENT OF SUGARCANE FIRST-GENERATION BIOREFINERIES*
Pablo Silva Ortiz, Daniel Flórez-Orrego, Silvio de Oliveira Junior, François Maréchal, Rubens Maciel Filho
Journal of Power Technologies 99 (2), 2019. <https://papers.itsc.pw.edu.pl/index.php/JPT/article/view/1517>
- [8] *COMPARATIVE PERFORMANCE INDEXES FOR ETHANOL PRODUCTION BASED ON AUTONOMOUS AND ANNEXED SUGARCANE PLANTS*
Pablo Andrés Silva Ortiz, Rubens Maciel Filho
ISBN 978-88-95608- 62-4; ISSN 2283-9216. Chemical Engineering Transactions, Vol. 65, 2018. <https://doi.org/10.3303/CET1865105>
- [9] *COMPARED EXERGY ANALYSIS OF SUGARCANE BAGASSE SEQUENTIAL HYDROLYSIS AND FERMENTATION AND SIMULTANEOUS SACCHARIFICATION AND FERMENTATION*
Pablo A. Silva Ortiz, Silvio de Oliveira Junior
Int. J. Exergy, Vol. 19, No. 4, 2016. <https://doi.org/10.1504/IJEX.2016.075880>
- [10] *EXERGY ANALYSIS OF PRETREATMENT PROCESSES OF BIOETHANOL PRODUCTION BASED ON SUGARCANE BAGASSE*
Pablo A. Silva Ortiz, Silvio de Oliveira Junior
Energy 76, p. 130-138, 2014. <https://doi.org/10.1016/j.energy.2014.04.090>

Conference Papers

- [1] **TECHNO-ECONOMIC AND ENVIRONMENTAL ANALYSIS OF CARBON, CAPTURE AND UTILIZATION OF FERMENTATION CO₂ FROM ETHANOL DISTILLERIES**
Sara Restrepo-Valencia, Pablo Silva Ortiz, Rafael Capaz
16th Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES 2021
October, 2021. Dubrovnik – Croatia (*Virtual conference*)
- [2] **EXERGY ANALYSIS OF MICROALGAE BIODIESEL PRODUCTION INTEGRATED WITH A SUGARCANE ETHANOL PLANT**
Pablo Silva Ortiz, Murilo dos Santos Gabriel, Rubens Maciel Filho, Adriano Pinto Mariano
6th International Conference on Contemporary Problems of Thermal Engineering - CPOTE 2020
September 21-24, 2020. Poland (*Virtual conference*)
- [3] **EXERGY ASSESSMENT OF RENEWABLE ELECTRICITY FROM SUGARCANE STRAW FOR IMPROVED ENERGY INTEGRATION OF SUGARCANE BIOREFINERIES**
Pablo Silva Ortiz, Daniel Flórez-Orrego, Adriano Pinto Mariano, Vyacheslav Kafarov, Sílvia de Oliveira, Rubens Maciel Filho
6th International Conference on Contemporary Problems of Thermal Engineering - CPOTE 2020
September 21-24, 2020. Poland (*Virtual conference*)
- [4] **EXERGY EFFICIENCY OF MARINE BIOFUEL PRODUCTION FROM RESIDUAL LIGNOCELLULOSIC BIOMASS USING THERMOCHEMICAL CONVERSION TECHNOLOGIES**
Pablo Silva Ortiz, Adriano Pinto Mariano, Rubens Maciel Filho, Patricia Osseweijer, John Posada
15th Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES 2020
September 1-5, 2020. Cologne – Germany (*Virtual conference*)
- [5] **COMPARATIVE TECHNO-ECONOMIC AND EXERGETIC ANALYSIS OF GASIFICATION TECHNOLOGIES**
Pablo Silva Ortiz, Simon Maier, Ralph-Uwe Dietrich, Rubens Maciel Filho, John Posada
15th Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES 2020
September 1-5, 2020. Cologne – Germany (*Virtual conference*)
- [6] **EXERGY COST AND SPECIFIC CO₂ EMISSIONS OF THE ELECTRICITY GENERATION IN THE NETHERLANDS**
Pablo Silva Ortiz, Daniel Flórez-Orrego, Sílvia de Oliveira Jr., Rubens Maciel Filho, John Posada
14th Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES 2019
October 1-6, 2019. Dubrovnik – Croatia
- [7] **MULTI-CRITERIA ANALYSIS OF SOFCS PERFORMANCES INTEGRATED IN CIRCULAR BIOPROCESSES**
Arianna Baldinelli, Pablo Silva Ortiz, Rubens Maciel Filho, Giovanni Cinti
14th Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES 2019
October 1-6, 2019. Dubrovnik – Croatia
- [8] **EXERGY-BASED PERFORMANCE ANALYSIS FOR BIOJET FUEL PATHWAYS IN BRAZIL**
Pablo Silva Ortiz, Rubens Maciel Filho, Patricia Osseweijer, John Posada
33rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems - ECOS 2019
June 23-28, 2019. Wrocław, Poland
- [9] **EXERGY ASSESSMENT AND TECHNO-ECONOMIC OPTIMIZATION OF BIOETHANOL PRODUCTION ROUTES**
Pablo A. Silva Ortiz, François Maréchal, Sílvia de Oliveira Jr.
33rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems - ECOS 2019
June 23-28, 2019. Wrocław, Poland
- [10] **EXERGETIC, ENVIRONMENTAL AND ECONOMIC ASSESSMENT OF SUGARCANE FIRST-GENERATION BIOREFINERIES**
Pablo Silva Ortiz, Daniel Flórez-Orrego, Sílvia de Oliveira Junior, François Maréchal, Rubens Maciel Filho
5th International Conference Contemporary Problems of Thermal Engineering - CPOTE 2018
September 18-21, 2018. Gliwice, Poland
- [11] **COMPARED EXERGY ANALYSIS OF SEQUENTIAL ENZYMATIC HYDROLYSIS FERMENTATION AND SIMULTANEOUS SACCHARIFICATION – FERMENTATION OF SUGARCANE BAGASSE**
Pablo A. Silva Ortiz and Sílvia de Oliveira Junior
13th International Conference on Clean Energy - ICCE 2014
June 8-12, 2014. Istanbul, Turkey
- [12] **EXERGY ANALYSIS OF PRETREATMENT PROCESSES OF ETHANOL PRODUCTION BASED ON LIGNOCELLULOSIC BIOMASS**
Pablo A. Silva Ortiz and Sílvia de Oliveira Junior
8th Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES 2013
September 22-27, 2013. Dubrovnik – Croatia
- [13] **COMPARED EXERGY ANALYSIS OF CELLULOSE HYDROLYSIS ROUTES**
Roberto Fiedler Rossi, Pablo A. Silva Ortiz and Sílvia de Oliveira Junior
14th Brazilian Congress of Thermal Sciences and Engineering - ENCIT 2012
November 18-22, 2012. Rio de Janeiro, Brazil
- [14] **EXERGY ANALYSIS OF A SUGARCANE-BASED BIOREFINERY**
Pablo A. Silva Ortiz and Sílvia de Oliveira Junior
5th International Congress on Science and Tech. of Biofuels - CIBSCOL 2012
June 5-8, 2012. Bucaramanga – Colombia
- [15] **TECHNICAL AND ECONOMIC EVALUATION OF IGCC SYSTEMS USING COAL AND PETROLEUM COKE CONSIDERING THE BRAZILIAN SCENARIO**
Pablo A. Silva, Osvaldo J. Venturini, Electo E. Silva
ASME Turbo Expo 2011
June 06 – 10, 2011. Vancouver – Canada

[16] *TECHNICAL COMPARISON BETWEEN IGCC AND NGCC POWER PLANTS*

Pablo A. Silva, Osvaldo J. Venturini, Electo E. Silva
13TH Brazilian Congress of Thermal Sciences and Engineering - ENCIT 2010
December 5-10, 2010. Uberlândia-MG, Brazil

[17] *TECHNICAL ASSESSMENT FOR IGCC SYSTEM USING BRAZILIAN COAL AND PETROLEUM COKE MIXTURE: Environments impacts, challenges, and possibilities to CCS*

Pablo A. Silva, Osvaldo J. Venturini, Electo E. Silva
X International Congress of the Mexican Society of Hydrogen "Renewable Energies" and
IV International Congress of Rational and Efficient Use of energy - CIUREE 2010
September 27 – October 1, 2010. Toluca – Mexico

[18] *ESTUDO DO IMPACTO AMBIENTAL PARA A GERAÇÃO COM CICLO COMBINADO DE GASEIFICAÇÃO INTEGRADA*

Pablo A. Silva, Osvaldo J. Venturini, Electo E. Silva
XVIII Congresso Brasileiro de Engenharia Química- COBEQ 2010
September 19 - 22, 2010. Foz do Iguaçu - Brazil

[19] *AValiação Técnica da Tecnologia de Gaseificação de Biomassa Integrada a Ciclos Combinados Utilizado Bagaço como Combustível*

Pablo A. Silva, Osvaldo J. Venturini, Electo E. Silva, Andrés Pérez Campo
VII Congresso Brasileiro de Planejamento Energético - CBPE 2010
September 8 - 10, 2010. São Paulo - Brazil

[20] *TECHNICAL EVALUATION OF IGCC SYSTEM FOR BRAZILIAN COAL AND PETROLEUM COKE*

Pablo A. Silva, Osvaldo J. Venturini, Electo E. Silva, Maria L. Grillo Reno
23TH International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems - ECOS 2010
June 14 - 17 2010. Lausanne, Switzerland

[21] *THE STATUS AND DEVELOPMENT TRENDS OF IGCC SYSTEMS WITH CAPTURE OF CO₂*

Pablo A. Silva, Osvaldo J. Venturini, Electo E. Silva
8TH National and 3RD International Conference of Science and Technology of Coal and Alternative Fuels
November 12 - 14, 2009. Bogota, Colombia

[22] *ESTADO-DA-ARTE DA TECNOLOGIA IGCC PARA A UTILIZAÇÃO DE COQUE DE PETRÓLEO E CARVÃO MINERAL*

Pablo A. Silva, Osvaldo J. Venturini, Electo E. Silva
8TH Latin-American Congress on Electricity Generation and Transmission - CLAGTEE 2009
October 18 - 22, 2009. Ubatuba, Brazil

Conference Presentations (posters/abstracts)

[1] *TECHNO-ECONOMIC ANALYSIS AND EXERGO-ENVIRONMENTAL PERFORMANCE OF INTEGRATED FIRST- AND SECOND-GENERATION BIOETHANOL PRODUCTION PLANTS THROUGH BIOCHEMICAL AND THERMOCHEMICAL CONVERSION PATHWAYS*

Pablo Andrés Silva Ortiz, Adriano Pinto Mariano and Rubens Maciel Filho
Symposium on Biotechnology for Fuels and Chemicals - SBFC 2019
April 28 - May 1, 2019. Seattle, USA

[2] *TECHNO-ECONOMIC ANALYSIS AND EXERGO-ENVIRONMENTAL PERFORMANCE OF FIRST-GENERATION BIOREFINERIES*

Pablo Andrés Silva Ortiz and Rubens Maciel Filho
III Conferencia Internacional de Biocombustibles
February 28 – March 1, 2019. Medellín, Colombia

[3] *EXERGY ANALYSIS OF THE INTEGRATION OF POWER-TO-GAS SYSTEMS TO BRAZILIAN SUGARCANE BIOREFINERIES: MOVING TOWARDS MAXIMUM ENERGY CONVERSION, MINIMUM WASTE AND ZERO CO₂ EMISSIONS*

Pablo Andrés Silva Ortiz, Larissa de Souza Noel Simas Barbosa, Emeli Hytonen, Pasi Vainikka, John Posada and Rubens Maciel Filho
26TH European Biomass Conference and Exhibition - EUBCE 2018
May 14-18, 2018. Copenhagen, Denmark

[4] *ANALYSIS OF ENVIRONMENTAL PROCESS PERFORMANCE METRICS OF INTEGRATED FIRST- AND SECOND-GENERATION BIOETHANOL PRODUCTION PLANTS THROUGH BIOCHEMICAL AND THERMOCHEMICAL CONVERSION PATHWAYS*

Pablo Andrés Silva Ortiz, John Posada Duque, Rubens Maciel Filho, Patricia Osseweijer
ECO-BIO 2018 'Team up to accelerate the global bioeconomy'
March 4-7, 2018. Dublin, Ireland

[5] *HEAT INTEGRATION OF BIOETHANOL PRODUCTION PROCESS: TARGETING THE COST REDUCTION, ENVIRONMENTAL IMPACT AND ENERGY CONSUMPTION*

Pablo Andrés Silva Ortiz and Rubens Maciel Filho
Brazilian BioEnergy Science and Technology Conference - BBEST 2017
October 17-19, 2017. Campos do Jordão, Brazil

[6] *TECHNO-ECONOMIC AND ENVIRONMENTAL ASSESSMENT OF BIOREFINERY TECHNOLOGIES*

Pablo Andrés Silva Ortiz, Silvio de Oliveira Junior, Rubens Maciel Filho
2nd International Bioeconomy Congress. September 12-13, 2017. University of Hohenheim, Stuttgart, Germany

[7] *EXERGY ANALYSIS OF THE THERMOCHEMICAL AND BIOCHEMICAL PATHWAYS FOR BIOETHANOL PRODUCTION*

Pablo A. Silva Ortiz and Silvio de Oliveira Junior
JFREIA-J Fundam Renewable Energy Appl. Vol. 5, No. 5, 2015 .International Congress and Expo on Biofuels & Bioenergy
August 25-27 2015. Valencia, Spain

[8] *EXERGY ANALYSIS OF THERMOCHEMICAL ROUTE OF BIOETHANOL PRODUCTION VIA SUGARCANE BAGASSE GASIFICATION*

Pablo A. Silva Ortiz and Silvio de Oliveira Junior
Second Brazilian Bioenergy Science and Technology Conference – BBEST 2014
October 20-24, 2014. Campos do Jordão, Brazil