

CONTACT

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APPOINTMENTS

Full Professor (with tenure) <i>Craft & Hawkins Department of Petroleum Engineering</i> <i>Louisiana State University (LSU), United States</i>	2025-present
Full Professor (with tenure) <i>Department of Mechanical Engineering</i> <i>Federal University of Santa Catarina (UFSC), Brazil</i>	2023-2024
Associate Professor (with tenure) (position equivalent to) <i>Department of Mechanical Engineering</i> <i>Federal University of Santa Catarina (UFSC), Brazil</i>	2009-2023
Assistant Professor (position equivalent to) <i>Department of Mechanical Engineering</i> <i>Federal University of Santa Catarina (UFSC), Brazil</i>	2004-2008
Postdoctoral Fellow <i>Department of Mechanical Engineering</i> <i>Federal University of Santa Catarina (UFSC), Brazil</i>	2001-2004

EDUCATION

PhD Chemical Engineering <i>Imperial College London</i> “Phase Change of Single Component Fluids and Mixtures in Annular Flow” Advisor: G. F. Hewitt, FRS, FREng	1997-2001
MSc Mechanical Engineering <i>Federal University of Rio de Janeiro</i> “Electro-resistivity Sensors Applied to Bubble Plumes” (in Portuguese) Advisor: A. P. Silva Freire	1995-1997
BS Mechanical Engineering <i>Federal University of Rio de Janeiro</i>	1991-1995

ACADEMIC INTERESTS

- Energy Storage, CO₂ Transport, Wellbore Integrity (Thermo-structural Analysis)
- Multiphase, Multicomponent Transport in Pipelines and Wells
- Thermodynamics, Refrigeration, Emerging Cooling Technologies, Magnetic Cooling
- Phase Change, Heat and Mass Transfer, Process Heat Transfer, Heat Transfer Enhancement

HONORS AND AWARDS

Academic Awards and Recognition

- 2025 - World's Top 2% Scientists' List - Stanford University ([Career List - Elsevier](#))
- 2024 - World's Top 2% Scientists' List - Stanford University ([Career List - Elsevier](#))
- 2023 - World's Top 2% Scientists' List - Stanford University ([Career List - Elsevier](#))
- 2023 - Petrobras Inventor Prize (Petrobras, Brazil)
- 2022 - Faculty honored at the Commencement Ceremony (Mechanical Engineering 2022.1) - UFSC
- 2022 - Faculty honored at the Commencement Ceremony (Mechanical Engineering 2021.2) - UFSC
- 2021 - Brazilian National Research Council (CNPq) Productivity Scholar - Level 1A
- 2020 - Faculty honored at the Commencement Ceremony (Mechanical Engineering 2019.2) - UFSC
- 2017/2018 - Fulbright Visiting Scholar - School of Mechanical, Industrial and Manufacturing Engineering, Oregon State University, USA.
- 2017 - Faculty honored at the Commencement Ceremony (Mechanical Engineering 2017.1) - UFSC
- 2014 - Faculty honored at the Commencement Ceremony (Mechanical Engineering 2013.2) - UFSC
- 2013 - Brazilian National Research Council (CNPq) Productivity Scholar - Level 1B
- 2012 - Faculty honored at the Commencement Ceremony (Mechanical Engineering 2012.1) - UFSC
- 2011 - Brazilian National Research Council (CNPq) Productivity Scholar - Level 1D
- 2011 - Faculty honored at the Commencement Ceremony (Mechanical Engineering 2010.2) - UFSC
- 2007 - Brazilian National Research Council (CNPq) Productivity Scholar - Level 2
- 2004 - Young Scientist Award - [European Committee for the Advancement of Thermal Sciences and Heat Transfer \(EUROTHERM Committee\)](#)
- 2001 - Dudley Newitt Prize (Ph.D. thesis of exceptional merit) - Imperial College London, UK
- 2001, 2000 - International Travel Grant - Royal Academy of Engineering, UK
- 2000 - Richardson Travel Award - Society of Chemical Industry (SCI), UK
- 2000, 1999, 1998 - ORS Award - Committee of Vice-Chancellors and Principals of the UK

Co-Authorship of Prized Publications

- 2023 - Metalinox Cogne Hydrogen Prize — Best paper at the 3rd Brazilian Congress on Hydrogen (with Guilherme Peixer, Jhonatta Casagrande, Tamayo Dias, Yogan Sganzerla, and Jaime Lozano)
- 2021 - [Best Pre-Recorded Presentation. 9th Int. Conf. on Caloric Cooling and Applications of Caloric Materials \(THERMAG IX\)](#), U. of Maryland, MD, USA (online) (with Fábio Fortkamp, Luís Cattelan, Guilherme Peixer and Jaime Lozano)
- 2015 - 3rd Place, Best Poster Award. 9th Int. Conf. on Boiling and Condensation Heat Transfer, Boulder, CO, USA (with Julio Ferreira and Daniel Hense)
- 2013 - 1st Place, Best Paper Award. Brazilian National Congress of Mechanical Engineering Students (with Thiago Ebel and Rodrigo Pizarro-Recabarren)
- 2010 - 2nd Place, Best Student Paper Award Competition. 20th International Compressor and Engineering Conference, Purdue University, USA (with Moisés A. Marcelino Neto)
- 1999 - HTFS Prize, Best Paper at the 6th UK Conference on Heat Transfer, Edinburgh, UK (with Geoff Hewitt)

Prizes and Awards by Supervised Students

- 2026 - ABCM/Springer Prize - Best Ph.D. thesis (Student: Guilherme Fidelis Peixer), Brazilian Society Mechanical Engineering, Brazil

- 2024 - ABCM Prize - Best B.Sc. thesis (Student: Pedro Miola Silva), Brazilian Society Mechanical Engineering, Brazil
- 2024 - ABCM Prize - Mention of Honor M.Sc. thesis (Student: Luiz Henrique Silva Junior), Brazilian Society Mechanical Engineering, Brazil (Main Advisor: Prof. A. Kupka da Silva).
- 2023 - ABCM/Embraer Prize - Mention of Honor B.Sc. thesis (Student: Maria Claudia Régio e Silva), Brazilian Society Mechanical Engineering, Brazil
- 2022 - ABCM/Embraer Prize - Mention of Honor B.Sc. thesis (Student: Natália Maleski de Sá), Brazilian Society Mechanical Engineering, Brazil
- 2021 - ABCM/Embraer Prize - Best B.Sc. thesis (Student: Diego dos Santos), Brazilian Society Mechanical Engineering, Brazil
- 2021 - [SPE Student Contest, Brazil Chapter - 2nd Place Master's thesis category](#) (Student: Eduardo B.D.M. Alves), Society of Petroleum Engineers
- 2019 - ABCM/Embraer Prize - Mention of Honor B.Sc. thesis (Student: Sergio Dutra), Brazilian Society Mechanical Engineering, Brazil
- 2017 - CAPES Prize - Mention of Honor (Engenharias III) Student: Pablo Adamoglu de Oliveira.
- 2016 - CAPES Prize (Engenharias III) Student: Jaime Andres Lozano Cadena
- 2016 - ABCM/Embraer Prize - Best Ph.D. thesis (Student: Paulo V. Trevizoli), Brazilian Society Mechanical Engineering, Brazil
- 2014 - ABCM/Embraer Prize - Best M.Sc. thesis (Student: Pedro M. de Oliveira), Brazilian Society Mechanical Engineering, Brazil
- 2012 - CAPES Prize - Mention of Honor (Engenharias III) Student: Moisés Alves Marcelino Neto.
- 2011 - ABCM/Embraer Prize - Mention of Honor M.Sc. thesis (Student: Bruno F. Pussoli), Brazilian Society Mechanical Engineering, Brazil
- 2009 - ABCM/Embraer Prize - Best M.Sc. thesis (Student: Paulo J. Waltrich), Brazilian Society Mechanical Engineering, Brazil

SYNERGISTIC ACTIVITIES

- 2026 - Chair of Faculty Search Committee. Tenure Track, Assistant Professor, Craft & Hawkins Department of Petroleum Engineering, LSU.
- 2025/ - Journal Development Editor - [Applied Thermal Engineering](#) (Elsevier).
- 2025/ - LSU Society of Petroleum Engineers (SPE) Student Chapter Faculty Advisor.
- 2023/ - Member of the International Technical Advisory Committee - [12th North American Conference on Multiphase Production, Banff, Canada](#).
- 2021/ - President of the Assembly of World Conferences on Experimental Heat Transfer, Fluid Mechanics, and Thermodynamics.
- 2020/2025 - Subject Editor (Heating, Cooling and Refrigeration) - [Applied Thermal Engineering](#) (Elsevier).
- 2020 - Guest Editor (with Oscar Rodriguez) - [Special Issue of Multiphase Science and Technology](#) (Begell House) - Collection of papers presented at ICMF 2019 (Rio de Janeiro, Brazil).
- 2019/2025 - Editor-in-Chief - [Journal of the Brazilian Society of Mechanical Sciences and Engineering](#) (Springer).
- 2019 - Co-Chair of EVR 2019 (5a Escola de Verão em Refrigeração - 5th Summer School in Refrigeration) - ABCM (Brazilian Society of Mechanical Sciences and Engineering), Florianopolis, February 18-21.
- 2018/onward - Editorial Board Member - [Multiphase Science and Technology](#) (Begell House Inc.).
- 2016/ - Advisory Board Member - [Thermophysics and Aeromechanics](#) (Springer).
- 2019/2024 - Program Coordinator: INCT in Cooling and Thermophysics at the Federal University of Santa Catarina (FAPESC/CNPq)
- 2019/2024 - Program Coordinator: Polo/UFSC EMBRAPII Unit
- 2018 - Guest Editor (with Gherhardt Ribatski) - [Virtual Special Issue of Experimental Thermal and Fluid Science](#) (Elsevier) - Collection of papers presented at ExHFT-9 (Foz do Iguaçu, Brazil).
- 2018/2019 - Co-Chair of the Brazilian-German Frontiers of Science and Technology (BRAGFOST) Meetings - Alexander von Humboldt Foundation/CAPES, Florianopolis (2018)/Munich (2019).

- 2017 - Member of the Evaluation Committee (CA-EM) - Mechanical Engineering - Brazilian National Research Council (CNPq) (2017-2020).
- 2017 - Chairman (with Gherhardt Ribatski): [9th World Conference on Experimental Heat Transfer, Fluid Mechanics and Thermodynamics](#), 11-15 June, Foz do Iguaçu, Brazil.
- 2017 - Member of the 2013-2016 CAPES Evaluation Committee (evaluation of graduate programs in Mechanical, Industrial, Energy, Petroleum and Ocean Engineering), Brazilian Ministry of Education, Brasília, Brazil.
- 2016/ - Member of the Scientific Council [International Center for Heat and Mass Transfer](#).
- 2016/2019 Technical Editor (Fluid Mechanics) - Journal of the Brazilian Society of Mechanical Sciences and Engineering (Springer) - Started July 2016.
- 2016/ - Member of the [THERMAG Conference International Advisory Committee](#) and Co-Editor of the Conference Proceedings - International Institute of Refrigeration
- 2015/ - [Member of the International Scientific Committee](#) - 9th International Conference on Boiling and Condensation Heat Transfer (UC Boulder, CO)
- 2014 - Guest Editor (with Barry Azzopardi) - [International Journal of Multiphase Flow, Vol. 67, Supplement, A Collection of Papers in Honor of Professor G. Hewitt on the Occasion of his 80th Birthday](#)
- 2014 - Member of the Scientific Committee - Multiphase Flow Journeys (Jornada de Escoamentos Multifásicos), Unicamp, Brazil
- 2014/ - Member of the Technical Advisory Committee - Multiphase Production Technology (Cannes) Conference, Cannes, France
- 2013 - Member of the THERMAG VI Conference Advisory Board - International Institute of Refrigeration
- 2013/2021 - [Officer of the World Conferences on Experimental Heat Transfer, Fluid Mechanics, and Thermodynamics](#)
- 2013 - Co-Chair of the UFSC-DTU Workshop “Identifying ways to increase the efficiency of magnetocaloric devices”, Florianópolis, SC, Brazil, April.
- 2013 - Member of the 2010-2012 CAPES Evaluation Committee (evaluation of graduate programs in Mechanical, Industrial, Energy, Petroleum and Ocean Engineering), Brazilian Ministry of Education, Brasília, Brazil.
- 2010 - Co-Chair of the Symposium on Emerging Cooling Technologies 1st Brazilian-German Frontiers of Science and Technology (BRAGFOST) Meeting CAPES - Alexander von Humboldt Foundation, Bento Gonçalves, RS, Brazil, September.
- 2009/2013 - Assembly Member of the World Conferences on Experimental Heat Transfer, Fluid Mechanics, and Thermodynamics
- 2008 - Co-Chair of the 1st Brazilian Meeting on Boiling, Condensation and Multiphase Flow, Florianópolis, SC, Brazil, May.
- 2007 - Textbook translation into Portuguese - Y. Cengel and M.A. Boles, Thermodynamics: An Engineering Approach, 5th Ed., McGraw-Hill (2007).
- 2002 - Co-Chair of the 3rd Spring School of Transition and Turbulence Florianópolis, SC, Brazil, September.
- Peer-reviewer for a number of journals: Applied Mathematical Modelling, Nuclear Engineering and Design, Journal of Chemical and Engineering Data, Journal of Enhanced Heat Transfer, Fluid Phase Equilibria, Chemical Engineering Science, Chemical Engineering Research & Design, The Canadian Journal of Chemical Engineering, Experiments in Fluids, International Journal of Heat and Mass Transfer, Proceedings of the IMechE Part A: Journal of Power and Energy, Experimental Heat Transfer, Heat Transfer Engineering, Multiphase Science and Technology, HVAC & R Research, International Journal of Multiphase Flow, Journal of Heat Transfer, Heat and Mass Transfer, Progress in Nuclear Energy, Journal of Food Engineering, International Journal of Heat and Fluid Flow, International Journal of Refrigeration, Journal of the Brazilian Society of Mechanical Sciences, International Journal of Thermal Sciences, Flow Measurement and Instrumentation, Journal of Thermal Sciences and Engineering Applications, Thermal Science and Engineering Progress, Advances in Mechanical Engineering, Entropy, Asia-Pacific Journal of Chemical Engineering
- Reviewer of research proposals submitted to the Fulbright Commission, Slovenian Research and Innovation Agency (Slovenia), Brazilian National Research Council (CNPq, Brazil), The Danish Council for Strategic Research (Denmark), Agentschap voor Innovatie door Wetenschap en Technologie (Belgium), Comisión Nacional de Investigación Científica y Tecnológica (Chile)

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS

- 2024 - SPE (Society of Petroleum Engineers) Member (3291401)
- 2003 - ABCM (Brazilian Society of Mechanical Sciences and Engineering) Member

INTELLECTUAL PROPERTY

13. M.A.C. de Lima, G.F. Peixer, J.A. Lozano, J.R. Barbosa Jr., “AiMR - Artificial Intelligence for Magnetic Regenerators”, *Brazilian Copyright Registration (software) INPI*, BR 51 2024 001263-0 (2024).
12. P.M. Silva, G.F. Peixer, J.A. Lozano, J.R. Barbosa Jr., “DeepMag - Dynamics of Magnetic Regenerators via Deep Learning”, *Brazilian Copyright Registration (software) INPI*, BR 51 2024 001278-8 (2024).
11. A.T.D. Nakashima, E. Pagnan, G.F. Peixer, J.A. Lozano, J.R. Barbosa Jr., “MagSim - Magnetic Refrigerator Simulator”, *Brazilian Copyright Registration (software) INPI*, BR 51 2024 001273-7 (2024).
10. B.P. Vieira, P.V. de Faria, G.F. Peixer, J.A. Lozano, J.R. Barbosa Jr., “McHARS - Magnetic Regenerator Simulator”, *Brazilian Copyright Registration (software) INPI*, BR 51 2024 001265-6 (2024).
9. G.F. Peixer, A.T.D. Nakashima, J.A. Lozano, J.R. Barbosa Jr., “OptSys - Thermal Systems Optimizer”, *Brazilian Copyright Registration (software) INPI*, BR 51 2024 001274-5 (2024).
8. J.R. Barbosa Jr., F.P. Fortkamp, J.A. Lozano, “nhalbach - Nested Halbach Simulator”, *Brazilian Copyright Registration (software) INPI*, BR 51 2023 003752-4 (2023).
7. J.R. Barbosa Jr., F.P. Fortkamp, J.A. Lozano, L.F.P. Cattelan, “teslamax”, *Brazilian Copyright Registration (software) INPI*, BR 51 2023 003753-4 (2023).
6. L.A. Militão, J.R. Barbosa Jr., A.K. da Silva, C.R. Rambo, D.M. Machado, A.M. de Oliveira, R.A. Peçanha, C.D. Fernandes, M.L. Heldwein, D.A.B. Barbosa, R.R. Moura, A.H. Kasama, “Cooling System for Subsea Power Electronics: Circuit Assembly and Method for Sizing Cooling System for Subsea Power Electronics Assembly (in Portuguese)”, *BR Patent INPI*, BR 10 2022 025731 0 (2022).
5. V. Matvienko, J.R. Barbosa Jr., “HEXON - Heat Exchangers Online”, *Brazilian Copyright Registration (software) INPI*, BR 51 2022 001619-2 (2022).
4. J.A. Lozano, G.F. Peixer, A.M. Lorenzoni, G. Hoffman, M.C. Régio e Silva, S.L. Dutra, M.C. Ribeiro, D. dos Santos, G.M. do Rosário, L.F.P. Cattelan, H.F. Teza, E. Pagnan, F.P. Fortkamp, B.P. Vieira, A.T.D. Nakashima, J.R. Barbosa Jr., “Magnetocaloric Unit (in Portuguese)”, *BR Patent INPI*, BR 10 2021 023316 8 (2021).
3. E. Radovanovic, J.R. Bocca, F.C. Colman, P.V. Trevizoli, S.L. Fávoro Rosa, W.A.S. Conceição, M.R. Coutinho, A.M.G. Carvalho, C.S. Alves, J.R. Barbosa Jr., “Equipment for measuring the compressive mechanocaloric effect (in Portuguese)”, *BR Patent INPI*, BR 20 2021 021907 1 (2021).
2. J.R. Barbosa Jr., P.V. Trevizoli, “REGSIM - Regenerator Simulator”, *Brazilian Copyright Registration (software) INPI*, BR 51 2016 001111-4 (2017).
1. R. Kremer, D.E.B. Lilie, F.A. Ribas Jr., C.J. Deschamps, J.E. Schreiner, J.R. Barbosa Jr., “Cooling system for reciprocating compressors and a reciprocating compressor”, *US Patent*, US20120267075 (2012).

CITATION COUNTS [Google Scholar][Scopus][Web of Science] [Research Gate]

	Google Scholar	Scopus	Web of Science	Research Gate
h-index	40	35	30	36
i10-index	136	—	—	—
Total citations	5952	3991	3326	5022
Research interest	—	—	—	3153

◊: Post-doc; ★: Graduate student; *: Undergraduate student; †: Corresponding author.

Papers currently in review or preparation

12. Y.Ko*, J.R. Barbosa Jr.[†], “Repurposing Oil Wells for Thermal Energy Storage: A Power-to-Heat-to-Power Analysis”. *In preparation for Energy*.
11. R.A. Pizarro-Recabarren, J.C.A. Ferreira[◊], C.J. Deschamps, J.R. Barbosa Jr.[†], “Measuring the dynamic adhesion force between a sphere and a base plate”. *In preparation for the Journal of the Brazilian Society of Mechanical Sciences and Engineering*.
10. J.C. Bordignon, G.F. Peixer, J.R. Barbosa Jr.[†], J.A. Lozano, “Integrated Thermoeconomic Multi-Objective Optimization of Organic Rankine Cycles via Artificial Neural Networks and Genetic Algorithms”. *Submitted to the Journal of the Brazilian Society of Mechanical Sciences and Engineering*.
9. L.A. Militão*, E.E. dos Santos Filho, M.L. Heldwein, J.R. Barbosa Jr.[†], “A Novel Integrated Electrothermal Model for Subsea Power Electronics”. *In preparation for Applied Thermal Engineering*.
8. P.V. de Faria*, B.P. Vieira*, H.F. Teza*, R.S. Sucaria*, J.A. Lozano, J.R. Barbosa Jr.[†], “Effectiveness modeling of triangular microchannel magnetocaloric regenerators considering thermal entrance effects”. *In preparation for Applied Thermal Engineering*.
7. L.G.M de Luca*, F.F. Czubinski, J.R. Barbosa Jr.[†], “Phase equilibrium and volumetric behavior of R-1234yf+POE ISO 68 mixtures”. *In preparation for The Journal of Chemical Thermodynamics*.
6. T. Lex, G.F. Peixer*, J.R. Barbosa Jr., J. A. Lozano, C. Schweigler, “Techno-economic Analysis of an Absorption Heat Transformer for Steam Generation” *In preparation for International Journal of Refrigeration*
5. A.S.M. Vicente, M.V.P. Carneiro, P.V. de Faria, J.R. Barbosa Jr., J.A. Lozano, “Heat Exchanger and Thermal Management System Modeling for Fuel Cell Electric Vehicle Following Brazilian Road Design Guidelines” *Submitted to International Journal of Hydrogen Energy*
4. T. Z. P. A. M. Dias, P. V. de Faria, M. L. R. do Canto, M. V. P. Carneiro, J.R. Barbosa Jr., J.A. Lozano, “Thermal and Electrochemical Characterization of a 500 W Proton Exchange Membrane Water Electrolyzer Under Steady State Conditions” *Submitted to International Journal of Hydrogen Energy*
3. A.B. Falcão, M.V.P. Carneiro, J.R. Barbosa Jr., A.K. da Silva, “Multi-objective techno-economic optimization of source-to-sink CO₂ conditioning and transport reusing decommissioned natural gas infrastructure” *In preparation for Energy*
2. S.S.K. Kundu, J.R. Barbosa Jr., “Multi-objective techno-economic optimization of source-to-sink CO₂ conditioning and transport reusing decommissioned natural gas infrastructure” *In preparation for KeAi*
1. G. F. Peixer, E. B. D. M. Alves, F. Valore, L. F. N. Ferrarezi, C. O. de Souza, J.R. Barbosa Jr., J. A. Lozano, “Assessing the Impact of Uncertainties on Offshore Oil Well Annular Pressure Buildup using Artificial Neural Network Surrogates” *In preparation for KeAi*

Accepted papers

1. R.E.V. Vargas, A.J. Melo Jr., C.J. Munaro, C.B. de Campos Lima, E.T. de Lima Jr., F.M. Barrocas, F.M. Varejão, G.F. Peixer, I.M.N. Oliveira, J.R. Barbosa Jr., J.A. Lozano, J.C.D. de Araújo, J.N.E. Carneiro, L.G.O. Lopes, L.P. de Gouveia, M.A. Fernandes, M.L. Scramignon, P.M. Ciarelli, R. Castello Branco, R.L.A. Pinto “3W Dataset 2.0.0: a realistic and public dataset with rare undesirable real events in oil wells”. *Scientific Data*, in press, <https://doi.org/10.1038/s41597-026-07225-z>.

Published papers

182. J.L.L. de Almeida*, P.M. de Oliveira, T.R. Gessner, J.R. Barbosa Jr.[†], “[Benchmarking commercial multiphase flow simulators for flow assurance in pre-salt offshore facilities](#)”, *Journal of the Brazilian Society of Mechanical Sciences and Engineering* **48**, 460 (2026).

181. G.F. Peixer*, A.M. Lorenzoni, Y.C. Azeredo*, R.S. Sucaria*, P.V. de Faria*, A.T.D. Nakashima[°], C.S. Teixeira, J.R. Barbosa Jr., J.A. Lozano, “[Evaluation of the Thermodynamic Performance Evolution of Three Generations of a Large-Scale Magnetic Refrigerator](#)”, *International Journal of Refrigeration* **187**, 106952 (2026).
180. G.F. Peixer*, A.M. Lorenzoni, P.V. Faria*, D.D.A.C. Reif, A.T.D. Nakashima[°], C.S. Teixeira, J.A. Lozano, J.R. Barbosa Jr.[†], “[From concept to operation: Design strategies, experimental evaluation, and engineering challenges across three generations of a magnetocaloric air conditioner](#)”, *AIP Advances* **16**, 025214 (2026).
179. L.G.M. de Luca*, F.F. Czubinski, J.R. Barbosa Jr.[†], “[Liquid density and bubble-point measurement of R-290+POE ISO 32 mixtures between 283.15 and 343.15 K](#)”, *International Journal of Refrigeration* **182**, 399-408 (2026).
178. D.D.A.C. Reif, A.M. Döring, F.M. Andre, C.M. Poffo, G.F. Peixer, J.A. Lozano, J.R. Barbosa Jr., C.S. Teixeira., “[Influence of the magnetic state in the thermo-structural properties of commercially available La\(Fe,Si,Mn\)₁₃H₂ microparticles applied in magnetic refrigeration prototypes](#)”, *IEEE Transactions on Magnetics* **61**, 1-8 (2025).
177. G.F. Peixer*, M.C.R. Silva*, A.M. Lorenzoni, G. Hoffmann*, D. dos Santos*, G.M. do Rosário*, E. Pagnan*, H.F. Teza*, P.M. Silva*, S.L. Dutra, A.T.D. Nakashima[°], C.S. Teixeira, J.A. Lozano, J.R. Barbosa Jr.[†], “[Energy and Efficiency Breakdown Analysis of a Large-Scale Magnetic Refrigerator](#)”, *Applied Thermal Engineering* **280**, 128157 (2025).
176. M.V.P. Carneiro*, P. Cavicchioli, M.R.P.M. Tavares, D.A. Rolón, D. Oberschmidt, J.R. Barbosa Jr.[†], “[Comparing spray and microchannel as evaporators of a compact refrigeration system for electronics cooling](#)”, *Applied Thermal Engineering* **281**, 128526 (2025).
175. U. Tomc, G.F. Peixer*, C.R.H. Bahl, K.K. Nielsen, J.A. Lozano, J.R. Barbosa Jr., A. Kitanovski, “[The Influence of Layering and Curie Temperature Uncertainty on the Performance of Multilayer Active Magnetic Regenerators](#)”, *Advanced Functional Materials* , e24282 (2025).
174. G.B. Dutra, E.V. Ferreira, C.E.B. Corrêa, K.V. de Paiva, E.B.D.M. Alves, M.B. da Cunha, J.R. Barbosa Jr., “[hermal Evaluation of 3D-Printed Triply Periodic Minimal Surface compact heat exchanger using hexagonal boron nitride photopolymeric composite](#)”, *Polymer Composites* **0**, 1-11 (2025).
173. G.F. Peixer*, J. A. Lozano, J.R. Barbosa Jr.[†], “[AI-Driven Monte Carlo Uncertainty Analysis of Curie Temperature Effects on Active Magnetic Regenerator Performance](#)”, *International Journal of Refrigeration* **180**, 518-527 (2025).
172. M.V.P. Carneiro*, J.R. Barbosa Jr.[†], “[Effect of an internal heat exchanger on the performance of a compact refrigeration system with a spray evaporator for high heat flux thermal management](#)”, *Applied Thermal Engineering* **279B**, 127507 (2025).
171. L.A. Militão*, C.D. Fernandes*, M.L. Heldwein, J.R. Barbosa Jr.[†], “[Thermal Performance Evaluation of a Novel Subsea Enclosure Geometry](#)”, *Journal of the Brazilian Society of Mechanical Sciences and Engineering* **47**, 324 (2025).
170. M.V.P. Carneiro*, J.R. Barbosa Jr.[†], “[Comparing the performances of R-134a, R-1234yf and R-600a in a compact spray refrigeration system for electronics cooling](#)”, *International Journal of Refrigeration* **175**, 400-411 (2025).
169. L. Castro-Anaya, E. Marese, J.A. Lozano, G.F. Peixer, J.R. Barbosa Jr., S.Y. Gomez-Gonzalez, “[Machine Learning Methodologies Applied to Magnetocaloric Perovskites Discovery](#)”, *Journal of Chemical Information and Modeling* **65**, 1812-1825 (2025).
168. J.R. Bocca, M.A.Y. Moia, F.C. Colman, G.H. Giudai, W. Imamura, E.I. Usuda, G. Fornazaro, L.W. Aguiar, W.A.S. Conceição, M.R. Coutinho, S.L. Favaro, C.S. Alves, A.M.G. Carvalho, P.V. Trevizoli, J.R. Barbosa Jr., R.C.C. Simões, E. Radovanovic, “[Device for direct barocaloric measurement](#)”, *International Journal of Thermophysics* **46**, 38 (2025).
167. M.A.S. Timmermann*, J.C.A. Ferreira[°], J.R. Barbosa Jr.[†], “[Air-side heat transfer and pressure drop in parallel-plate evaporators. Part II: Frost formation and pressure drop](#)”, *Heat Transfer Engineering* **46(2)**, 132-146 (2025).
166. M.A.S. Timmermann*, J.C.A. Ferreira[°], J.R. Barbosa Jr.[†], “[Air-side heat transfer and pressure drop in parallel-plate evaporators. Part I: Sensible heat transfer](#)”, *Heat Transfer Engineering* **46(2)**, 117-131 (2025).

165. M.S. de Oliveira, G.F. Peixer, M.A. Rosa, F.A. Forcellini, J.R. Barbosa Jr., J.A. Lozano, “Value deployment in set-based design: Design space propagation to integrate manufacturing in the narrowing-down process”, *Systems Engineering* **28**, 175–189 (2025).
164. H.F. Teza*, B.P. Vieira*, P.V. de Faria*, G. Hoffmann*, J.A. Lozano, J.R. Barbosa Jr.[†], “Experimental Assessment of a Packed-Sphere La-Fe-Si Active Magnetic Regenerator”, *International Journal of Refrigeration* **168**, 537-551 (2024).
163. R.A. Pizarro-Recabarren, J.C.A. Ferreira[°], J.R. Barbosa Jr.[†], “Experimental determination of gas-liquid interfacial tension of R-134a+POE ISO 10 mixtures using the maximum bubble pressure method”, *Journal of the Brazilian Society of Mechanical Sciences and Engineering* **46**, 642 (2024).
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1. T.R. Gessner, J.R. Barbosa Jr., “[Integrated Modeling of Reservoir Fluid Properties and Multiphase Flow in Offshore Production Systems](#)”, Springer, ISBN 978-3-031-39849-0, 302 p. (2023).

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5. P.V. Trevizoli, J.R. Barbosa Jr., “[Overview on Magnetic Refrigeration](#)”, In: *Reference Module in Materials Science and Materials Engineering*. 1.Ed., 231 (2020).
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1. J.R. Barbosa Jr., G.F. Hewitt, S.M. Richardson and G. Saville, “Comparison of Prediction Methods for Choked Two-Phase Flow (Annex G)”, In: S.F. Schuyleman (Org.) *Guidelines for the Safe and Optimum Design of Hydrocarbon Pressure Relief and Blowdown Systems*, The Institute of Petroleum, London, UK, p. 143-152 (2001).

SEMINARS AND INVITED LECTURERS

- 2026 - “Repurposing of Legacy Oil and Gas Infrastructure for the Energy Transition: A New Frontier in Wellbore Heat Transfer Modeling”, 11th World Congress on Momentum, Heat and Mass Transfer, Paris, France, April 14-16.
- 2025 - “Comparing and Combining Microchannel and Spray Cooling Schemes in Innovative Vapor-Compression Strategies for High Heat Flux Thermal Management”, 11th World Conference on Experimental Heat Transfer, Fluid Mechanics and Thermodynamics (ExHFT-11), Beijing, China, August 15-18.
- 2024 - “Cooling Technologies at Polo-UFSC”, Carnot Anniversary Session during the 2024 Herrick Conferences at Purdue University, West Lafayette, IN, July 17.
- 2024 - “Recent Developments in Near Room-Temperature Magnetic Refrigeration”, Scientific Colloquium of the SFB/TRR 270 at TU Darmstadt and U Duisburg-Essen, June 18.
- 2024 - “Advancements in the Development of Magnetic Refrigerators Operating at Near Room Temperature”, *Advanced Soft Magnets and Magnetocaloric Materials Symposium honoring Victorino Franco*, TMS 2024 Annual Meeting and Exhibition, Orlando, FL, March 3-7.
- 2023 - “Thermodynamics and Multiphase Transport in Geonergy Systems”, Louisiana State University, Baton Rouge, LA, September.
- 2023 - “Thermostructural Phenomena in Oil & Gas Wells”, Invited Seminar, Technological Federal University of Paraná, Curitiba, Brazil, 05 September.
- 2023 - “Cooling with Magnets: Developing Near Room-Temperature Magnetic Refrigerators”, Keynote Lecture, 17th International Heat Transfer Conference, Cape Town, South Africa, 14-18 August.
- 2022 - “Developing Near Room-Temperature Magnetic Refrigerators: Lessons Learned and Future Challenges”, Invited Speaker, 2022 Joint European Magnetism Symposia, Warsaw, Poland, 24-29 July.
- 2021 - “Cooling with Magnets: Recent Developments in Magnetic Refrigeration”, Keynote Lecture, 15th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, online, 26-28 July.
- 2021 - “Developing a Magnetocaloric Wine Cooler” Workshop on i-Caloric Effects, online event, March 30-31.
- 2020 - “Cooling with Magnets: Developing a Magnetocaloric Wine Cooler” 18th Brazilian Congress of Thermal Sciences and Engineering (ENCIT2020), Online Conference, Brazil, November 16-20.
- 2020 - “Cooling with Magnets: Recent Developments in Magnetic Refrigeration”, Invited Seminar, J. Mike Walker ’66 Department of Mechanical Engineering, Texas A&M University, College Station, TX, February 24.
- 2017 - “Some Applications of Two-Phase Heat and Mass Transfer in Vapor Compression Cooling Systems”, Invited Seminar, Department of Mechanical Engineering, University of South Florida, Tampa, FL, December 12.

- 2017 - “Recent Developments in Near Room Temperature Magnetic Refrigeration”, Invited Seminar, Florida Polytechnic, Lakeland, FL, December 11.
- 2017 - “Recent Developments in Near Room Temperature Magnetic Refrigeration”, Mechanical Engineering Seminar, Massachusetts Institute of Technology, Boston, MA, November 3.
- 2017 - “Developments in Near Room Temperature Magnetic Refrigeration”, Energy Systems Engineering Seminar, Oregon State University, Cascades Campus, Bend, OR, October 25.
- 2017 - “Some Applications of Two-Phase Heat and Mass Transfer in Vapor Compression Cooling Systems”, Thermal and Fluids Systems Seminar, School of Mechanical, Industrial and Manufacturing Engineering, Oregon State University, Corvallis, OR, October 13.
- 2014 - “Magnetocaloric Refrigeration Research at the INCT in Cooling and Thermophysics” 15th Brazilian Congress of Thermal Sciences and Engineering, Belém, PA, Brazil, November 10-13.
- 2011 - “Recent developments in vapour compression technologies for small scale refrigeration applications”, 9th International Conference on Nanochannels, Microchannels and Minichannels (ASME ICNMM 2011), Edmonton, Canada, June 19-22.
- 2010 - “Modeling of non-equilibrium two-phase flows at high vapor mass fractions”, J. L. “Corky” Frank ’58 Graduate Seminar Series, Department of Petroleum Engineering, Texas A& M University, February 2.
- 2008 - “Experimental and Theoretical Analysis of Refrigerant Absorption in Lubricating Oil”, ASHRAE Annual Meeting, June 21-25, Salt Lake City, USA.
- 2007 - “Termodinâmica, transferência de calor e escoamento de óleos lubrificantes no interior de compressores herméticos”, 19th International Congress of Mechanical Engineering (COBEM 2007), Brasília, DF, 5-9 November.
- 2007 - “Modeling of vapor-liquid flows and phase change at high qualities”, 2nd Annual Multiphase User Roundtable South America, Rio de Janeiro, 14-15 March.
- 2004 - “Two-Phase Non-Equilibrium Models: The Challenge of Improving Phase Change Heat Transfer Prediction”, 10th Brazilian Congress of Thermal Sciences and Engineering, Rio de Janeiro, Brazil.

CONFERENCE PUBLICATIONS

◊: Post-doc; ★: Graduate student; *: Undergraduate student; †: Corresponding author.

Peer-reviewed, full conference papers

230. Y. Ko, J.R. Barbosa Jr., “Thermal Analysis of a Power-to-Heat-to-Power System Using Repurposed Oil Wells for Energy Storage.” Proceedings of the 18th International Heat Transfer Conference - IHTC-18, Rio de Janeiro, Brazil, August 2026, Paper IHTC18-0178.
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221. G. F. Peixer, Y. F. Sganzerla, J. C. Brodignon, J.R. Barbosa Jr., J. A. L. Cadena, “AI-Driven Multiobjective Optimization of Pre-Cooling Systems for Hydrogen Liquefaction.” Proceedings of the 4th Brazilian Hydrogen Conference, November 2025.
220. T. Z. P. A. M. Dias, P. V. de Faria, M. V. P. Carneiro, G. F. Peixer, J.R. Barbosa Jr., J. A. Lozano, “High-Speed Visualization of Hydrogen Bubble Formation on Flat Electrodes: Effects of Current Density in Alkaline Electrolysis.” Proceedings of the 4th Brazilian Hydrogen Conference, November 2025.
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216. A.B. Falcão*, J.R. Barbosa Jr., A.K. da Silva. “Injection Scenario of CO₂-Rich Mixtures.” Proceedings of the 28th International Congress of Mechanical Engineering (COBEM 2025), Curitiba, Paraná, November 9–14, 2025, Paper 2243.
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214. G.M. Luz*, A. Nakashima°, G.F. Peixer*, J.A. Lozano, J.R. Barbosa Jr. “Development of a Thermal Systems Modeling Software for Energy Research Applications.” Proceedings of the 28th International Congress of Mechanical Engineering (COBEM 2025), Curitiba, Paraná, November 9–14, 2025, Paper 2706.
213. M.A. Pereira*, E.B.D.M. Alves*, J.A.L. Cadena, J.R. Barbosa Jr. “Comparative Analysis of Solution Gas-Oil Ratio for Brazilian Reservoirs with Varied CO₂ Concentrations.” Proceedings of the 28th International Congress of Mechanical Engineering (COBEM 2025), Curitiba, Paraná, November 9–14, 2025, Paper 1319.
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16. J.R. Barbosa Jr., G.F. Hewitt "Enhancement of Boiling Heat Transfer at Near-Zero Qualities: A Thermodynamic Non-Equilibrium Slug Flow Model". Proceedings of the 4th European Thermal Sciences Conference, Birmingham, UK, 2004.
15. L.S. Sell*, J.R. Barbosa Jr. "A Simplified Model for the Absorption of Refrigerants by Lubricant Oil". Proceedings of the 10th Brazilian Congress of Thermal Sciences and Engineering (ENCIT 2004), Rio de Janeiro, 2004.
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11. J.R. Barbosa Jr., G.F. Hewitt, S.M. Richardson "Nucleate boiling in climbing films: a flow visualisation study". Proceedings of the 5th World Conference on Experimental Heat Transfer, Fluid Mechanics and Thermodynamics (ExHFT-5), Thessaloniki, 2001.
10. J.R. Barbosa Jr., S.M. Richardson, G.F. Hewitt "Churn flow: Myth, mystery and magic". Proceedings of the 39th European Two-Phase Flow Group Meeting, Aveiro, Portugal, 2001.
9. J.R. Barbosa Jr., V.V. Wadekar, G.F. Hewitt "A review of heat and mass transfer in flow boiling of binary mixtures". Proceedings of Boiling 2000: Phenomena and Emerging Applications Conference, Anchorage, 2000, v. 2, pp. 754-771.
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7. J.R. Barbosa Jr., G.F. Hewitt "A model for forced convective boiling of ternary mixtures". Proceedings of the 6th UK National Heat Transfer Conference, Edinburgh, 1999, pp. 169-174.
6. J.R. Barbosa Jr., G.F. Hewitt "The influence of droplet interchange on forced convective boiling of binary mixtures in annular flow". Proceedings of the HTFS Annual Meeting, Dublin, 1999, pp. 251-264.

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2. J.R. Barbosa Jr., L.J.S. Bradbury, A.P. Silva Freire “On the numerical calculation of bubble plumes, including an experimental investigation of its mean properties”. Proceedings of the SPE/IADC Drilling Conference, 1996, Rio de Janeiro, 1996.
1. J.R. Barbosa Jr., N.C.L. Brum “Heat transfer in annular two-phase flow (in Portuguese)”. Proceedings of the 13th Brazilian Congress of Mechanical Engineering (COBEM 1995), Belo Horizonte, 1995.

FUNDING AND PROJECTS (2003 ONWARD)

At LSU

- LSU Energy Institute - “Repurposing Idle Oil and Gas Wells for Subsurface Thermal Energy Storage”, (US\$ 150,000.00) (2026 - 2028, PI: Jader Barbosa)
- The National Science Foundation and the Louisiana Board of Regents - “Repurposing Legacy Wells for Cold Energy Storage: A Comparative Framework for Resilient Cooling Technologies” - EPSCoR LINK Project - (US\$ 6,000.00) (2026), PI: Jader Barbosa)
- The National Science Foundation and the Louisiana Board of Regents - “Technoeconomic Analysis of Thermal Energy Storage Systems in Legacy Wellbores” - Supervised Undergraduate Research Experience - (US\$ 5,000.00) (2026 - 2027), PI: Jader Barbosa)
- The National Science Foundation and the Louisiana Board of Regents - “Transforming Legacy Wells into High-Temperature Thermal Batteries for Clean Energy Storage” - Supervised Undergraduate Research Experience - (US\$ 5,000.00) (2025 - 2026), PI: Jader Barbosa)

At UFSC

Values in Brazilian Reais and US Dollars (Conversion rate applied at the grant start date)

- Petrobras - “Thermodynamic Characterization of CO₂-Rich Mixtures for CCUS and Hydrocarbon Production. (Caracterização Termodinâmica de Misturas Ricas em CO₂ para CCUS e Produção de Hidrocarbonetos)”, R\$ 4,919,265.26 (US\$ 904,276.70) (2025 - 2027, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 904,276.70** - *As of early 2025, Dr. Barbosa is no longer the PI of this project.*
- Petrobras - “Infrastructure for Thermodynamic Characterization of CO₂-Rich Mixtures for CCUS and Hydrocarbon Production. (Infraestrutura para Caracterização Termodinâmica de Misturas Ricas em CO₂ para CCUS e Produção de Hidrocarbonetos)”, R\$ 1,228,502.66 (US\$ 225,827.69) (2025 - 2026, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 225,827.69** - *As of early 2025, Dr. Barbosa is no longer the PI of this project.*
- Petrobras - “Transient numerical model for predicting pressure increase in confined annuli. (Modelo numérico transiente para predição do aumento de pressão em anular confinado)”, R\$ 1,698,964.71 (US\$ 324,850.01) (03/2023 - 03/2026, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 324,850.01** - *As of early 2025, Dr. Barbosa is no longer the PI of this project.*
- CNPq - Conselho Nacional de Desenvolvimento Científico e Tecnológico - “Thermal management of proton exchange membrane fuel cells (Gerenciamento térmico de células a combustível de membranas trocadoras de prótons)”, R\$ 559,200.00 (US\$ 105,310.00) (12/2022 - 11/2025, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 42,124.30**
- CNPq - Conselho Nacional de Desenvolvimento Científico e Tecnológico - “Development of rare-earth permanent magnetic circuits for thermomagnetic conversion systems (Desenvolvimento de Circuitos Magnéticos à Base de Ímãs Permanentes de Terras-Raras para Aplicações em Sistemas de Conversão Termomagnéticos)”, R\$ 247,500.00 (US\$ 49,039.00) (03/2022 - 02/2025, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 9,807.80**

- Petrobras/EMBRAPII - “Analysis of thermophysical properties of completion and drilling fluids (Análise e adequação de propriedades de fluidos de perfuração e completação)”, **R\$ 3,082,793.18 (US\$ 591,706.94)** (08/2021 - 08/2024, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 591,706.94**
- Petrobras - “Infrastructure for the analysis of thermophysical properties of completion and drilling fluids (Infraestrutura para análise e adequação de propriedades de fluidos de perfuração e completação)”, **R\$ 2,449,682.74 (US\$ 420,907.68)** (09/2021 - 03/2023, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 420,907.68**
- Whirlpool/EMBRAPII - “Innovative solutions for reducing energy consumption in domestic refrigeration systems (Soluções inovadoras para redução do consumo de energia em sistemas domésticos de refrigeração)”, **R\$1,560,000.00 (US\$ 385,185.19)** (12/2019 - 06/2022, PI: C. Hermes 95%, Jader Barbosa 5%) - **Pro-rated amount for JRB: US\$ 19,259.26**
- CNPq - Conselho Nacional de Desenvolvimento Científico e Tecnológico (Brazilian National Research Council) “National Institute of Science and Technology in Cooling and Thermophysics” (404023/2019-3), **R\$ 821,506.46 (US\$ 211,728.98)** (06/2019 - 01/2023, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 211,728.98**
- FAPESC - Fundação de Amparo à Pesquisa e Inovação do Estado de Santa Catarina (Foundation for Research and Innovation Support of the State of Santa Catarina) “National Institute of Science and Technology in Cooling and Thermophysics” (TO 019TR0846), **R\$ 3,371,563.49 (US\$ 822,332.56)** (10/2019 - 01/2023, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 822,332.56**
- NIDEC GA/EMBRAPII - “Studies on new concepts of refrigeration systems for domestic and commercial applications (Estudos sobre novos conceitos de sistemas de refrigeração para aplicações domésticas e comerciais)”, **R\$2,880,000.00 (US\$ 761,904.76)** (03/2019 - 12/2021, PI: C. Hermes 95%, Jader Barbosa 5%) - **Pro-rated amount for JRB: US\$ 38,095.24**
- Codemge/EMBRAPII - “Design of a 9000 BTU/hr. magnetic air conditioner (Desenvolvimento de condicionador de ar operado por unidade de refrigeração magnética)”, **R\$ 6,814,017.93 (US\$ 1,793,162.61)** (11/2018 - 02/2022, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 1,793,162.61**
- Petrobras - “Thermal Phenomena in Oil and Gas Wells - Phase II (Fenômenos térmicos em poços de petróleo e gás II)”, **R\$ 1,952,360.69 (US\$ 478,519.78)** (08/2018 - 02/2022, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 478,519.78**
- Embraco/EMBRAPII - “Innovative refrigeration systems and components for domestic and commercial applications (Sistemas e componentes inovadores de refrigeração para aplicações domésticas e comerciais)”, **R\$1,266,000.00 (US\$ 385,975.61)** (11/2017 - 02/2019, PI: C. Melo 85%, Jader Barbosa 15%) - **Pro-rated amount for JRB: US\$ 57,896.34**
- Embraco/EMBRAPII - “Design and dimensioning of a compact magnetic cooler (Concepção e dimensionamento de um refrigerador magnético compacto)”, **R\$ 624,000.00 (US\$ 195,611.29)** (07/2017 - 02/2020, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 195,611.29**
- Petrobras - “Development of advanced systems for protection and cooling of high-pressure submarine electrical systems (Desenvolvimento de sistemas avançados de proteção e resfriamento de sistemas elétricos submarinos sob alta pressão)”, **R\$ 1,784,478.21 (US\$ 463,500.83)** (03/2016 - 07/2019, PI: C.R. Rambo 50%, Co-PIs: M. Heldwein 30%, Jader Barbosa 20%) - **Pro-rated amount for JRB: US\$ 92,700.16**
- Embraer/EMBRAPII - “Theoretical-experimental analysis of the frost formation process in aircraft windows (Análise teórico-experimental do processo de formação de geada em janelas de aeronaves)”, **R\$ 490,000.00 (US\$ 128,947.36)** (12/2015 - 06/2017, PI: C. Melo 60%, Jader Barbosa 40%) - **Pro-rated amount for JRB: US\$ 51,578.94**
- Embraco/EMBRAPII - “Innovative technologies for refrigeration production in domestic refrigeration systems (Tecnologias inovadoras de produção de frio em sistemas domésticos de refrigeração)”, **R\$2,160,000.00 (US\$ 626,086.96)** (08/2015 - 12/2017, PI: C. Melo 85%, Jader Barbosa 15%) - **Pro-rated amount for JRB: US\$ 93,913.04**
- CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico (Brazilian National Research Council) “Theoretical and Experimental Investigation of Magnetic Refrigeration Systems” (443696/2014-4 Universal 2014), **R\$ 118,920.00 (US\$ 46,445.00)** (PI 12/2014 - 12/2016, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 46,445.00**
- Petrobras - “Thermal Phenomena in Oil and Gas Wells (Fenômenos térmicos em poços de petróleo e gás)”, **R\$ 984,194.40 (US\$ 443,330.81)** (07/2014 - 11/2017, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 443,330.81**

- Petrobras - “Experimental and theoretical characterization of the thermophysical properties of mixtures of oil and CO₂ at High Pressures and High Temperatures (Caracterização teórica e experimental das propriedades termofísicas de misturas de óleo e CO₂ a altas pressões e altas temperaturas)”, **R\$ 2,649,368.40 (US\$ 1,531,426.82)** (02/2012 - 02/2017, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 1,531,426.82**
- Embraco/Whirlpool - “Minimization of the energy consumption in domestic refrigerators (Minimização do consumo de Energia em refrigeradores domésticos)”, **R\$3,600,000.00 (US\$ 2,117,647.06)** (12/2010 - 12/2015, PI: C. Melo 90%, Jader Barbosa 10%) - **Pro-rated amount for JRB: US\$ 211,764.71**
- Embraco/BNDES - “Development of innovative material solutions for manufacturing new types of compressors (Desenvolvimento de soluções inovadoras em materiais para fabricação de novos tipos de compressores)”, **R\$ 7,942,267.08 (US\$ 4,461,947.80)** (07/2010 - 07/2013, PI: A. Klein. This project had several Co-PIs in many departments at UFSC. I, Jader Barbosa, had a 0.5% share) - **Pro-rated amount for JRB: US\$ 22,309.74**
- Whirlpool - “Research and development in components and refrigeration systems (Pesquisa e desenvolvimento em componentes e sistemas de refrigeração)”, **R\$840,000.00 (US\$ 474,576.27)** (01/2010 - 12/2011, PI: C. Melo 85%, Jader Barbosa 15%) - **Pro-rated amount for JRB: US\$ 71,186.44**
- Petrobras - “Mixtures with phase change: Implementation of laboratory infrastructure for experimentation and modeling of thermodynamic and hydrodynamic processes (Misturas com mudança de fase: Implantação de infraestrutura laboratorial para experimentação e modelagem de processos termodinâmicos e hidrodinâmicos)”, **R\$ 2,710,000.00 (US\$ 1,188,596.49)** (11/2008 - 11/2014, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 1,188,596.49**
- Petrobras - “Liquid loading: Reservoir mechanisms, prediction and response, and modeling of two-phase flow in gas wells (Carregamento de líquido: Mecanismos, previsão e resposta do reservatório, e modelagem do escoamento bifásico em poços de gás)”, **R\$ 616,319.60 (US\$ 277,621.44)** (10/2008 - 04/2014, PI: Jader Barbosa) - **Pro-rated amount for JRB: US\$ 277,621.44** - This project was part of a JIP (Joint Industry Project) in connection with Texas A&M University and Imperial College London.
- Embraco/FINEP - “Development of compact cooling and heating systems with minimal global warming impact (Desenvolvimento de sistemas compactos de refrigeração e aquecimento de água com mínimo impacto sobre o efeito estufa)”, **R\$4,117,687.40 (US\$ 1,915,203.44)** (12/2006 - 01/2011, PI: C. Melo 90%, Jader Barbosa 10%) - **Pro-rated amount for JRB: US\$ 191,520.34**
- Embraco/FINEP - “Prospecting Alternative Cooling Technologies (Prospecção de tecnologias não-convencionais de refrigeração)”, **R\$ 585.000,00 (US\$ 272,093.02)** (12/2006 - 12/2010, PIs: A. Prata 50%, Jader Barbosa 50%) - **Pro-rated amount for JRB: US\$ 136,046.51**
- Embraco/FINEP - “High-Performance Heat Exchangers for Compact Refrigeration Systems (Trocadores de calor de alto desempenho para sistemas de refrigeração compactos)”, **R\$ 399.920,00 (US\$ 186,009.30)** (12/2006 - 12/2009, PI: A. Prata 50%, Co-PI: Jader Barbosa 50%) - **Pro-rated amount for JRB: US\$ 93,004.65**
- Whirlpool/FINEP - “Theoretical and Experimental Optimization of the Thermodynamic Performance of Domestic Refrigerators and their Components (Otimização teórico-experimental do desempenho energético de refrigeradores domésticos e seus componentes)”, **R\$ 598.735,00 (US\$ 278,481.39)** (12/2006 - 12/2009, PI: C. Melo 80%, Co-PI: J. Barbosa 20%) - **Pro-rated amount for JRB: US\$ 55,696.28**
- Whirlpool/FINEP - “Theoretical and Experimental Optimization of the Thermodynamic Performance of Domestic Refrigerators and their Components (Desenvolvimento de mecanismos de compressão para aplicação em refrigeração comercial)”, **R\$ 498,920.00 (US\$ 232,055.81)** (03/2006 - 06/2009, PI: A. Prata 80%, Co-PI: J. Barbosa 20%) - **Pro-rated amount for JRB: US\$ 46,411.16**
- Embraco/FINEP - “Development of an extremely high specific capacity compressor for cooling applications (Desenvolvimento de um compressor de extrema capacidade específica para aplicação em refrigeração)”, **R\$ 917,760.00 (US\$ 346,324.53)** (12/2004 - 12/2007, PI: A. Prata 80%, Co-PI: J. Barbosa 20%) - **Pro-rated amount for JRB: US\$ 69,264.90**
- Embraco - “Research and development of compressor components, lubrication and new refrigeration technologies (Pesquisa em componentes de compressores, lubrificação e novas tecnologias de refrigeração)”, **R\$ 801,597.69 (US\$ 301,352.51)** (10/2003 - 03/2005, PI: C. Deschamps 45%, Co-PI: A. Prata 45%, Co-PI: J. Barbosa 10%) - **Pro-rated amount for JRB: US\$ 30,135.25**

Total pro-rated amount for Jader Barbosa (JRB): US\$ 10,788,749.86

CURRENT RESEARCH STUDENTS AT LSU

Doctoral students

1. Subhrajyoti Kundu (Advisor)
2. Felipe Simões Maciel (Co-Advisor, Main Advisor: Paulo Waltrich)
3. Saeed Beheshtian (Co-Advisor, Main Advisor: Yuanhang Chen)

Undergraduate students

1. Younghyun Ko

CURRENT RESEARCH STUDENTS AT UFSC

Doctoral students

1. Eduardo Bader Dalfovo Mohr Alves. Characterization of thermophysical properties of drilling and completion fluids. Expected graduation: 2026.
2. Bernardo Peressoni Vieira. Development of transient models for injection wellbores. Expected graduation: 2026.
3. Michele Fripp Lazzari Schaefer. A thermal-hydraulic model of offshore drilling. (Co-advised with A.K. da Silva). Expected graduation: 2027.
4. Paulo Vitor de Faria. Thermal management of PEMFC fuel cells (Co-advised with J.A. Lozano). Expected graduation: 2027.

GRADUATE STUDENTS SUPERVISED

Post-Doctoral (UFSC)

12. Alan T.D. Nakashima. Thermal and Mechanical Design of an Annular Pressure Buildup Experimental Apparatus (2023-2025). Currently: UFSC.
11. Pedro M. de Oliveira. Flow assurance issues in carbon capture and sequestration (2023-2024). Currently: Assistant Professor at University of São Paulo.
10. Júlio C. A. Ferreira. Overall sensitivity analysis of thermostructural phenomena in offshore wells (2023-2024). Currently: IT Analyst at BTG Pactual, São Paulo.
9. Ianto O. Martins. Thermal and structural phenomena in wellbores (2022-2023). Currently: Assistant Professor at the University of Brasília.
8. Fernando F. Czubinski - Calorimetric and transport properties of mixtures (2019-2022). Currently: Process Engineer at GREEN14, Stockholm, Sweden.
7. Adrián Mota Babiloni - 2019 - Visiting Scholar from Universidad Jaume-I, Spain (2018)
6. Jaime A. Lozano - Design of a compact magnetic refrigerator prototype. Design of magnetic air conditioner (2016-2019). Currently: Assistant Professor at UFSC
5. Henrique Neves Bez - Characterization of first-order magnetic phase transition materials for magnetic refrigeration (2017-2019). RIP.
4. Fábio P. Fortkamp - Fortkamp. Compact magnetic refrigerator (Magnet & AMR) (2019-2020). Currently: Research Engineer at POLO/UFSC
3. Pablo A. de Oliveira - Development of different configurations of two-phase jet impingement heat sinks (2016-2017). Currently: ASML, San Diego, USA
2. Moisés A. Marcelino Neto - Thermophysical properties and phase equilibrium CO₂-oil solutions (2011-2013). Currently: Associate Professor, Technological Federal University of Paraná, Brazil
1. Nicolas R. Ratkovich - Design of a two-phase flow loop (2010). Currently: Professor at Universidad de Los Andes, Colombia

Doctoral Dissertations (UFSC)

23. Adriano M. Hissanaga – Dr.Eng. 2026 “Dynamic Numerical Simulation of Thermally Induced Crystalization Fouling” Currently: Petrobras
22. Guilherme Fidelis Peixer – Dr.Eng. 2025 “Optimization of the Performance of Magnetic Refrigeration Systems Using Artificial Intelligence” Currently: UFSC
21. Luís Gustavo Medeiros de Luca – Dr.Eng. 2025 “Phase Equilibria and Density of Refrigerant-Lubricant Mixtures: R-290+POE ISO 32 and R-1234yf+POE ISO 68 (in Portuguese)” Currently: UFSC
20. Lucas Andrade Militão – Dr.Eng. 2025 “Development of an Integrated Electrothermal Model for Subsea Power Electronics” Currently: UFSC
19. Marcus Vinicius Pedron Carneiro – Dr.Eng. 2024 “Advanced Vapor Compression Cooling Systems with Spray and Microchannel Heat Sinks for Electronics Thermal Management” Currently: UFSC
18. Mayara Silvestre de Oliveira – Dr.Eng. 2023 “Managerial model and process for set-based design” Currently: GE Brazil
17. Alan T. D. Nakashima – Dr.Eng. 2022 “Design of a magnetocaloric refrigeration prototype using a system-modeling approach (in Portuguese)” After graduation/Currently: Post-doc POLO/UFSC
16. Ianto O. Martins – Dr.Eng. 2022 “Transient Modeling of Injection and Production Wellbores: A Study on Annular Pressure Change Prediction and Mitigation” After graduation: Post-doc at POLO/UFSC; Currently: Assistant Professor at University of Brasilia
15. Tobias R. Gessner – Dr.Eng. 2021 “Reservoir Fluid Properties and Multiphase Flow Modelling in Offshore Production Systems” Currently: Petrobras, Brazil
14. Paulo C. Sedrez – Dr.Eng. 2019 “Relative permittivity of mixtures of carbon dioxide and hydrocarbons (n-dodecane and 2,6,10,15,19,23-hexamethyltetracosane)” After graduation/Currently: Brazilian Navy
13. Fernando F. Czubinski – Dr.Eng. 2019 “Phase-equilibrium and dynamic viscosity of gas mixtures at high pressures and liquid mixtures of heavy oils and liquefied gases)” After graduation/Currently: Research Engineer POLO/UFSC
12. Fábio P. Fortkamp – Dr.Eng. 2019 “Integrated design of the magnet-regenerator assembly for a magnetic refrigerator” After graduation: Post-Doc at POLO/UFSC, then Instructor at State University of Santa Catarina; Currently: Research Engineer at POLO/UFSC.
11. Marcus Vinicius D. Ferreira – Dr.Eng. 2017 “Thermal-structural study of wellbores with vacuum insulated tubes” Currently: Petroleum Engineer, Petrobras, Rio de Janeiro, Brazil
10. Camilo A. S. Costa – Dr.Eng. 2016 “A numerical and experimental study of the onset of intermittent gas-liquid flows in a horizontal tube (in Portuguese)” After graduation/Currently: Associate Professor, Federal University of Ceara, Brazil
9. Silvia T. Viana – Dr.Eng. 2016 “Fabrication and thermal analysis of polymer composite heat exchangers (in Portuguese)” After graduation/Currently: Associate Professor, Federal University of Ceara, Brazil
8. Pablo A. de Oliveira – Dr.Eng. 2016 “Development of a two-phase jet heat sink integrated with a compact refrigeration system for electronics cooling” Currently: ASML, San Diego, USA
7. Paulo V. Trevizoli – Dr.Eng. 2015 “Development of thermal regenerators for magnetic cooling applications” Currently: Assistant Professor at Federal University of Minas Gerais, Brazil
6. Guilherme B. Ribeiro – Dr.Eng. 2015 “Analysis of variable capacity air-conditioning systems considering the effect of the oil-refrigerant mixture (in Portuguese)” After graduation/Currently: Assistant Professor at ITA, Sao Jose dos Campos, Brazil
5. Jaime A. Lozano – Dr.Eng. 2015 “Designing a rotary magnetic refrigerator” After graduation: Post-Doc at UFSC, Brazil; Currently: Assistant Professor at UFSC, Brazil

4. Dalton Bertoldi – Dr.Eng. 2014 “Experimental investigation of two-phase flashing flows of a binary mixture in a Venturi tube (in Portuguese)” After graduation: Visiting scholar, UTFPR, Brazil; Currently: Post-Doc at Tulsa University, USA.
3. Rodrigo A. Pizarro Recabarren – Dr.Eng. 2014 “Modeling of oil stiction in compressor valves considering the interfacial phenomena in the oil film (in Portuguese)” After graduation: Electrolux, Chile; Currently:
2. Marcus Vinícius C. Alves – Dr.Eng. 2014 “Numerical Modeling of transient churn-annular flows in vertical pipes and their application in liquid loading in gas wells” After graduation/Currently: Associate Professor, Santa Catarina State University, Brazil
1. Moisés A. Marcelino Neto – Dr.Eng. 2011 “Thermodynamics and absorption phenomena in mixtures of lubricating oil and environmentally friendly refrigerants (in Portuguese)” After graduation/Currently: Associate Professor, Technological Federal University of Paraná, Brazil

Master's Theses (UFSC)

40. Allan de Bastos Falcão – M.Eng. 2026 “CO₂ dynamic simulations and pressurization strategies for CCS applications” (Co-supervisor) After graduation/Currently:
39. Jamille Ludimila Lopes de Almeida – M.Eng. 2025 “Simulation of gas-liquid flows in offshore production systems using commercial software (in Portuguese)” After graduation/Currently:
38. Yogan Felipe Sganzerla – M.Eng. 2024 “Simulation of Hydrogen Liquefaction Cycles: Energy Consumption Reduction with Gas Mixtures (in Portuguese)” After graduation/Currently:
37. Ederson Sandrin – M.Eng. 2023 “Fouling mitigation in thermal processes via geometric optimization (in Portuguese)” (Co-supervisor) After graduation/Currently: D.Eng. student, UFSC.
36. Luiz Henrique Silva Junior – M.Eng. 2023 “Non-intrusive multiphase flow analysis using machine learning” (Co-supervisor) After graduation/Currently: D.Eng. student, UFSC.
35. Paulo Vítor de Faria – M.Eng. 2022 “Thermal-hydraulic and magnetic characterization of triangular microchannel La-Fe-Si active magnetic regenerators (in Portuguese)” After graduation/Currently: D.Eng. student, UFSC.
34. Victor Matvienko – M.Eng. 2022 “Simulation of a cassette-type beverage cooler considering frost formation on the evaporator (in Portuguese)” After graduation/Currently: Self employed
33. Eduardo Bader Dalfovo Mohr Alves – M.Eng. 2021 “Coupled modeling of heat transfer and deformation of salt layers in hydrocarbon producing wells” After graduation/Currently: D.Eng. student, POLO/UFSC
32. André Provensi – M.Eng. 2020 “Spray cooling of microfin surfaces in a compact refrigeration system: Fabrication and experimental evaluation of the thermal performance (in Portuguese)” After graduation/Currently: Brazilian Navy.
31. Guilherme Fidelis Peixer – M.Eng. 2020 “Thermodynamic design of a magnetic cooling system for air conditioning applications” After graduation/Currently: D.Eng. student at POLO/UFSC
30. Bernardo Peressoni Vieira – M.Eng. 2020 “Modeling and optimization of active magnetic regenerators using La-Fe-Si based alloys” After graduation/Currently: D.Eng. student at POLO/UFSC
29. Gislaine Hoffmann – M.Eng. 2020 “Development and experimental evaluation of control strategies for magnetic cooling systems (in Portuguese)” (Co-supervisor) After graduation: Research Engineer, POLO/UFSC; Currently: Petrobras
28. Lucas Andrade Militão – M.Eng. 2019 “A novel concept for a subsea frequency inverter (in Portuguese)” Currently: D.Eng. student, POLO/UFSC
27. Leonardo Casagrande Dalla Vecchia – M.Eng. 2019 “Natural convection heat transfer to nanofluids in a rectangular cavity (in Portuguese)” (Co-supervisor) Currently: Self-Employed
26. Ricardo Schneider Calomeno – M.Eng. 2018 “Mathematical modeling of the cabinet and heat exchangers for a magnetic wine cooler (in Portuguese)” Currently: D.Eng. student, UFSC

25. Julio Cesar Alves Ferreira – M.Eng. 2018 “Quantifying interfacial parameters of upward and downward annular flow condensation from high-speed visualization” After graduation: Ph.D. student, University of Michigan, USA; Currently: Post-Doc at UFSC
24. Marcus Vinicius Pedron Carneiro – M.Eng. 2018 “Flow visualization and heat transfer in a jet impingement heat sink integrated with a compact refrigeration system” After graduation/Currently: D.Eng. student, POLO/UFSC
23. Pedro Oliveira Cardoso – M.Eng. 2018 “An Electrovalve-Based Flow Management System for Active Magnetic Regenerators (in Portuguese)” After graduation/Currently: Self-Employed
22. Johann Goethe Alrutz Barcelos – M.Eng. 2017 “Mathematical Modeling of Annular Pressure Buildup in Petroleum Wells (in Portuguese)” After graduation: PhD student, TU Eindhoven; Currently:
21. Alan Tihiro Dias Nakashima – M.Eng. 2017 “ Experimental and theoretical evaluation of the temporal flow profile on the performance of an active magnetic regenerator (in Portuguese)” After graduation: D.Eng. at UFSC; Currently: Post-Doc at UFSC
20. Paula do Vale Pereira – M.Eng. 2017 “ Experimental and theoretical analysis of the deposition of water vapor on airplane windows (in Portuguese)” After graduation: PhD student, MIT/USA; Currently: Assistant Professor at Florida Institute of Technology, Melbourne, FL
19. Jean E. Cararo – M.Eng. 2016 “ Analysis of multilayer active magnetic regenerators (in Portuguese)” After graduation: D.Eng. at UFSC; Currently:
18. [Marco Aurélio S. Timmermann](#) – M.Eng. 2016 “A study of frost formation in peripheral finned-tube heat exchangers” After graduation/Currently: Military Firefighter, Santa Catarina State, Brazil
17. [Thomas E. Hafemann](#) – M.Eng. 2015 “Modeling of multiphase flow and heat transfer in pre-salt wells to estimate the annular pressure buildup (in Portuguese)” After graduation: PhD student, TU Dresden, Germany; Currently: Research Staff at TU Dresden, Germany
16. Daniel Hense – M.Eng. 2014 “[Experimental evaluation of counter-current flow limitation in the condensation of R-134a in vertical and inclined tubes \(in Portuguese\)](#)” After graduation/Currently: Embraco/Whirlpool
15. [Fábio P. Fortkamp](#) – M.Eng. 2014 “[Experimental and theoretical analysis of foam formation in refrigerant-oil mixtures \(in Portuguese\)](#)” After graduation: D.Eng. at UFSC, then Instructor at UDESC, Joinville, Brazil; Currently: Research Engineer at POLO/UFSC
14. Paulo C. Sedrez – M.Eng. 2014 “[Experimental characterization of dielectric properties of oil-refrigerant mixtures \(in Portuguese\)](#)” After graduation: D.Eng. at UFSC; Currently: Brazilian Navy
13. [Pedro M. De Oliveira](#) – M.Eng. 2013 “On Air-Water Two-Phase Flows in Return Bends” After graduation: Ph.D. student, University of Cambridge, UK; Currently: Post-Doc: UFSC, Brazil
12. Augusto G. Ulson de Souza – M.Eng. 2011 “[Spray cooling of extended surfaces using refrigerants \(in Portuguese\)](#)” After graduation/Currently: Petrobras, Brazil
11. Rodrigo A. Sigwalt – M.Eng. 2010 “[Theoretical and experimental analysis of wire-on-tube condensers under forced convection \(in Portuguese\)](#)” After graduation: Whirlpool Corp.; Currently: Fisher & Paykel Appliances, New Zealand
10. Tobias R. Gessner – M.Eng. 2010 “[Numerical modeling of transient gas-liquid annular flows using the Split-Coefficient Matrix Method \(in Portuguese\)](#)” After graduation/Currently: Petrobras, Brazil
9. [Paulo V. Trevizoli](#) – M.Eng. 2010 “[Experimental analysis of a device for evaluating magnetocaloric materials for refrigeration applications \(in Portuguese\)](#)” After graduation: D.Eng. at UFSC, then Post-Doc at UVic, Canada; Currently: Assistant Professor Federal University of Minas Gerais
8. Bruno F. Pussoli – M.Eng. 2010 “Analysis and optimization of peripheral fin evaporators (in Portuguese)” After graduation/Currently: Metalfrio, Brazil
7. Antônio J. Lückmann – M.Eng. 2010 “[Modeling of spray cooling heat transfer with and without phase change \(in Portuguese\)](#)” After graduation/Currently: Petrobras, Brazil

6. Paulo J. Waltrich – M.Eng. 2008 “[Analysis and optimization of accelerated flow evaporators applied to household refrigeration \(in Portuguese\)](#)” After graduation: Ph.D. student at Texas A&M; Currently: Associate Professor, Louisiana State University, USA
5. João E. Schreiner – M.Eng. 2008 “[Numerical simulation methods applied to the thermal management of a household refrigeration compressor \(in Portuguese\)](#) - Co-supervised with C. Deschamps” After graduation: Embraco Compressors, Brazil, then Secop Compressors, Austria, then Danfoss, Denmark; Currently:
4. [Marcus Vinícius C. Alves](#) – M.Eng. 2007 “[Analysis of the lubricating oil pumping in hermetic compressors \(in Portuguese\)](#)” After graduation: D.Eng. at UFSC; Currently: Associate Professor, Santa Catarina State University, Brazil
3. Rodrigo A. Pizarro Recabarren – M.Eng. 2007 “[Influence of the lubricating oil on the heat transfer in a hermetic reciprocating compressor \(in Portuguese\)](#)” After graduation: D.Eng. at UFSC, then Electrolux, Chile; Currently:
2. Rodrigo Kremer – M.Eng. 2006 “[Experimental and theoretical analysis of the influence of oil atomization in compression processes \(in Portuguese\)](#)” After graduation/Currently: Embraco/Whirlpool
1. [Moisés A. Marcelino Neto](#) – M.Eng. 2006 “[Characterization of the physical properties of mixtures of lubricating oil and natural refrigerants \(in Portuguese\)](#)” After graduation: D.Eng. at UFSC; Currently: Associate Professor, Technological Federal University of Paraná, Brazil

Diploma (Final-Year, Graduation) Projects supervised (UFSC)

52. Mariah Alves Pereira (2026) Implementation of the Peng–Robinson Equation of State for Estimating the Thermodynamic Properties of Fluids from Brazilian Offshore Reservoirs (in Portuguese).
51. Glenda de Melo Luz (2025) Development of a Modular Tool for Modeling and Simulation of Thermal Systems (in Portuguese). Main Advisor: Jaime A. Lozano.
50. Jhonatta Casagrande Bordignon (2025) Technical and Economic Feasibility Analysis of Power Generation from Low-enthalpy Geothermal Sources. Main Advisor: Jaime A. Lozano.
49. Rogerio Sawaya Sucaria (2025) Design of an Experimental Apparatus for Studying Annular Pressure Buildup in Oil and Gas Wells (in Portuguese). Main Advisor: Jaime A. Lozano.
48. Pedro Cavicchioli (2023) Design of a Microchannel Evaporator for a Compact Refrigeration System.
47. Pedro Miola Silva (2023) System Identification with Recurrent Neural Networks for an Air Conditioner Operating with a Magnetic Refrigeration System.
46. Elias Pagnan (2022) Design of the magnetic circuit of a magnetic refrigeration prototype aiming at cost reduction and manufacturability (in Portuguese)
45. André de Souza Matos Vicente (2022) Development of an open-source package for calculating the properties of fluids used in the petroleum industry (in Portuguese)
44. Hígor Feltrin Teza (2022) Experimental evaluation of microchannel and packed-sphere La-Fe-Si active magnetic regenerators (in Portuguese)
43. Maria Claudia Regio e Silva (2022) Experimental evaluation of a magnetic air conditioner in a calibrated calorimeter (in Portuguese)
42. Natália Maleski de Sá (2020) Thermodynamic comparison of a wine cooler operating with a magnetic prototype and a vapor compression refrigeration system.
41. Diego dos Santos (2020) Hydraulic management system for a magnetic refrigeration unit (in Portuguese).
40. Victor Matvienko (2019) Development and implementation of an optimization algorithm applied to heat exchangers (in Portuguese).
39. Sergio Luiz Dutra (2018) Evaluation of a domestic wine refrigerator from the perspectives of two cooling technologies: Vapor compression and magnetic refrigeration (Co-supervisor) (in Portuguese)

38. Gusttav Lang (2018) Development of an active magnetic regenerator model in Python using the Finite Volume Method (Co-supervisor)
37. Bernardo Peressoni Vieira (2018) Numerical simulation of the two-phase flow in two evaporators connected to a reciprocating compressor (in Portuguese)
36. Jian Carlos Bonelli (2017) Thermal analysis of vacuum insulated tubing: design of an experimental setup (in Portuguese)
35. Andre Provensi (2017) Analysis of a counterflow multiple-stage thermoelectric coolers (in Portuguese).
34. Felipe de Sousa França (2017) Modeling and second-law optimization of internally finned tubes (in Portuguese).
33. Kaio G. S. Rosa (2016) Modeling of frost formation on aircraft windows.
32. Caio C. S. Dallalba (2016) CFD analysis of two-phase flashing flows in Venturi tubes.
31. Filipe V. Gaelzer (2016) Multiple jet impingement heat transfer (integration with a compact cooling system).
30. Júlio C. Caye (2016) High-speed visualization and image processing of gas-liquid slug flows.
29. Vinicius K. Scariot (2016) Synthesis and characterization of composite materials for polymeric heat exchangers.
28. Thiago R. V. Ebel (co-supervised with J. Lozano) (2016) Analysis of hydraulic circuits for a compact magnetic refrigerator.
27. Pedro S. B. da Silveira (2015) Thermal conductivity characterization of R-134a/POE ISO 10 and R-134a/POE ISO 68 mixtures.
26. Júlio C. A. Ferreira (2015) Analysis of interfacial waves in the condensation of R-134a in upward annular flow by means of a new optical technique.
25. Eduardo Strle (2015) Void fraction in two-phase air-water flows in vertical return bends (in Portuguese).
24. Ricardo S. Calomeno (2015) Thermal modeling of vacuum insulated tubes using nodal analysis (in Portuguese).
23. Matheus S. Capovilla (co-supervised with J. Lozano) (2015) Performance evaluation of a magnetic refrigerator.
22. Diego P. Alcalde (2014) Design, Construction and Analysis of a Temperature Controlled Metallic-Foam Heat Exchanger.
21. Johann Goethe A. Barcelos (2014) Computational analysis of heat transfer in vacuum insulated tubes to mitigate annular pressure buildup (in Portuguese).
20. Marcelo H. Soar (2014) A study of alternative fin profiles for application in transformer radiators (in Portuguese).
19. Marco A. S. Timmermann (2013) Mathematical modeling and experimental analysis of parallel-plate heat exchangers (in Portuguese).
18. Sérgio Galliza Filho (2013) Experimental determination of the interfacial tension of N₂-water using the maximum bubble pressure method (in Portuguese).
17. Rafael M. França (2013) Experimental characterization of phase equilibrium in R-134a/POE ISO 10 and R-1234yf/POE ISO 10 systems (in Portuguese).
16. Victor Limonta Neto (2013) Design of an air conditioning system according to NBR 16401 - A case study of a convention center (in Portuguese).
15. Luã Carlos Martins (2012) Thermal analysis of a two-stage thermoelectric refrigerator.
14. Fabio Mendes (2012) Entropy generation minimization of tube-fin evaporators with frost formation (in Portuguese).
13. Felipe G. Wolff (2012) Analysis of an air-water two-phase flow in vertical pipes (in Portuguese).

12. Mariana Tiemi Tamura (2012) Analysis and optimization of polymeric heat exchangers (in Portuguese).
11. Getúlio A. Vianna Jr. (2012) Fabrication and thermal analysis of composite (polyurethane and graphite) heat exchangers (in Portuguese).
10. Fabio E. Kulichski (2012) Experimental analysis of parallel-plate evaporators (in Portuguese).
9. Rafael Y. Lenoch (2012) Experimental evaluation of the effect of the liquid-phase physical properties on the two-phase flow in bubble plumes (in Portuguese).
8. Lucas P. A. Stropasolas (2012) Experimental investigation of the heat transfer in impinging two-phase jets and sprays (in Portuguese).
7. Fábio P. Fortkamp (2011) Experimental analysis of foam formation in R-134a/POE ISO 10 oil mixtures subjected to rapid depressurization (in Portuguese).
6. Maria Tereza S. Nedochetko (2011) Evaluation of the impact of the oil circulation ratio on the thermodynamic performance of vapor compression refrigeration systems (in Portuguese).
5. Carlos Akira Furuya (2011) Theoretical analysis of frost formation in accelerated flow evaporators (in Portuguese).
4. Fabio Cesar Canesin (2011) An OpenFOAM-based solver for numerical analysis of active magnetic regenerators.
3. Thomas E. Hafemann (2011) Immersion cooling of a printed circuit board of a frequency inverter via R-134a pool boiling (in Portuguese).
2. Daniel Hense (2010) PIV study of the flow field in a submerged jet (in Portuguese).
1. Tiago de C. Macários (2010) Infrared thermography of a 1-kW frequency inverter for variable speed compressors.

TEACHING

Undergraduate (LSU)

- PETE 2032 - Reservoir Fluid Properties: Spring 2025, Spring 2026

Graduate (LSU)

- PETE 7242 - (Special Topics) Thermodynamics and Transport Processes in Carbon Management: Fall 2025

Undergraduate (UFSC)

- Transport Phenomena (Environmental and Civil Engineering - Core course, 4 credits): Taught from 2003 to 2007
- Refrigeration and Air Conditioning (Mechanical Engineering - Optional course, 3 credits): Taught from 2004 to 2008
- Applied Thermodynamics (Mechanical Engineering - Core course, 3 credits): Taught from 2007 to 2020
- Heat Transfer II (Mechanical Engineering - Core course, 3 credits): Taught from 2009 to 2020
- Fundamentals of Thermodynamics (Mechanical Engineering - Core course, 4 credits): Taught from 2020 to 2024
- Heat Exchanger Design (Mechanical Engineering - Optional course, 3 credits): Taught from 2004 to 2011
- Introduction to Multiphase Flows (Mechanical Engineering - Optional course, 3 credits): Taught from 2004 to 2015

Graduate (UFSC)

- Heat and Mass Diffusion (Mechanical Engineering - Core course, 2 credits): Taught from 2005 to 2024
- Convection Mass Transfer (Mechanical Engineering - Optional course, 2 credits): Taught from 2014 to 2019
- Fundamentals of Thermodynamics (Mechanical Engineering - Core course, 2 credits): : Taught from 2018 to 2024