

# Paulo J. Waltrich

*Associate Professor*  
Craft & Hawkins Department of Petroleum Engineering  
Louisiana State University  
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## Research Interests

- Multiphase flows in pipes
- Liquid-Assisted Gas Lift
- Liquid loading in gas wells
- Artificial lift systems
- Managed Pressure Drilling (MPD)
- Flow assurance
- Instrumentation and control for field operations

## Education

- **PhD:** Petroleum Engineering, Texas A&M University, USA 2009 - 2012  
Dissertation: "Onset and Subsequent Transient Phenomena of Liquid Loading in Gas Wells – Experimental Investigation Using a Large-Scale Flow Loop"
- **MSc:** Mechanical Engineering, Federal University of Santa Catarina, Brazil 2006 - 2008  
Thesis: "Analysis and Optimization of Accelerated Flow Evaporators Applied to Domestic Refrigeration"
- **BSc:** Mechanical Engineering, Federal University of Santa Catarina, Brazil 2001 - 2005

## Professional Experience

- Associate Professor - Department of Petroleum Engineering 2019 - Present  
Louisiana State University, USA
- Assistant Professor - Department of Petroleum Engineering 2012 - 2019  
Louisiana State University, USA
- Production Engineer (Intern) Summer 2010 and Summer 2011  
Petrobras America Inc., USA
- Graduate Research Assistant - Department of Petroleum Engineering 2009 - 2012  
Texas A&M University, USA
- Research Assistant - Laboratories for Emerging Technologies in Cooling and 2008 - 2009  
Thermophysics Federal University of Santa Catarina, Brazil
- Engineering Intern – Technology & Innovation Center 2005 - 2006  
Whirlpool Corporation, Brazil
- Research Assistant - Laboratories for Emerging Technologies in Cooling and 2002 - 2005  
Thermophysics  
Federal University of Santa Catarina, Brazil

## Technology Transfer & Entrepreneurship

- Executive Vice President of Research & Development/Co-Founder 2018 - Present  
Lift Emerging Technology Company  
Development & Commercialization of field application of the Liquid-Assisted Gas-Lift  
Technology initiated at LSU through a research grant sponsored by Shell

## Awards and Recognition

- Holder of the H. Mark Krause Jr. Professorship, *LSU*, 2012-Present
- Outstanding Faculty Advisor Award, *ASME*, 2019
- Top #5 Most Downloaded paper of the year *OnePetro/SPE*, 2017-2018
- Nominated for the Subrata Chakrabarti Young Lecture Award, *ASME/OMAE* 2016
- “Top 25 Hottest Articles July-December 2015” *Experimental Thermal and Fluid Science*, 2015
- Excellence in Peer Review by Elsevier and the Editors of *Journal of Natural Gas Science and Engineering*, 2014
- “Top 25 Hottest Articles July-December 2013” *Int. J. of Multiphase Flow*, 2013
- Scholarship Recipient, *Artificial Lift Research and Development Council (ALRDC)*, USA, 2011-2012
- ConocoPhillips Fellowship, *Texas A&M University*, USA, 2009-2010
- Graduate Research Assistantship, *Texas A&M University*, USA, 2009-2012
- National Best Master Thesis Prize by *Brazilian Society of Mechanical Engineering*, 2009
- Master of Science Scholarship, *CNPq*, Brazil, 2006-2008

## Dr. Waltrich’s Students Awards and Recognition

- Renato Coutinho – 2nd Place on the SPE International Paper Contest (PhD division), Dallas, USA, 2018
- Renato Coutinho – 1nd Place on the SPE Regional Paper Contest (PhD division), Baton Rouge, USA, 2017
- Renato Coutinho – 2nd Place Research Competition, LAGCOE 2017, Lafayette, USA, 2017 – Paper title: “The Case for Liquid-Assisted Gas-Lift”.
- Renato Coutinho – 1<sup>st</sup> Place Technical Paper Competition – 21st Annual Gulf of Mexico Deepwater Technical Symposium, New Orleans, USA, 2017 – Paper title: “Liquid-Assisted Gas-Lift: an Alternative to Perform Unloading Operations with Single Point Injection”.
- Renato Coutinho – Best Paper Award – BHR 18<sup>th</sup> International Conference on Multiphase Technology, Cannes, France, 2017 – Paper title: “A Model for Liquid-Assisted Gas-Lift Unloading”.
- Woonchan Lee - First Place Oral Presentation - Student Session on the 20th Annual Gulf of Mexico Deepwater Technical Symposium, New Orleans, USA, 2016 – Paper title: “Performance Evaluation of Flow Models Applied to Worst Case Discharge”.
- Erika Pagan – First Place Oral Presentation – SPE LSU paper contest – Baton Rouge, USA, 2016. Paper Title: “A Simplified Transient Model to Predict Liquid Loading in Gas Wells”.
- Catalina Posada – Second Place Oral Presentation – SPE LSU paper contest – Baton Rouge, USA, 2016. Paper Title: “Effect of Forced Flow Oscillations on Gas-Liquid Flows in Vertical Pipes”.

## Patents

- Patent Application Publication date: May 5, 2016  
U.S. Non-provisional Patent Application No. 14/920,603  
Title: APPARATUSES, SYSTEMS AND METHODS FOR PERFORMING REMOTE REAL-TIME EXPERIMENTS  
Inventor: Paulo J. Waltrich

## Funding and Sponsored Research Grants Awarded

<i>Project Title</i>	<i>Sponsor</i>	<i>Project duration</i>	<i>Principal Investigator</i>	<i>Co-Principal Investigators</i>	<i>Total Grant Amount</i>	<i>Fraction to Dr. Waltrich</i>
Experiments on Multiphase Flow of Live Muds in a Full-Scale Wellbore with Distributed Sensing for Kick and Gas-in-riser Detection/Mitigation	National Academy of Science	3 years (from Jan 2018)	Wesley Willams	<b>Paulo Waltrich</b> Babak Akbari Mauricio Almeida Yuanhang Chen Jerome Schubert (Texas A&M Univ.) Hashid Hassan (Texas A&M Univ.)	<b>\$4,910,160</b>	\$736,524
Development and Improvement of Flow Models Applied to Multiphase Flows in Large-Diameter Pipes and High-Velocity Flows	BOEM/BSEE	1 year (from Aug 2017)	<b>Paulo Waltrich</b>	Ipsita Gupta Richard Hughes	<b>\$148,416</b>	\$74,208
Field-Scale Modeling, Simulation and Experimental Study for Early Pipeline Leak-Detection System	Louisiana Economic Development Agency/LSU	4 years (from July 2016)	Seung Kam	<b>Paulo Waltrich</b> Wesley Williams	<b>\$100,000</b>	N/A
Experimental Investigation and Performance Evaluation of Models Applied to Worse-Case-Discharge Calculations	BOEM/BSEE	1.5 years (from September 2015)	<b>Paulo Waltrich</b>	Richard Hughes Seung Kam Mayank Tyagi Wesley Williams	<b>\$571,432</b>	\$114,286
Experimental Investigation of Gas-Liquid Two-Phase Flow Through Gas-lift Valves and Its Applications to Gas-Lift in Vertical Wellbores	Shell	8 months (from May 2015)	<b>Paulo Waltrich</b>	Wesley Williams	<b>\$86,275</b>	\$43,138
Valve Performance Clearinghouse Consortium	BP, Chevron, ConocoPhillips, ExxonMobil, Schlumberger, PTC, Shell	Consortium started at Jan 2015	Karsten Thompson	<b>Paulo Waltrich</b> Wesley Williams	<b>\$255,000</b>	\$114,750
SPE Faculty Enhancement Travel Grant	SPE	1 week (in 2014)	<b>Paulo Waltrich</b>	-	<b>\$5,000</b>	\$5,000
Improvements of Deepwater Subsea Measurements RPSEA Program: Evaluation of Flow Modeling	Letton-Hall Group/ RPSEA	2 years (from April 2013)	<b>Paulo Waltrich</b>	-	<b>\$104,018</b>	\$104,018
A study of fluid flow in sediments and the effect of tidal fluctuations	Beatty & Wozniak P.C.	1 year (from April 2013)	<b>Paulo Waltrich</b>	Richard Hughes Karsten Thompson	<b>\$82,793</b>	\$57,955
LSU Startup Funds	LSU	5 years (from August 2012)	<b>Paulo Waltrich</b>	-	<b>\$200,000</b>	\$200,000

**Total: \$6,458,094 \$1,444,879**

**Total as PI: \$1,192,934**

## Publications

*Peer-Reviewed Journal Papers* (\* indicates Dr. Waltrich's students / \*\* indicates Dr. Waltrich as corresponding author)

- [1] Coutinho, R.P.\*, Tornisiello, L. \*, **Waltrich, P.J.\*\***, 2019, Experimental Investigation of Vertical Downward Two-Phase Flow in Annulus, *Journal of Energy Resources Technology*, (under review)
- [2] **Waltrich, P.J.\*\***, Capovilla, M.S.\*, Lee, W. \*, de Sousa, P.C., Zulqarnain, M., Hughes, R.G., Tyagi, M., Williams, W.C., Kam, S.I., Archer, A.W., Singh, J., Nguyen, H., Duhon, J., Griffith, C., 2019, Experimental Evaluation of Wellbore Flow Models Applied to Worst-Case-Discharge Calculations, *SPE Drilling & Completions* (In-press)
- [3] Coutinho, R.P.\*, **Waltrich, P.J.\*\***, Williams, W.C., Mehdizadeh, P., Scott, S., Mabry, W., Xu, J., 2019, Experimental and Numerical Characterization of Two-Phase Flow Through Gas-Lift Valves, *Journal of Energy Resources Technology*, (In-press).
- [4] Coutinho, R.P.\*, **Waltrich, P.J.\*\***, 2019, A Well-Unloading Procedure Using Liquid-Assisted Gas-Lift, *SPE Production and Operations* Volume 34 (03): 635-646.
- [5] Capovilla, M.S.\*, Coutinho, R. P.\*, de Sousa, P.C., **Waltrich, P.J.\*\***, 2019, Experimental investigation of upward vertical two-phase high-velocity flows in large-diameter pipes, *Experimental Thermal and Fluid Science*, Volume 102: 493-505
- [6] Thiberville, C.J., **Waltrich, P.J.**, Williams, W.C., Kam, S.I., 2018, Evaluation of Software-based Early Leak Warning System in the Gulf-of-Mexico Subsea Flowlines, *SPE Production & Operations*, Volume 33 (04): 802-828.
- [7] Guo, R., **Waltrich, P.J.**, Williams, W.C., Yuanhang, C., 2018, An Experimental Investigation on Flow Pattern Map and Drift-Flux Model for Co-Current Upward Liquid-Gas Two-Phase Flow in Narrow Annuli, *Journal of Natural Gas Science and Engineering*, Volume 51: 65-72.
- [8] Posada, C.\*, **Waltrich, P.J.\*\***, 2018, Similarities and Differences in Churn and Annular Flow Regimes in Steady-State and Oscillatory Flows in a Long Vertical Tube, *Experimental Thermal and Fluid Science*, Volume 93: 272-284.
- [9] Coutinho, R. P.\*, Williams, W.C., Mehdizadeh, P., Scott, S., Mabry, W., Xu, J., **Waltrich, P.J.\*\***, 2018, The Case for Liquid-Assisted Gas-Lift Unloading, *SPE Production & Operations*, Volume 33 (01): 73-84.
- [10] **Waltrich, P.J.\*\***, Whitehead, J. \*, Hughes, R., Thompson, K., 2017, A Study of fluid flow in sediments and the effect of tidal pumping, *Journal of Earth Science*, Volume 28 (5): 842-847.
- [11] Pagan, E.V. \*, Williams, W.C., Kam, S.I., **Waltrich, P.J.\*\***, 2017, A simplified model for churn and annular flow regimes in small- and large-diameter pipes, *Chemical Science Engineering*, Volume 162: 309-321.
- [12] Alves, M.V.C., **Waltrich, P.J.**, Gessner, T.R., Falcone, G., Barbosa, J.R., 2017, Modeling transient churn-annular flows in a long vertical tube, *International Journal of Multiphase Flow*, Volume 89: 399-412.
- [13] Posada, C.\*, **Waltrich, P.J.\*\***, 2017, Effect of forced flow oscillations on churn and annular flow in a long vertical tube, *Experimental Thermal and Fluid Science*, Volume 81: 345-357.
- [14] Pagan, E.V. \*, **Waltrich, P.J.\*\***, 2016, A simplified transient model to predict liquid loading in gas wells, *Journal of Natural Gas Science and Engineering*, Volume 35: 372-381.
- [15] **Waltrich, P.J.\*\***, Falcone, G., Barbosa, J.R., 2016, Liquid Transport During Gas Flow Transients Applied to Liquid Loading in Long Vertical Pipes, *Experimental Thermal and Fluid Science*, Volume 68: 652-662.
- [16] **Waltrich, P.J.\*\***, Martinez, J. \*, Posada, C. \*, Falcone, G., Barbosa, J.R., 2015, Experimental Investigation on the Prediction of Liquid Loading Initiation in Gas Wells Using a Long Vertical Tube, *Journal of Natural Gas Science and Engineering*, Volume 26: 1515-1529.
- [17] **Waltrich, P.J.\*\***, Falcone, G., Barbosa, J.R., 2013, Axial Development of Annular, Churn and Slug Flows in a Long Vertical Tube, *International Journal of Multiphase Flow*, Volume 57: 38-48.
- [18] **Waltrich, P. J.**, Barbosa Jr., J. R., Melo, C. and Hermes, C. J. L., 2010, COP-Based Optimization of Accelerated Flow Evaporators for Household Refrigeration Application, *Applied Thermal Engineering* 31 (1): 129-135.
- [19] **Waltrich, P. J.**, Barbosa Jr., J. R., Melo, C. and Hermes, C. J. L., 2010, Air-Side Heat Transfer and Pressure Drop in Accelerated Flow Evaporators, *International Journal of Refrigeration* 34 (2): 484-497.

- [20] Barbosa Jr., J. R., Melo, C. and Hermes, C. J. L., **Waltrich, P. J.**, 2009, A Study of the Air-Side Heat Transfer and Pressure Drop Characteristics of Tube-Fin ‘No-Frost’ Evaporators, *Applied Energy* 86 (9): 1484-1491.

#### **Press Articles**

- [21] Scott, S.L., Coutinho, R.P., **Waltrich, P. J.**, 2017, Method Improves Gas Lift Economics, *The American Oil & Gas Reporter*, June 2017.
- [22] Shecaira, F., Barros, D., Ramachandran, K., Bonin, G., **Waltrich, P. J.**, Jennings, D., Newberry, M., Ziglio, C., 2012, Pig/Paraffin Obstruction Remediated in a Deepwater Subsea Tieback of the Gulf of Mexico's Cottonwood Field, *World Oil* 233 (4): 97-112.

#### **Press Contributions**

- [23] “Transient Coupled Wellbore/Reservoir Model Using a Dynamic IPR Function” *Journal of Petroleum Technology (JPT/SPE – July 2107)*.  
[https://www.onepetro.org/journal-paper/SPE-0717-0058-JPT?sort=&start=0&q=waltrich&from\\_year=&peer\\_reviewed=&published\\_between=&fromSearchResults=true&to\\_year=&rows=10#](https://www.onepetro.org/journal-paper/SPE-0717-0058-JPT?sort=&start=0&q=waltrich&from_year=&peer_reviewed=&published_between=&fromSearchResults=true&to_year=&rows=10#)
- [24] "Emerging Technology - Production Technology Still Evolving," *The American Oil & Gas Reporter*. (January 2017).  
<http://www.aogr.com/magazine/sneak-peek-preview/production-technology-still-evolving>

#### **Conference Presentation with Proceedings** (\* indicates Dr. Waltrich’s students / \*\* indicates Dr. Waltrich as presenter)

- [25] Coutinho, R.P.\*, **Waltrich, P.J.\*\***, 2018, Experimental Investigation of Vertical Downward Two-Phase Flow in Annulus, presented at the BHR 11<sup>th</sup> North America Conference Multiphase 2018, June 6-8, Banff, Canada.
- [26] Thiberville, C.J., **Waltrich, P.J.**, Williams, W.C., Kam, S.I., 2017, Evaluation of Software-based Early Leak Warning System in the Gulf-of-Mexico Subsea Flowlines, presented at the 2017 SPE Annual Technical Conference and Exhibition, October 9-11, San Antonio, TX, USA.
- [27] de Sousa, P.C., Garcia A.P., **Waltrich, P.J.**, 2017, Analytical Development of a Dynamic IPR for Transient Two-Phase Flow in Reservoirs, presented at the 2017 SPE Annual Technical Conference and Exhibition, October 9-11, San Antonio, TX, USA.
- [28] de Sousa, P.C., Garcia A.P., **Waltrich, P.J.**, 2017, Investigation of Pressure Profiles of Reservoirs with Wells Under Transient, Unstable Flow, presented at the 2017 SPE Annual Technical Conference and Exhibition, October 9-11, San Antonio, TX, USA.
- [29] Capovilla, M.S.\*, de Sousa, P.C., **Waltrich, P.J.\*\***, 2017, Experimental investigation of vertical high-velocity two-phase flows in large-diameter pipes, presented at the BHR 18<sup>th</sup> International Conference on Multiphase Production Technology 2017, June 7-9, Cannes, France.
- [30] Coutinho, R.P.\*, Williams, W.C., Mehdizadeh, P., Scott, S., **Waltrich, P.J.**, 2017, A Model for Liquid-Assisted Gas-Lift Unloading, presented at the BHR 18<sup>th</sup> International Conference on Multiphase Production Technology 2017, June 7-9, Cannes, France.
- [31] de Sousa, P.C., Garcia A.P., **Waltrich, P.J.**, 2017, A Transient Inflow Performance Relationship (IPR) for the Early and Late Life of Gas Wells: The Dynamic Gas IPR, presented at the ASME 2017 36th International Conference on Ocean, Offshore and Arctic Engineering, June 25-30, Trondheim, Norway.
- [32] AlTarabulsi, K.\*, Coutinho, R.P.\*, **Waltrich, P.J.**, 2017, Effect of Fluid Properties on the Performance of Gas-lift Valves, presented at the ASME 2017 36th International Conference on Ocean, Offshore and Arctic Engineering, June 25-30, Trondheim, Norway.
- [33] Guo, R., **Waltrich, P.J.**, Chen, Y., 2017, Numerical and Experimental Investigations of Gas Kick Migration during Casing while Drilling, presented at the 2017 SPE Health, Safety, Security, Environment, & Social Responsibility Conference-North America, April 18-20, New Orleans, USA.
- [34] **Waltrich, P.J.\*\***, Capovilla, M.S.\*, Lee, W.\*, de Sousa, P.C., Zulqarnain, M., Hughes, R.G., Tyagi, M., Williams, W.C., Kam, S.I., Archer, A.W., Singh, J., Nguyen, H., Duhon, J., Griffith, C., 2017, Experimental Investigation of Flows in Large Diameter Pipes and High Flow Rates Applied to Worst-Case-Discharge Calculations, presented at the 2017 SPE Health, Safety, Security, Environment, & Social Responsibility Conference-North America, April 18-20, New Orleans, USA.

- [35] Mokhtari, K.J.\*, **Waltrich, P.J.**, 2016, Performance Evaluation of Multiphase Flow Models Applied to Virtual Flow Metering, presented at the 11th International Conference on Advances in Fluid Mechanics, September 5-7, Ancona, Italy.
- [36] Garcia, A.P., de Sousa, P.C., **Waltrich, P.J.**, 2016, A Transient Coupled Wellbore-Reservoir Model Using a Dynamic IPR Function, presented at the 2016 SPE Annual Technical Conference and Exhibition, September 28-26, Dubai, UAE.
- [37] Whitehead, J.\*, **Waltrich, P.J.\*\***, Hughes, R., Thompson, K., 2016, A study of fluid flow in sediments and effect of tidal pumping, presented at the ASME 2016 35th International Conference on Ocean, Offshore and Arctic Engineering, June 19-24, Busan, Korea.
- [38] Posada, C.\*, **Waltrich, P.J.\*\***, 2016, Performance evaluation of two-phase flow models on the prediction of oscillatory flow conditions, presented at the ASME 2016 35th International Conference on Ocean, Offshore and Arctic Engineering, June 19-24, Busan, Korea.
- [39] Pagan, E.V.\*, Williams, W.C., Kam, S.I., **Waltrich, P.J.\*\***, 2016, Modeling vertical flows in churn and annular flow regimes in small- and large-diameter pipes, presented at the BHR 10<sup>th</sup> North America Conference Multiphase 2016, June 8-10, Banff, Canada.
- [40] Pagan, E.V.\*, Williams, W.C., **Waltrich, P.J.\*\***, 2016, A simplified transient model to predict liquid loading in gas wells, presented at the SPE Western Regional Meeting held in Anchorage, May 23-26, Alaska, USA.
- [41] **Waltrich, P. J.\*\***, Zhang, H, Teodoriu, C., 2014, Remote Real-time Experiments for Well Challenges Diagnostics, presented at 2014 SPE Annual Technical Conference and Exhibition, October 27-29, Amsterdam, Netherlands.
- [42] Alves, M.V.C., Barbosa, J.R., **Waltrich, P.J.**, Falcone, G., 2013, Modeling Transient Churn-Annular Flows in a Long Vertical Pipe, presented at the ASME 2013 International Mechanical Engineering Conference & Exposition, November 15 – 21, San Diego, USA.
- [43] Jennings, D., White, J., Pogoson, O., Barros, D., Ramachandran, K., Bonin, G., **Waltrich, P. J.**, Shecaira, F., Ziglio, C., 2012, Paraffin Dispersant Application for Cleaning Subsea Flowlines in the Deepwater Gulf of Mexico Cottonwood Development, presented at Rio Oil & Gas Conference 2012, Rio de Janeiro, Brazil.
- [44] **Waltrich, P. J.**, Falcone, G., Barbosa Jr., J. R., 2012, Axial Development of Churn and Slug Flows in a Long Vertical Tube, presented at 3rd Brazilian Conference on Boiling, Condensation and Multiphase Flow, Curitiba, Brazil.
- [45] **Waltrich, P. J.\*\***, Falcone, G., Barbosa Jr., J. R., 2011, Performance of Vertical Transient Two-Phase Flow Models Applied to Liquid Loading in Gas Wells, presented at 2011 SPE Annual Technical Conference and Exhibition, Denver, USA.
- [46] Shecaira, F., Barros, D., Ramachandran, K., Bonin, G., **Waltrich, P. J.**, Jennings, D., Newberry, M., Ziglio, C., 2011, The Cottonwood field case history: the pig/paraffin obstruction of a long subsea, deepwater tie-back and its successful remediation, presented at 2011 SPE Annual Technical Conference and Exhibition, Denver, USA.
- [47] **Waltrich, P. J.**, Barbosa Jr., J. R., Melo, C. and Hermes, C. J. L., 2010, COP-Based Optimization of Accelerated Flow Evaporators for Household Refrigeration Application, presented at 13th International Refrigeration and Air Conditioning Conference, Purdue, USA.
- [48] **Waltrich, P. J.**, Barbosa Jr., J. R., Melo, C. and Hermes, C. J. L., 2008, Air-Side Heat Transfer and Pressure Drop in Accelerated Flow Evaporators, presented at 21th International Refrigeration and Air Conditioning Conference, Purdue, USA.
- [49] **Waltrich, P. J.\*\***, Boeng, J., Vieira, D., Hermes, C. J. L, Melo, C. and Barbosa Jr., J. R., 2007, Air-Side Heat Transfer and Pressure Drop in Tube-Fin Accelerated Flow Heat Exchangers, presented at 19th International Congress of Mechanical Engineering, Brasilia, Brazil.
- [50] **Waltrich, P. J.**, Boeng, J., Hermes, C. J. L, Melo, C. and Barbosa Jr., J. R., 2007, Experimental Analysis of the Thermal-Hydraulic Characteristics of the Accelerated Flow Evaporators, presented at 8th Congress of Mechanical Engineering, Cusco, Peru.
- [51] Fiedler, H. D., Pavei, A. D., Chagas, C. U., Ghiggi, F., Dientsmann, F., **Waltrich, P. J.**, Lima, V. R., Nome, F., 2000, Metal Distribution in sediments and the Relation with Adsorption Isotherms, presented at 10th Seminar of Undergraduate Studies, Florianopolis, Brazil.

**Conference Presentations without Proceedings** (\* indicates main presenter)

- [1] Coutinho, R.\*, **Waltrich, P.J.**, 2018, Optimization of Liquid-Assisted Gas-Lift Unloading, presented at the Artificial Lift & Production Optimization Congress Rockies 2018, May 21-23, Denver, USA
- [2] Coutinho, R.\*, **Waltrich, P.J.**, 2018, Liquid-Assisted Gas-Lift Unloading, presented at the Permian Basin Congress 2018, January 23-25, Houston, USA
- [3] Coutinho, R.\*, **Waltrich, P.J.**, 2017, Liquid-Assisted Gas-Lift Unloading, presented at the 2017 ALRDC Gas-Lift Workshop, October 23-26, Houston, USA
- [4] Mokhtari, K., **Waltrich, P.J.**\*, 2017, Performance Evaluation of Virtual Flow Metering Models and Its Application to Metering Backup and Production Allocations, presented at the 21st Annual Gulf of Mexico Deepwater Technical Symposium, August 21-23, New Orleans, USA.
- [5] Coutinho, R. \*, **Waltrich, P.J.**, 2017, Effect of Liquid-Phase in the Performance of Gas-Lift Valves, presented at the 21st Annual Gulf of Mexico Deepwater Technical Symposium, August 21-23, New Orleans, USA.
- [6] Thiberville, C.J., **Waltrich, P.J.**, Williams, W.C., Kam, S.I.\*, 2016, Vertical and Horizontal Flow Loop Tests for Field Scale Drilling and Production Applications, presented at the 2016 Offshore Korea Technical Conference, 19-20 October, Busan, Korea.
- [7] Lee, W.\*, **Waltrich, P.J.**, 2016, Performance Evaluation of Flow Models Applied to Worst-Case-Discharge Calculations, presented at the 20th Annual Gulf of Mexico Deepwater Technical Symposium, August 17-18, New Orleans, USA.
- [8] Wang, Y.\*, **Waltrich, P.J.**, Williams, W.C., Kam, S.I., 2016, An Improved Foam Model for Fracturing and Drilling Applications by Combining Wet- and Dry-Foam Rheological Properties, presented at the AADE National Technical Conference and Exhibition, Houston, TX, 12-13 April.
- [9] Williams, W.C.\* , **Waltrich, P.J.**, Thompson, K., 2016, Valve performance clearinghouse: Testing and applications, presented at the SPE Aberdeen European Artificial Lift Forum EuALF 2016, June 8-9, Aberdeen, UK.
- [10] Wang, Y. \*, Edrisi, A., **Waltrich, P.J.**, Williams, W.C., Kam, S.I., 2015, Foam Drilling Hydraulics Calculations Using Two Foam-Flow Regimes, presented at the 19th Annual Gulf of Mexico Deepwater Technical Symposium, 18-20 August, New Orleans, USA.

**Invited Talks/Presentations**

- 23rd Annual Gulf of Mexico Deepwater Technical Symposium, New Orleans, USA, May 2019  
Workshop Title: “Production Challenges and Worst-Case-Discharge in the Gulf of Mexico Wells”
- Bureau of Ocean Energy Management, New Orleans, USA, May 2018  
Workshop Title: “Development and Improvement of Flow Models Applied to WCD Calculations”
- In-House Bureau of Ocean Energy Management (BOEM) Worst-Case-Discharge Conference, New Orleans, USA, July 2017, Title: “Practical Guide on the Selection of Wellbore Flow Models Applied to WCD Calculations”
- Cranfield University, Cranfield, UK, June 2017  
Title: “Paulo Waltrich’s Research Group and PERTT Lab”
- The University of Nottingham, Nottingham, UK, June 2017  
Title: “Paulo Waltrich’s Research Group and PERTT Lab”
- Bureau of Ocean Energy Management, New Orleans, USA, Sept 2016  
Workshop Title: “Experimental Investigation of Flow Models Applied to Worst-Case-Discharge Calculations”
- Bureau of Ocean Energy Management, New Orleans, USA, Jan 2016  
Workshop Title: “Experimental Investigation and Performance Evaluation of Models Applied to Worst-Case-Discharge Calculations”
- Louisiana State University, Baton Rouge, USA, 2013  
Presentation Title: “Axial Development of Annular, Churn and Slug Flows in a Long Vertical Tube”
- Texas A&M University, College Station, USA, 2012  
Presentation Title: “Onset and subsequent transient phenomena of liquid loading in gas wells – Experimental Investigation using a large scale flow”

- Oklahoma University, Norman, USA, 2012  
Presentation Title: “Onset and subsequent transient phenomena of liquid loading in gas wells – Experimental Investigation using a large scale flow”
- Chevron, Houston, USA, 2011  
Presentation Title: “Performance of Vertical Transient Two-Phase Flow Models Applied to Liquid Loading in Gas Wells” and “A Generic Model for Optimizing the Selection of Artificial Lift”
- Federal University of Technology of Parana, Curitiba, Brazil, 2011  
Presentation Title: “Liquid Loading in the Operation of Gas Fields: Mechanisms, Prediction and Reservoir Response”

## Scholastic Activities

### Undergraduate Courses Taught

PETE 3037 – Field Operations Lab

PETE 3085 – Well Performance and Production

PETE 4085 – Surface Handling of Produced Fluids

PETE 4046 – Well Design

### Graduate Courses Taught

PETE 7211 – Production System Analysis

PETE 7242 – Selected Topics in Advanced Petroleum Engineering: Multiphase Flow in Wells

## Mentoring and Supervision

### *Post-Doctoral/Research Fellow*

1. Pedro C. de Souza – Design and implementation of an experimental apparatus for experimental investigation of two-phase flows in vertical pipes of large diameter and large flow rates. Summer 2015 & 2016 (six months).
2. Muhammad Zulfarnain – Performance evaluation of CFD modeling on predicting two-phase flow in pipes of large diameter. Fall 15 to Summer 2016 (one year). Co-supervising with Dr. Mayank Tyagi and Dr. Richard Hughes.

### *PhD students*

1. Kahila Mokhtari, Dissertation title: “Performance evaluation of virtual flow metering models and its application to metering backup and production allocation”. **Graduated Spring 2017.**
2. Renato Coutinho, Dissertation title: “Experimental and modeling investigation of multiphase gas-lift technique”. **Graduated Summer 2018.**
3. Khadhr Altarabulsi, Dissertation title: “An improved method to calculate gas-lift valve set pressure and valve performance curves”. **Graduated: Spring 2019.**
4. Woochan Lee, Dissertation title: “Experimental investigation of flow regime maps for two-phase flow in vertical pipes of large diameter”. *Expected graduation Spring 2020.*

### *MS students*

1. Catalina Posada, Thesis title: “Effect of forced flow oscillation on churn and annular flow in vertical pipes”. **Graduated Fall 2014.**
2. John Whitehead, Report title: “A study of fluid flow in sediments and the effect of tidal fluctuations”. **Graduated Fall 2014.**
3. Erika Pagan, Thesis title: “Modeling Churn and Annular flows in pipes of small and large dimeters **Graduated Summer 2016.**
4. Matheus Capovilla, Thesis title: “Experimental investigation of two-phase flow in pipes of large diameter for large flow rates”. **Graduated Summer 2018.**
5. Francisco Bruno Teles, Thesis title: “An Improved Numerical Flow model for two-phase flow in pipes of large diameter and large flow rates”. *Expected graduation: Spring 2019.*



6. Ligia Tornisiello, Thesis title: “A Simplified Two-phase Flow Simulator for Small and Large Diameters pipes, and Vertical and Horizontal Wells”. Expected graduation: Spring 2019.
7. Felipe Simoes Maciel, Thesis title: “A CFD Model for Gas-Lift Valves”. Expected graduation: Spring 2021.

#### ***Undergraduate students***

<i>Student name</i>	<i>Period</i>	<i>Project</i>
Adam Baker Glenn Steele Taylor Frick	2016-2017 2016 2014-2015	Implementation and performance of experiments of two-phase flow in vertical pipes of large diameter applied to WCD calculations. <i>Funding source: BOEM/BSEE</i>
Victor Souza Raisa C. Sousa Mateus C. de Oliveira	Summer 2016	Performance of experiments of two-phase flow in vertical pipes of large diameter applied to WCD calculations. Funded through Science Without Borders Program. <i>Funding source: Brazilian Funding Agency (CNPq)</i>
Cen Chen	2015-2016	Building an apparatus to test gas-lift valves for high pressure at static conditions. <i>Funding source: VPC Consortium</i>
Matheus P. Marino Francisco B. Telles Ricardo Santana Felipe Maciel Gustavo R. Tavares Joao P. Meirelles	Summer 2015	Design and implementation of a flow loop for the investigation of two-phase flow in vertical pipes of large diameter. Funded through Science Without Borders Program. <i>Funding source: Brazilian Funding Agency (CNPq)</i>
Sofia G. Rodrigues Fernanda A. Almeida	Summer 2015	Implementation of a numerical simulator for the investigation of two-phase flow in vertical pipes of large diameter. Funded through Science Without Borders Program. <i>Funding source: Brazilian Funding Agency (CNPq)</i>
Jessica Martinez	2013-2014	Study on the effect of pipe diameter on liquid loading in gas wells. <i>Funding source: LSU (Startup funds)</i>
Joao V. Pontes	Summer 2015	Data processing of a study of fluid flow in sediments and the effect of tidal fluctuations. Funded through Science Without Borders Program. <i>Funding source: Brazilian Funding Agency (CNPq)</i>

#### ***Committee member***

<b>PhD</b>	<b>MS and MS non-thesis</b>
Alireza Edrisi, PhD, committee member, 2013	Brian Picolo, MS, committee member, 2013
Pranjali Muley, PhD, dean’s representative, 2014	Muhammad Chaudhry, MS, committee member, 2014
Abiola Olabode, PhD, committee member, 2015	Christopher Ruffer, MS non-thesis, committee member, 2014
Kahila Mokhtari, PhD, chair, 2016	Efecan Demirci, MS, committee member, 2014
Renato Coutinho, PhD, chair, 2016	Kolawole Bello, MS, committee member, 2014
Woochan Lee, PhD, chair, 2016	Catalina Posada, MS, chair, 2014
Yanfeng Wang, PhD, committee member, 2017	John Whitehead, MS non-thesis, chair, 2014
Khadhr Altarabulsi, PhD, chair, 2017	Dogus Saracoglu, MS non-thesis, chair, 2016
Mojtaba Mosaheb, PhD, committee member, 2018	Erika Pagan, MS, chair, 2016
Mohammad Izadi, PhD, committee member, 2018	Christian Griman, MS non-thesis, committee member, 2016
Caitlyn Thiberville, PhD, committee member, 2018	Doris Maestre, MS, committee member, 2017
Merrel Holley, PhD, dean’s representative, 2019	Matheus Capovilla, MS, chair, 2018
	Florencia Cordoba, MS, committee member, 2018
	Corinne Duplantis, MS, committee member, 2018
	Herman von Holt, MS, committee member, 2019

## Professional Activities & Affiliations

### *Associate Editor*

- Multiphase Science and Technology, Begell House, 2017-present  
(Founding Editors: Jean-Marc Delhaye, Geoffrey F. Hewitt, Novak Zuber)  
<http://www.begellhouse.com/journals/multiphase-science-and-technology.html>

### *Technical Reviewer*

- International Journal of Multiphase Flow
- SPE Journal
- SPE Production & Operations
- Journal of Petroleum Science and Engineering
- Experimental Thermal and Fluid Science
- Multiphase Science and Technology
- Chemical Engineering and Science
- Journal of Energy Resources Technology
- Flow Measurement and Instrumentation
- Industrial & Engineering Chemistry Research
- Journal of Natural Gas Science & Engineering
- Journal of Canadian Petroleum Engineering
- International Journal of Oil, Gas and Coal Technology
- Brazilian Congress of Thermal Sciences and Engineering

### *Conference & Meeting Organization*

- Technical Committee - 2017 ASME/OMAE Conference - Session organizer and chair for the Petroleum Technology Symposia, in the session: Recent Developments in Artificial Lift and Gas Well Deliquification. Date: Jun 25-30, 2017, Trondheim, Norway.
- Technical Committee - 2016 ASME/OMAE Conference - Session co-organizer and chair for the Petroleum Technology Symposia, in the session: Petroleum Production Systems Design and Analysis. Date: Jun 19-24, 2016, Busan, South Korea.
- Technical Committee - 2015 ASME/OMAE Conference - Session organizer for the Petroleum Technology Symposia, in the session: Petroleum Wells: Production and Operation I. Date: May 31- Jun 5, 2015, St. John's, Canada.
- Technical Committee - 2014 ASME/OMAE Conference - Session co-organizer and chair for the Petroleum Technology Symposia, in the session: Current Challenges in Production and Stimulation of Gas Reservoirs. Date: Jun 8-13, 2014, San Francisco, USA.

### *Affiliations*

- Member of Society of Petroleum Engineers (SPE), since August 2009
- Member of American Society of Mechanical Engineers (ASME), since August 2013

### *University Service*

- Advisor for Pi Epsilon Tau Honor Society at Louisiana State University, 2012-Present.
- Member of Faculty Search Committee at LSU, 2013-2015, and 2018
- Committee for laboratory improvements for the Petroleum Engineering Department at LSU, 2012-2013
- PETE Graduate Seminar Series Organizer at LSU, 2013-2014
- Director of Sports of the Brazilian Student Association at Texas A&M University, 2009-2010.

## Computational Skills

- Engineering Packages: OLGA, MBAL, PROSPER, GAP, PVTSIM, Avocet, PIPESIM, HYSYS, LabView, EES, ModeFRONTIER, ANSYS/FLUENT, AutoCAD CFD, AutoCAD Inventor, SolidWorks.
- Programming Languages: FORTRAN, Matlab, VBA.