Diego Siguenza

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Education

2018 - Present
Doctor of Philosophy (Ph.D Candidate) degree in Mechanical Engineering
Purdue University, Indiana, USA

2014 - 2013
Master of Science (M.Sc) degree in Renewable Energy **with Merit**
Newcastle University, Newcastle, United Kingdom
Dissertation:*"Coaxial Geothermal Borehole Simulation for Chachimbiro, Ecuador"*

2012 - 2006
Bachelor of Science (B.Sc) degree in Mechanical Engineering
Escuela Superior Politécnica del Litoral (ESPOL), Guayaquil, Ecuador
Thesis:*"Design, Construction and Testing of a Hybrid Vehicle (Photovoltaic-Human Energy)"*

Academic Experience

Present
Teaching Assistant
School of Mechanical Engineering at Purdue University, Indiana, USA
- Thermodynamics I - ME200 (Spring 2022)
- Power Engineering - ME430 (Fall 2021)
- The Multi-ethnic Introduction to Engineering - MITE (Summer 2021)
- Basic Mechanics I - ME270 (Fall 2020)

2015-2018
Jan-May
Researcher & Lecturer
Alternative Renewable Energy Center (CERA) & Department of Mechanical Engineering at ESPOL, Guayaquil, Ecuador
- Research in Geothermal Energy (Borehole Modelling).
- Lectures in Statics, Dynamics, Fluid Mechanics, Thermodynamics, and Technical Drawing.
- Supervision of Undergraduate Dissertations & Social Interest Projects.

2012-2010
Feb-Sep
Research Assistant Internship
Renewable Energy Laboratory at Mechanical Engineering Department in ESPOL
- Mechanical Designer of INTI-INVICTUS, First Ecuadorian Solar Car.
- Literature review for the project "Hydrogen Alternative Electric Power Generation for Social Dwellings"

Publications

1. Bocanegra Evans, H., Doosttalab, A., **Siguenza-Alvarado, D.**, Cheng, S., Chamorro, L. P., Castillo, L. (2022). Spectral features of the wake and power fluctuations of model wind turbines under low-level jets. Submitted to the Journal of Renewable and Sustainable Energy.
2. **Siguenza-Alvarado, D.**, Doosttalab, A., Cheng, S., Bocanegra Evans, H., Cal, R. B., Chamorro, L. P., Castillo, L. (2021). Exploring the effects of low-level-jets on the energy entrainment of vertical-axis wind turbines. Journal of Renewable and Sustainable Energy, 13(3), 033310.
3. Doosttalab, A., **Siguenza-Alvarado, D.**, Pulletikurthi, V., Jin, Y., Bocanegra Evans, H.,

Chamorro, L. P., Castillo, L. (2020). Interaction of low-level jets with wind turbines: On the basic mechanisms for enhanced performance. Journal of Renewable and Sustainable Energy, 12(5), 053301.

4. Hidalgo-León, R., Urquizo, J., Macías, J., **Siguenza, D.**, Singh, P., Wu, J., Soriano, G. (2018, October). Energy Harvesting Technologies: Analysis of their potential for supplying power to sensors in buildings. In 2018 ieee third ecuador technical chapters meeting (etcm) (pp. 1-6). IEEE.
5. Hidalgo-León, R., **Siguenza, D.**, Sanchez, C., León, J., Jácome-Ruiz, P., Wu, J., Ortiz, D. (2017, October). A survey of battery energy storage system (BESS), applications and environmental impacts in power systems. In 2017 ieee second ecuador technical chapters meeting (etcm) (pp. 1-6). IEEE.
6. **Siguenza, D.**, Wu, D., Soriano, G., (2016, November). Coaxial Borehole Heat Exchanger Simulation with Power Generation Potential for Chachimbiro, Ecuador. In ASME 2016 *International Mechanical Engineering Congress and Exposition* (pp. V06AT08A044-V06AT08A044). American Society of Mechanical Engineers.
7. Soriano, G., & **Siguenza, D.** (2015, November). Thermal Performance of a Borehole Heat Exchanger Located in Guayaquil-Ecuador Using Novel Heat Transfer Fluids. In ASME 2015 *International Mechanical Engineering Congress and Exposition* (pp. V06AT07A054-V06AT07A054). American Society of Mechanical Engineers.

Industrial Experience

2012-2013 Mar-Aug — **Junior Mechanical Engineer**
Santos CMI, Guayaquil, Ecuador

- Elaboration of mechanical equipment specifications & 3D models and field inspections for Power Plants and Oil & Gas projects in Latin America
- Elaboration of CAD drawings such as layouts and isometrics of piping routes for Power Plants and Oil & Gas projects in Latin America.

2010-2010 Apr-May — **Internship**
Novacero SA, Guayaquil, Ecuador

- Operational galvanized process and SMED methodology learning for steel galvanized pipes.

Language Skills

Spanish: Mothertongue
English: Fluent

IT Skills

Software — OpenFOAM, Python, Matlab, EES, LaTeX. AutoCAD, Inventor, SolidWorks, AMESim, COMSOL, ANSYS, TRNSYS, OpenStudio.

Additional Information

Honors & Awards:

2017-Aug	*"Convocatoria Abierta 2017"* Scholarship awarded from Ecuador government to study a Mechanical Engineering doctoral degree at Purdue University, USA.
2012-Aug	*"Convocatoria Abierta 2012"* Scholarship awarded from Ecuador government to study a Renewable Energy master degree at Newcastle University, UK.
2011-Nov	Grant from ESPOL for the outstanding participation in the first Latin American solar car racing "Atacama Solar Challenge" as mechanical designer of INTI-INVICTUS team in Chile during September 30th until October 2nd 2011.

Leadership Roles

May 2021 - May 2022	President of the Mechanical Engineering Graduate Student Association (OMEGA) at Purdue University, USA.

Instructed Courses:

2016-Mar	Introduction to EES & OpenStudio for HVAC Systems for Bioclimatic Architecture postgraduate students at Cuenca University, Cuenca, Ecuador.

Courses:

2016-Jul	Introduction to Python for Data Science. Microsoft, edX valid certificate (a70a0a27ed024633b3bc5473bc79ae5e)
2015-May	Scietific Papers Drafting and Reviewing in Guayaquil, Ecuador.

Conference Presentations & Attendances:

2020-Nov	Siguenza-Alvarado, Diego, et al. "An Experimental Survey on the Interaction of Wind Turbines over Complex Terrain." Bulletin of the American Physical Society.
2019-Nov	Siguenza, Diego, et al. "The low-level jet role on the mean power and momentum transport of vertical axis wind turbines." APS Division of Fluid Dynamics Meeting Abstracts.
2018-Nov	Siguenza, Diego, et al. "Effect of a synthetic low-level jet on the mean power and momentum transport of a model wind-turbine arra." Bulletin of the American Physical Society 63.
2016-Jun	Regional ASME Student Professional Development Conference (SPDC) in Puno, Perú.
2015-Nov	International Mechanical Engineering Congress and Exposition IMECE in Houston, United States.
2011-Oct	First International Symposium on Renewable Energy CERA-ESPOL in Guayaquil, Ecuador.
2010-Dec	Second National Congress of Electricity and Alternative Energy in Guayaquil, Ecuador.
2010-Jul	First Mechanical Engineering Conferences EPN-UNL in Loja, Ecuador.