

CURRICULUM VITAE Erik Alvarez



Personal information

Name: Erik Francisco Alvarez Quispe
Born: 23 January 1992 in Lima, Perú
Nationality: Spanish, Peruvian
Position: Researcher
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Education – MSc & PhD in Electrical Engineering

2025 PhD in Electrical Engineering: Comillas Pontifical University, Madrid, Spain. Thesis: *Improving Modelling for Optimal Expansion Planning of Power Transmission Systems*
2019 Master of Science in Electrical Engineering: UNICAMP - University of Campinas, Sao Paulo, Brazil. Thesis: *Semidefinite Relaxation for the Optimal Operation and Expansion Planning of Power Transmission Systems*

Work experiences – over 5 years' experience within the power and energy system sector

since 2024 **RISE Research Institutes of Sweden**, Researcher in Electric Power Systems, Göteborg, Sweden
2019 – 2024 **Institute for Research in Technology - Comillas Pontifical University**, Research Assistant - PhD Student, Madrid, Spain
2017 – 2019 **UNICAMP**, Master Student in Power Systems and Optimization, Sao Paulo, Brazil
2017 – 2017 **CONENHUA (Peruvian generation company)**, Business Analyst, Lima, Peru
2016 – 2017 **COES-SINAC (Peruvian independent system operator)**, Assistant Engineer, Lima, Peru
2015 **COES-SINAC (Peruvian independent system operator)**, Trainee, Lima, Peru

Other relevant professional experiences

- R&D in power system optimization:
 - Approaches: Convex relaxations, mixed-integer linear programming, near-optimal solutions, multi-criteria decision analysis, and equilibrium modelling.
 - Software experience: Plexos, AMPL, GAMS.
 - Language: Pyomo-python and JuMP-julia
- Power system simulation software experience: *PowerFactory*

Selected projects – participation in projects within the power system sector

2024-2025 SCALE – Smart Charging Alignment for Europe (RISE: researcher), funding: Horizon Europe Program
2023-2024 DEFINER – Management of flexible electricity demand in markets with very high penetration of renewable energies (Comillas Pontifical University: Research Assistant), funding: NextGenerationEU, Spanish Ministry of Science and Innovation, and Iberdrola
2023-2024 openMod4Africa - Open Modelling toolbox for development of long-term pathways for the energy system in Africa (Comillas Pontifical University: Research Assistant), funding: Horizon Europe
2019-2023 openENTRANCE - Open energy transition analyses for a low-carbon economy (Comillas Pontifical University: Research Assistant), funding: EU Horizon 2020

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Selected publications – author or coauthor of scientific articles

- **Álvarez, E. F.**, López, J.C., Olmos, L., Ramos, A., An optimal expansion planning of power systems considering cycle-based AC optimal power flow. Sustainable Energy, Grids and Networks. Vol. 39, pp. 101413-1 - 101413-16, Septiembre 2024.
- Santos Oliveira, D., Lumbreras, S., **Álvarez, E. F.**, Ramos, A., Olmos, L., Model-based energy planning: a methodology to choose and combine models to support policy decisions. International Journal of Electrical Power & Energy Systems. Vol. 159, pp. 110048-1 - 110048-22, Agosto 2024.
- **Álvarez, E. F.**, Sánchez, P., Ramos, A., Self-scheduling for a hydrogen-based virtual power plant in day-ahead energy and reserve electricity markets, 20th International Conference on the European Energy Market - EEM24, Estambul (Turquía). 10-12 junio 2024.
- **Álvarez, E. F.**, Olmos, L., Ramos, A., Antoniadou-Plytaria, K., Steen, D., Tuan, L.A., Values and impacts of incorporating local flexibility services in transmission expansion planning. Electric Power Systems Research. Vol. 212, pp. 108480-1 - 108480-9, Noviembre 2022.
- Ramos, A., **Álvarez, E. F.**, Lumbreras, S., OpenTEPES: Open-source transmission and generation expansion planning. SoftwareX. Vol. 18, pp. 101070-1 - 101070-14, Junio 2022.
- Lumbreras, S., Gómez, J.D., **Álvarez, E. F.**, Huclin, S., The human factor in transmission network expansion planning: the grid that a sustainable energy system needs. Sustainability. Vol. 14, nº. 11, pp. 6746-1 - 6746-22, Junio 2022.
- Huppmann, D., Gidden, M.J., Nicholls, Z., Hörsch, J., Lamboll, R., Kishimoto, P.N., Burandt, T., Fricko, O., Byers, E., Kikstra, J., Brinkerink, M., Budzinski, M., Maczek, F., Zwickl-Bernhard, S., Welder, L., **Álvarez, E. F.**, Smith, C.J., pyam: Analysis and visualisation of integrated assessment and macro-energy scenarios. Open Research Europe. Vol. 1, pp. 74-1 - 74-30, Septiembre 2021.
- **Álvarez, E. F.**, Paredes Quiñones, M., Rider, M.J., Semidefinite relaxation and generalised benders decomposition to solve the transmission expansion network and reactive power planning. IET Generation Transmission & Distribution. Vol. 14, nº. 11, Junio 2020.
- **Álvarez, E. F.**, López, J.C., Vergara, P.P., Chavez, J.J., Rider, M.J., A stochastic market-clearing model using semidefinite relaxation, 13th IEEE PowerTech Conference - PowerTech 2019, Milán (Italia). 23-27 junio 2019.