



Roberto Ruiz Flores

Energy efficiency consultant

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EXECUTIVE SUMMARY

Mechanical engineer with more than 10 years of experience in the field of energy efficiency of buildings and a strong focus on energy modeling. Special interest in data science, machine learning and deep applications.

SKILLS

- Solid background in building physics, HVAC systems and thermal systems.
- Wide experience in energy modeling and simulation of buildings and thermal systems (TRNSYS, Open Studio, Carrier HAP, THERM, EES, PEB).
- Energy efficiency studies: energy audits and quick scans, feasibility studies, design studies, thermal comfort and IAQ studies, measurement and verification of energy savings (M&V).
- Good programming and data analysis skills (Python, MATLAB/ GNU Octave).
- Teamwork experience. Self-taught, analytical and autonomous.
- Languages: Spanish (native), English (fluent), French (fluent), Portuguese (intermediate).

WORK EXPERIENCE

August 2021 – Present: Energy efficiency consultant ([Freelance](#)), Brussels (Belgium).

January 2018 – July 2021: Expert at [Sweco Belgium](#) (Buildings division), Brussels (Belgium).

Main Activities:

- Providing engineering services during the development and execution of energy efficiency projects in buildings.
- Building energy simulations: overheating analysis, building energy consumption, BREEAM certification (Low carbon design / Ene 04, Thermal comfort / Hea 04, evidence gathering).
- Energy audits: measured data and energy consumption analysis, identification and evaluation of energy conservation measures, report writing.
- PEB certification: initial declaration, feasibility studies, final declaration.

May 2010 – April 2016: Research engineer at [Thermodynamics Laboratory of the University of Liège](#), Liège (Belgium).

Research projects:

- [BRICKER](#): Energy Reduction in Public Building Stock. WP4 - BRICKER technologies integration in buildings. D4.43.a: [Simulation report of Belgian demonstrator - Definition of baseline scenario](#).
- [iSERVcmb](#): Inspection of HVAC Systems through continuous monitoring and benchmarking. Energy Conservation Studies. [Public report Code to integrate modelling tools into database](#).
- [IEA ECBCS Annex 53](#): Total Energy Use in Buildings - Analysis & Evaluation Methods.

Main Activities:

- Energy performance assessment of buildings and HVAC systems through detailed energy simulations for different purposes: diagnosis, identification and implementation of retrofit options and estimation of energy savings (M&V).
- Collection and analysis of energy consumption and monitoring data, report writing.

March 2009 – April 2010: Freelance Consultant, Concepción (Chile)

Main Activities:

- Participation in projects about energy efficiency of buildings carried out by Green Energy Company.
- Dynamic simulation of solar thermal systems. Study carried out for Green Energy Company.

November 2008 – February 2009: Project Engineer, Enersolutions, Concepción (Chile).

Project:

Waste heat recovery from Ruth Steam Accumulators. Study carried out for Steel Company Huachipato, Chile.

Main Activities:

- System performance assessment, equipment sizing, modeling and simulation of thermal systems, report writing.

EDUCATION AND TRAINING

March 2002 – May 2008: Mechanical Engineer, University of Concepción, Concepción (Chile).

COURSES AND CERTIFICATIONS

- [Data Analysis with Python \(FreeCodeCamp\)](#) – October 2021
- [Machine Learning with Scikit-Learn professional course](#) – December 2020
- [Git and GitHub professional course](#) – November 2020
- [Convolutional neural networks \(Coursera\)](#) – August 2020
- [Neural Networks and Deep Learning \(Coursera\)](#) – July 2020
- [Machine Learning \(Coursera\)](#) – June 2020

PUBLICATIONS

- R. Ruiz, M. D'Antoni, V. Lemort, "[Energy Reduction in Public Building Stock: Assessing the Impact of Control Strategy over Expected Energy Savings and Indoor Comfort Level](#)". CLIMA 2016 - 12th REHVA World Congress. Aalborg, May 2016.
- R. Ruiz, V. Lemort, "[Calibration of Building Simulation Models: Assessment of Current Acceptance Criteria](#)", 8th International Conference Improving Energy Efficiency in Commercial Buildings (IEECB'14). Frankfurt, April 2014.
R. Ruiz, S. Bertagnolio, V. Lemort, "[Global Sensitivity Analysis applied to Total Energy Use in Buildings](#)", 2nd International High Performance Buildings Conference. Purdue, July 2012.