



## 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 learning applications.

Dual-citizenship: Chilean-Belgian.

### 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 (pre-intermediate).

## WORK EXPERIENCE

**December 2021 – Present:** Energy efficiency consultant at [R2F SpA](#), Castro (Chile).

### Main Activities:

- Energy efficiency studies in buildings and industries.
- Environmental certifications (CES, CEV).
- Building energy simulations.

**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).*

## ACCREDITATIONS

- [Certificación Edificio Sustentable assessor](#) (CES / Chile)
- [External energy assessor CEV](#) (Minvu / Chile)
- [Energy efficiency consultant](#) (Agencia de Sostenibilidad Energética / 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 - 12<sup>th</sup> REHVA World Congress. Aalborg, May 2016.
- R. Ruiz, V. Lemort, "[Calibration of Building Simulation Models: Assessment of Current Acceptance Criteria](#)", 8<sup>th</sup> 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](#)", 2<sup>nd</sup> International High Performance Buildings Conference. Purdue, July 2012.