Carlos Varela Martín

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Birth 11th November 1986, Almería (Spain)

Relevant work experience

Ongoing personal project ▷ eflows.nl

From September 2017 to July 2019 **Energy Data Consultant** — Gemeente Amsterdam

Flexpower Amsterdam: Analysis of electric vehicles charging sessions, to devise how to match their consumption with renewable energy generation in the city.

Simulation and dashboarding of energy flows combining solar energy, stationary batteries and electric vehicles.

From June 2017 to December 2018 **Developer** — Hero Balancer

Development of algorithms for the intelligent steering of heating installations, combining heat pumps, buffers and prediction of heat demand.

Implementation of cloud infrastructure for data gathering and use of machine learning algorithms.

Development of web application for data display (▷ app.herobalancer.nl).

From October 2015 **Data Scientist** — Resourcefully

Gemeente Amstelveen: Application of *eflows* to estimate energy flows and the potential for energy flexibility in districts, combining data of households, heat pumps and electric vehicles.

East Harbour Prosumer Community: Engagement of households with PV installations. Participants can monitor and compare their energy production and consumption (▷ prosumers.nl).

Project *Amsterdam Vehicle 2 Grid*: Combining electromobility and solar energy in a household.

2014 October to November **Energy Consultant** — Stadt Graz (Austria).

Research and modeling of heating technologies: *Potential of near-surface geothermal heating on houses in Graz*.

Education

August 2011 to August 2013 **MSc: Erasmus Mundus Master in Industrial Ecology** — (Double degree) Delft University of Technology / Leiden University (Netherlands); and University of Graz (Austria).

Master's thesis: *Indicators for Smart Cities: Energy, Carbon and Mobility*. Awarded as one of the best in its promotion by Stadt Graz.

September 2004 to September 2010 **Bachelor in Environmental Sciences** — University of Granada (Spain).

2008/09: Academic *Erasmus* stay at Leuven University (Belgium).

Languages

Native Spanish

Professional English

Basic (B1) Dutch

Computer skills

Programming languages
Expert: R

Competent: C++, Python, JavaScript.

Data Science Data gathering, manipulation, analysis and visualization.

Custom dashboards, with Shiny framework.

Custom reports, including use of LaTeX

Machine learning and optimization algorithms.

Databases: SQL and MongoDB.

Energy Systems I elaborate my own algorithms for energy systems simulations and steering, combining electric vehicles, heating and batteries. I include them in my R package *eflows* (▷ https://github.com/cvmartin/eflows).

Implementation Cloud computing and web service infrastructure with Amazon Web Services, to elaborate data flows and energy steering engines.

Deployment of microservices using HTTP and MQTT, for IoT and smart devices steering.

Publications

Journal Heimo Staller, Ernst Rainer, Richard Heimrath, Carlos Varela Martín and Martin Grabner, *+ERS – Plus Energy Network ReininghsRaus Süd: a pilot project towards an energy self-sufficient urban district*. Energy and buildings 115, 138-147.

Conferences Carlos Varela Martín, Ernst Rainer and Hans Schnitzer, *Smart City Graz: from the vision to the action* (*Places and Technologies*, Belgrade, April 3 – 4, 2014).

Birgit Kohla, Carlos Varela Martín, Antonia Nakova et al., *Sustainable Urban Mobility: Applications projected in the city of Graz* (paper presented at the conference *European Roundtable on Sustainable Consumption and Production*, Portorož, Slovenia, October 3 – 4, 2014).

References

Available on request.