# Gaëlle FAURE

**Nationality**: French
**Date of birth**: March 31st, 1988 (30 years old)
**Address**: 853 Reed Street – Victoria V8X 2P4 – BC, Canada
**Personal number**: +1 236 882 1218
**E-mail**: [perso@gaellefaure.fr](mailto:perso@gaellefaure.fr)
Driving license

## PROFESSIONAL AND RESEARCH EXPERIENCE

**since 2019** | ### Postdoctoral fellow
*Department of Civil Engineering, University of Victoria*
As member of Energy Systems and Sustainable Cities team, I use my double-background to do some research on:
- stochastic modelling and robust optimization of district energy systems
- low temperature district heating modelling

**2015-2018** | ### Ph. D. Thesis
*French National Institute for Solar Energy (CEA LITEN)*
**Title:** Study of large solar thermal system critical faults: definition, modeling and diagnosis
Analyse of fault impacts on the behavior of a large solar thermal system by simulation means.
This work implies in particular:
- treatment and analysis of a large amount of data coming from 2 large solar installations in operation
- exhaustive analysis of dysfunctions affecting large solar thermal systems based on a survey to European experts and data coming from installations in operation
- detailed modeling and experimental validation of a solar thermal collector in Modelica/Dymola
- features selection characterizing the behavior of a large solar thermal installation

**2013-2015** | ### Sabbatical &Free-lance engineer
Development of VBA Excel macro for a thermal solar systems test and certification laboratory:
- automatic generation of Word reports
- tasks automation

**2010-2013** | ### Research & development engineer
*Viessmann*
I was integrated in the design office for new solar systems and components:
- project management of collaborative R&D projects:
  o SysTHeff (high efficiency solar thermal systems): project financed by the French agency for environment and energy management (ADEME), in partnership with CEA-INES, INES Education and WILO company
  o SCHEFF (high energy efficiency large solar thermal systems): project financed by ADEME, in partnership with Tecsol, CEA-INES, Belenos, Cofely
- internal management of maintenance and improvement of CARNOT: a MATLAB/Simulink library of thermal and hydraulic components enabling solar thermal systems modeling
- solar thermal systems modeling and simulation for research and development

**2010**
**(6 months)** | ### Trainee engineer
*French National Institute for Solar Energy (CEA LITEN)*
Parameter identification of a solar hot water tank numerical model
- study of algorithms for parameter identification models with the help of experimental data (Levenberg-Marquardt, Hooke-Jeeves…)
- design and development of a software enabling this identification with JAVA and GenOpt

**2009**
**(2 months)** | ### Trainee engineer
*Meteolien*
Study and comparison of data for wind forecast and assessment
- study, comparison and cross-validation of models (ALADIN of Météo France, WRF, MaestroWind of ATM-Pro) for wind assessment in Lebanon
- study of the WRF model and application to wind forecast in Lebanon

**2008**
**(1 month)** | ### Trainee engineer
*Ti'Eole*
Design and development of a software of wind analysis for small wind turbine

## EDUCATION

| **2015-2018** | **Ph.D.** |
|---|---|
| | *Grenoble Electrical Engineering Laboratory, Grenoble Alpes University* |
| | -- Director: Tuan Quoc TRAN |
| **2006-2010** | **M.Sc.** |
| | *National Institute of Applied Sciences (INSA) of Toulouse* |
| | • Applied mathematics department |
| | • Visiting student at Polytechnique Montréal during one semester |
| **2005** | French baccalaureate in sciences with honours |

## PUBLICATIONS AND CONGRESSES

| Journal | • Gaëlle Faure et al. « Fault Detection and Diagnosis for Large Solar Thermal Systems: a Review of Fault Types and Applicable Methods ». In *Solar Energy*. *Under review* |
|---|---|
| | • Gaëlle Faure et al. « Impact of faults on the efficiency curve of flat plate solar collectors: a numerical analysis ». In *Journal of cleaner energy production*. |
| Oral presentation | • Fabrice Renaude, Cédric Paulus, Gaëlle Faure, Mathieu Vallée, et Pascal Bourbotte. 2016. « Monitoring results for the two firsts solar plants on district heating network in France: BalmaGramont and Juvignac ». In *Proceedings of 4th International Solar District Heating Conference*. Billund, Denmark. |
| | • Gaëlle Faure et al. 2016. « Reviewing the Dysfunctions of Large Solar Thermal System: A Classification of Sub-Systems Reliability ». In *ISES ConferenceProceedings (2016)*. Palma de Mallorca (Spain). |
| | • Gaëlle Faure et al. 2018. « A methodology to analyse fault effect on large solar thermal system behaviour ». In *Proceedings of ECOS 2018 (2018)*. Guimaraes (Portugal). |
| Poster | • Gaëlle Faure et al. 2017. « Diagnosis of critical faults in large solar thermal systems: an overview of relevant FDI methods and their combination ». In *Proceedings of 20th IFAC World Congress*. Toulouse. |
| | • Gaëlle Faure et al. 2018. « Modelling faulty behaviours of large solar thermal systems ». In *Proceedings of 5th SDH Conference*. Graz (Austria). |
| Patent | • Gaëlle Faure et al. « Procédé de localisation de défaut dans un champ solaire thermique. », FR1859767, filled on October 23th, 2018. |

## TEACHING

| **2015** | **Basics of numerical mathematics.** |
|---|---|
| | *Grenoble Alpes University Institute of Technology 1* |
| | Teaching assistant, lab work supervisor for undergraduate students. |
| | Lab work on MathCad and Matlab/Simulink. |
| | -- 17h |

## LANGUAGES

| French | Native speaker |
|---|---|
| English | Professional fluent<br>TOEIC 910/995 |
| German | Basic skills |

## INFORMATICS

| Programming | Modelica, Python, Scilab/Matlab, VBA, C++ |
|---|---|
| Software | Dymola, Spyder, Matlab, Scilab, Office Suite, LateX, TRNSYS, GenOpt |

## ACTIVITIES AND INTERESTS

- Mountain activities and sports: climbing, hiking, skiing
- Reading: science fiction, crime novel, comics, historical novel

# REFEREES

| | |
|---|---|
| Dr Ralph EVINS | **Assistant professor** |
| | *Department of Civil Engineering, University of Victoria* |
| | E-mail: revins@uvic.ca |
| | Professional number: +1 250-472-5845 |
| Dr Mathieu VALLEE | **Research engineer** |
| | *French National Institute for Solar Energy (CEA LITEN)* |
| | E-mail: mathieu.vallee@cea.fr |
| | Professional number: +33 (0)4 79 79 21 87 |
| Pr Tuan Q. TRAN | **Professor** at *INSTN, Paris Saclay University* |
| | **Scientific manager** at *French National Institute for Solar Energy (CEA LITEN)* |
| | E-mail: QuocTuan.Tran@cea.fr |
| | Professional number: +33 (0)4 79 79 22 31 \| Mob. +33 (0)6 70 25 20 31 |