

Job title	Study of electromagnetic compatibility of a hydrogen fuel cell coupled to a very high frequency GaN-based power converter with advanced functionalities
Job type (PhD, Post-doc, Engineer)	PhD
Contract duration (months)	36 months
Qualifications (Master degree, PhD...)	Master degree in Electrical Engineering
Job hours (full time/ part time)	Full time
Employer	UBFC – Université de Franche-Comté
Host Laboratory	FEMTO-ST Institute, Department of Energy, SHARPAC team
URL Host Laboratory	https://www.femto-st.fr
Address Host Laboratory	FEMTO-ST, Equipe SHARPAC, Plateforme Hydrogène – Energie, Rue Edouard Belin, 90000 Belfort Cedex
Job description	The idea of the proposed PhD thesis subject is to study the integration and the frequency behavior of a GaN-based static converter coupled to a hydrogen fuel cell integrating advanced diagnostic functionalities of the state of health of the cell and of the converter. The study of the electromagnetic compatibility (EMC) of the Hydrogen Cell / GaN converter assembly aims to obtain the frequency analysis of the assembly knowing that in a context of integration, the parasitic elements (parasitic inductance, capacitance coupling) can interfere with the operation of the system. It will be interesting to check that the high measurements necessary for piloting and diagnosis are not disturbed by electromagnetic phenomena. An EMC theoretical study as well as a prototype of a GaN-based power converter strongly integrated on a 500W hydrogen fuel cell will be made. The EMC chamber is used to test the hydrogen fuel cell / GaN-based power converter to verify that it meets current standards for electromobility.
Supervisor(s)	<ul style="list-style-type: none"> ▪ Supervisor : Prof. Dr. Daniel HISSEL ▪ Co-supervisor : Dr. Béatrice BOURIOT (contact email) ▪ Co-supervisor : Dr. Arnaud GAILLARD ▪ Co-supervisor : Dr. Frédéric GUSTIN
Candidate profile	Electromagnetic Compatibility, Power Electronics, Hydrogen-based Fuel Cell, Experimental tests capability

Keywords	Hydrogen-based Fuel Cell, Power Converters, GaN semiconductors, Electromagnetic Compatibility, Diagnosis, Experimental Test Bench
Application deadline	15/06/2021
Starting Job	01/10/2021
Application <i>Depending on the type of position</i>	<p>PhD Position</p> <p>Please send the following documents (all in one PDF file) by e-mail to beatrice.bouriot@ubfc.fr :</p> <ol style="list-style-type: none"> 1) For EU candidates: Copy of your national ID card or of your passport page where your photo is printed. For non-EU candidates: Copy of your passport page where your photo is printed. 2) Curriculum Vitae (1 page). 3) Letter of motivation relatively to the position (1 page). 4) Copy of your Master degree and/or Engineer degree if already available. 5) Copy of your final marks and ranks. 6) Coordinates of reference persons (maximum 3, at least your master thesis supervisor): Title, Name, organization, e-mail. <p>If you have questions regarding the application, please contact the supervisors.</p>