



Researcher in the field of Power Semiconductor Modules (M/F)

<i>Location :</i>	<i>Rennes (35), France</i>
<i>Web site :</i>	http://www.fr.mitsubishielectric-rce.eu/
<i>Job reference:</i>	<i>PES_PERM_012023</i>
<i>Contract :</i>	<i>permanent</i>

Context and description:

MITSUBISHI ELECTRIC is one of the leading manufacturers of power electronics related products from components such as power devices to systems such as EV traction inverters. As MITSUBISHI ELECTRIC Group's subsidiary, MITSUBISHI ELECTRIC R&D CENTRE EUROPE includes a research division specialized in power electronics which perform fundamental research in the fields of integration and reliability of power electronic systems.

To develop its activities in the field of Health Management Technologies for **power converters** and more specifically of **power semi-conductor modules** the research division located in Rennes (France – Bretagne [35]) is looking for a researcher specialized in the fields of **test of power semi-conductor modules** and **design of intelligent gate drivers**, with the following duties:

- Conducting **research** in the domain of **power semiconductor modules**, to contribute to design the **future generation of intelligent gate drivers**, with strategic functions of **condition and health monitoring, protection, remaining lifetime prediction and lifetime extension**. The company catalog and example research can be found with the following links:

<https://www.mitsubishielectric.com/semiconductors/products/powermod/index.html>

https://www.mitsubishielectric-rce.eu/wp-content/uploads/2021/08/JCB_SelectiveGate.pdf

- You will coordinate and contribute to project(s) related to the **condition** (e.g. junction temperature, current, voltage) and **health** (e.g. of wired, soldered or sintered interconnections) monitoring of **IGBT and SiC MOSFET power devices**.
- You will create and maintain a **literature review** on the relevant scientific perimeter, propose **research directions**, and **patent ideas**
- You will be in charge a **converter test platform with power cycling capability, specify/realize hardware and software developments and tests**

- You will develop **models** and **simulations** to support the analysis of the **failure modes** and related **precursors to failure**, as well as the analysis of the **errors and noise of the measures**.
- **You will propose patents**
- You will **report your activities** to your manager and you will be in contact with **Japanese partners** to integrate the industrial objectives, present the research progress, and contribute to technology transfers.

Education and experience required:

- **At least 3 or 4 years of experience (including PhD degree) within the field of power electronics**, through a public or private R&D laboratory (industrial experience is a plus).
- **Expertise in IGBT and SIC MOSFET power semiconductor modules, with a focus on the electrical (including switching) and thermal measures, the reliability tests, the control (gate drive) and the integration in a converter context.**
- Practical experience in using the equipment of a power electronics laboratory (e.g. power supplies, oscilloscope, probes...), softwares for the simulation and the analysis of circuits (e.g. LTspice, PSIM, MATLAB) and, if possible, of finite element modeling tools (e.g. ANSYS, COMSOL).

Personal profile:

- Ability to work across multiple tasks methodically and efficiently and meet committed schedules;
- Motivated to work in **dynamic environment** and adaptable to changes in priority;
- Excellent **communication** and interpersonal skills: ability of sharing information; ability to expose clearly complex concepts, speaking and writing.
- **Fluent English;**

Contact:

Magali BRANCHEREAU (HR Manager),

Thanks to send your CV and motivation letter in PDF format by email (in object: your name + the reference PES_PERM_012023) to: jobs@fr.mercedes-mee.com