



## **New Exchanger for water-based systems – Master Internship – 5 to 6 months**

In 2020, refrigerant used in air-conditioning systems (excluding automotive air-conditioning systems) were responsible for 3.5 millions of tons eq. CO<sub>2</sub>. To reduce the contribution of air-conditioning systems to climate change, water-based systems are a promising alternative. However several drawbacks hinder the industrialization of these systems, including cost and compactness. LOCIE has been working on these issues for several years and developed compact components notably for H<sub>2</sub>O/LiBr absorption systems. The aim of this internship is to pursue in these issues by developing a new generation of water-based mass and heat exchanger.

During this internship, the student will mainly conduct an experimental works. She/he will study transfer phenomena occurring inside one channel of this new generation of heat exchanger by means of a high speed, high resolution camera. She/he will also conduct thermal analysis based on data of temperature, pressure and mass flow recorded. A performance map will be extracted from the obtained results and suggestions will be made to realize compact design of this heat exchanger.

According to the work to conduct, a solid knowledge on heat transfer, thermodynamic and phase-change phenomena is required. Moreover, the student should be comfortable with experimental work since he/she may be required to modify the experimental set-up and performs maintenance work to ensure the reliability and accuracy of the obtained results.

### **Practical Information :**

**Internship Localization :** LOCIE (Laboratoire Optimisation de la Conception et de l'Ingénierie de l'Environnement)

Université Savoie Mont Blanc, CNRS UMR 5271

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**Starting date :** Spring 2023

**Duration :** 5 - 6 months

**Supervision :** B. Stutz and F. Giraud

**Contact and application** (Resume + motivation letter) : F. Giraud ([florine.giraud@univ-smb.fr](mailto:florine.giraud@univ-smb.fr))

**Application deadline :** 2 décembre 2022