

## Ph.D Project EIPHI GS MIB

Job title	Experimental and numerical studies of the integration of a Trombe wall up to the building scale
Job type (PhD, Post-doc, Engineer)	PhD
Contract duration (months)	36
Qualifications (Master, Ph.D ...)	Master
Employer	UBFC Université Bourgogne Franche-Comté
Financing Institutions	Région Bourgogne Franche-Comté & Graduate School EIPHI
Host Laboratory	FEMTO-ST
URL Host Laboratory	<a href="https://www.femto-st.fr/fr">https://www.femto-st.fr/fr</a>
Address Host Laboratory	15B, avenue des montboucons 25000 BESANÇON
Job description	<p>The objective is to understand the key elements of the functioning of a Trombe wall, which is a passive solar facade system. These systems represent an ambitious alternative to meet energy needs. In the 1st phase of the thesis, the PhD student will discover the work already done within the team. An experimental model of a Trombe wall has been built and a numerical model has been established. A thorough bibliographical study will have to be done at the building scale and not only at the wall scale. The PhD student will also be asked to establish a bibliography on velocity measurement methods, in particular the PIV for low velocity air flows. The 2nd phase will consist in the preparation of the experimental tests. The PhD student will instrument with precision the model - Trombe wall and room. The setting up of the test bench including the data acquisition is a key aspect of this part. The equipment related to the PIV will have to be installed and the methodology mastered during this process.</p> <p>The 3rd phase is dedicated to a test campaign aiming at testing various configurations of the Trombe wall: aspect ratio (thickness of the air gap), incoming flow, different temperature and humidity conditions, open and closed gills, ... In parallel, the calculation code will be enriched to get closer to the situations encountered. The 4th part is dedicated to the integration of the wall at the building scale. This work will be done with the TRNSYS software. The PhD student will work on a real case if the ENERGIE building of the EcoCampus project is built or to look for a building to instrument.</p> <p>The last phase of the PhD thesis between [t0+30 months] and [t0+36 months] will be dedicated to the conclusions and perspectives to be given to the work, as well as to the writing of the manuscript.</p>

Supervisor(s)	Sylvie BEGOT – Philippe Désévaux
Candidate profile	Master en énergie thermique
Keywords	Thermal energy, PIV, modelling
Application deadline	31 <sup>st</sup> may 2022
Application Depending on the type of position	<p>Please send the following documents (all in one PDF file) by e-mail to:</p> <ol style="list-style-type: none"> <li>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.</li> <li>2) Curriculum Vitae (may include hyperlinks to your ResearchID, Research Gate, Google Scholar accounts).</li> <li>3) Detailed list of publications (may include hyperlinks to DOI of publications).</li> <li>4) Letter of motivation relatively to the position (Cover Letter) (maximum 1 page)</li> <li>5) Copy of your Master degree if already available.</li> <li>6) Coordinates of reference persons (maximum 3): Title, Name, organization, e-mail.</li> </ol> <p>If you have questions regarding the application, you can contact the supervisor.</p>