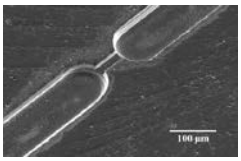


M I G R A T E

MIniaturized Gas flow foR Applications with enhanced Thermal Effects

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. 643095

MIGRATE (Research and training network on **MI**niaturized **G**as flow fo**R A**pplications with enhanced **T**hermal **E**ffects) is planned as a multi-partner Innovative Training Network (ETN – European Training Network), assessing research and applications for thermal aspects of gas microflows. The network consists of 10 beneficiaries and 7 associate partners, spread all over Europe. This unique combination of university research, SME and world leading industrial stakeholders will contribute in a synergetic way to the increase of knowledge about micro scale gas flow heat transfer problems as well as to industrial applications of highly efficient miniaturized devices. Within MIGRATE, a number of Early Stage Researcher (ESR) projects will cover different aspects of enhanced heat transfer and thermal effects in gases, spanning from modelling of heat transfer processes and devices, development and characterization of sensors and measurement systems for heat transfer in gas flows as well as thermally driven micro gas separators to micro-scale devices for enhanced and efficient heat recovery in automotive, aeronautics and energy generation.
The ESRs recruited for the network will undergo training in at least three different locations. Additionally, short stays can be arranged at beneficiaries and associate sites. Moreover, annual network wide workshops and summer schools will ensure that each researcher receives exposure to, and benefits from, the full expertise of the Network.

More information can be obtained from www.migrate2015.eu.

Within the MIGRATE network a

E S R Position

is offered at MITIS SA with the topic

Heat Recovery from Microturbines

Ref. N°: MIGRATE-ESR 15

The position includes secondments at

Karlsruhe Institute of Technology (6 Months)

and

University of Bologna (4 Months)

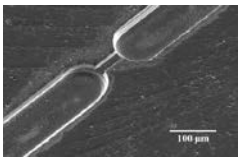
Short stays at different other beneficiaries or associated may be possible by negotiation.

Main goal: Design, fabrication, description and experimental characterization of a micro heat exchanger for heat recovery operating with turbine exhaust gases at high temperatures.

Duration: 3 years

Expected starting date: 2/1/2016

Application deadline: **15/12/2015**



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Detailed description of the project:

MITIS is developing a microCHP (Combined Heat and Power) system adapted to the residential sector and based on a recuperated cycle micro gas turbine. Here, CHP is defined as the distributed generation of electricity from piped-in natural gas fuel at a residence or a commercial site complemented by use of exhaust gas heat for local heating and cooling. The electric power output of the microCHP system is 1kWe to be adapted to the residential market. Our aim is to provide a disruptive technology with respect to the current available products (ICE, Stirling, micro gas turbine) that would allow a widespread deployment of this technology in Europe. Such deployment could drastically reduce the annual primary energy consumption and would provide significant reduction of CO_2 emissions (10-20% of total annual CO_2 emissions for electricity generation). The conditions for such a market uptake are high efficiency, long life (of about 10 years), low cost, low emissions. The ESR will focus on analysing and selecting the best appropriate materials and fabrication techniques to allow long lifetime, corrosion resistance at high temperature and low cost manufacturing of the recuperator heat exchanger of the micro-CHP system. Moreover, the PhD candidate should be able to support the design by simulation of the temperature and stress distribution inside the heat exchanger. After being manufactured, the characterization of the heat exchanger device is also performed by the PhD candidate.

Expected time schedule

ESR N°15	**Year 1**		**Year 2**		**Year 3**	
	1st stay	2nd stay	3rd stay	4fth stay	5th stay	
Location	MITIS	KIT	MITIS	UNIBO	MITIS	

1st stay: Learn about MITIS heat exchanger technologies and corrosion resistant materials in high temperature environment. Down select materials and manufacturing processes

2nd stay: Learn about KIT special micro-manufacturing techniques and manufacture prototype with selected materials

3rd stay: Perform heat exchanger accelerated life and corrosion testing at MITIS

4th stay: Deepen knowledge in heat transfer devices experimental testing at UNIBO

5th stay: Finalize optimized heat exchanger prototype testing at MITIS

Requirements

This is a challenging and highly rewarding course of study and therefore the successful candidate will need to have the following qualifications:

Engineering degree in materials, metallurgy or mechanics. Fluency in English. Some experience in the field of experimental testing on materials would be appreciated Good knowledge in fluid mechanics

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as well as heat transfer. Some knowledge in microstructure technology will be an advantage, but not a pre-condition.

Financial information / Salary

Wages include a monthly gross salary and a mobility allowance according to the Marie Sklodowska-Curie grant rules.

Contacts:

For further information please contact: michel.delanaye@mitis.be

Application procedure:

Applications for this position, including a CV with the contact details of three referees, a covering letter, attestation of the diploma / master degree and last transcript of records, should be sent, using the reference number in the subject line and preferably via e-mail, to:

michel.delanaye@mitis.be

Deadline: 15/12/2015

Eligibility of your application can be checked here: www.migrate2015.eu