


INNOSTORAGE IRSES-610692		Deliverable number:	D7.2
		Title:	Report on Staff Exchange

INNOSTORAGE – USE OF INNOVATIVE THERMAL ENERGY STORAGE FOR MARKED ENERGY SAVINGS AND SIGNIFICANT LOWERING CO₂ EMISSIONS

Beneficiaries:




Partners:




D7.2 - Report on Staff Exchanges

	Name and Institution	Date
Prepared by:	Lab. Technician Rosa Vaquera University of Lleida	20 July 2017
Checked by:		
Approved by:	Prof. Dr. Luisa F. Cabeza University of Lleida	15/09/2017

INNOSTORAGE IRSES-610692		Deliverable number:	D7.2
		Title:	Report on Staff Exchange

Contents

1	Objectives.....	3
2	Collaboration between UdL/UB and UNISA.....	3
3	Opening of high temperature testing facility in UNISA.....	3
4	Outcomes or future work.....	4
5	Assessment.....	5

INNOSTORAGE IRSES-610692		Deliverable number:	D7.2
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1 Objectives

The present secondment is included in Work package 1: Material development and characterisation.

Laboratory technician assisting the work done by the secondment of Dr. Mercè Segarra.

Thus, the objectives of this secondment were:

- To install and put into operation the experimental device to measure the corrosion of materials for containers of molten salts.
- To run different experiments of materials corrosion in molten salts under cycling conditions.
- To find and test some molten salts compositions to work as thermal energy storage systems at high temperatures.

2 Collaboration between UdL/UB and UNISA

Collaboration between both UdL and UB with UniSA was toughened, concerning corrosion tests on materials that can be used for PCM containers. The research group at Universitat de Barcelona, with the collaboration of UdL, has set up and tested a device to measure the corrosion on metals, and during this secondment it has been fully explained to researchers at UniSA.

The University of Lleida collaborated with a laboratory technician to perform the work planned by the University of Barcelona at the University of South Australia. Also, during this secondment the laboratory technician learned specific techniques of corrosion testing that are planned to be implemented in the laboratory analysis of UdL.

3 Opening of high temperature testing facility in UNISA

On the other hand, UNISA has been hardly working on the design and set up a large facility for testing high temperature molten salts (whose opening took place during this secondment), in which the experience on corrosion has been taken into account. UniSA members showed us the corrosion problems that had arisen during its design and operation.

The inauguration was carried out by Prof. Tanya Monro, deputy vice chancellor, Research and Innovation; Prof. Simon Beecham, Pro vice chancellor, division of information technology, engineering and the environment; and Prof. Wasim Saman, Sustainable Energy Engineering School of Engineering department (Figure 1).


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Figure 1. High temperature facility inauguration at Barbara Hardy Institute (UniSA, Australia)

4 Outcomes or future work

As a continuation of the joint research carried out so far, it was decided to carry out diverse corrosion tests. The agreed procedure for studying different metals and different salt mixtures was that the thermal cycles were to be performed at UNISA facilities, while the UB would undertake the corrosion determination and characterization tests using electron microscopy, as well as the tests of isothermal corrosion to determine corrosion kinetics (Figure 2).

Thus, the first samples obtained at UNISA in which stainless steel has been immersed in a mixture of salts of sulphates during several thermal cycles, will be sent to the UB for later characterization. At the same time, samples of Inconel, which will be in parallel tested at the UB under isothermal conditions, will be sent to UNISA to perform thermal cycling and returned to the UB for characterization.

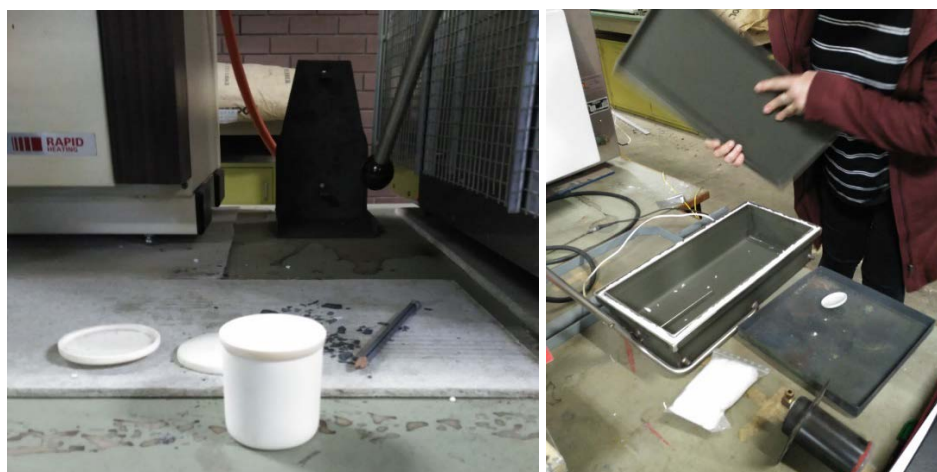



Figure 2. Preparation of set up for corrosion testing

In the University of Lleida, it is planned to start a research topic on corrosion testing to collaborate with UB and UniSA for the following EU projects.

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5 Assessment

This has been a great experience where I could learn different laboratory methodologies and the evaluation of corrosion problems. It was a pleasure working with Prof. Ming, and it was really interesting visit the laboratories and equipment of UniSA.

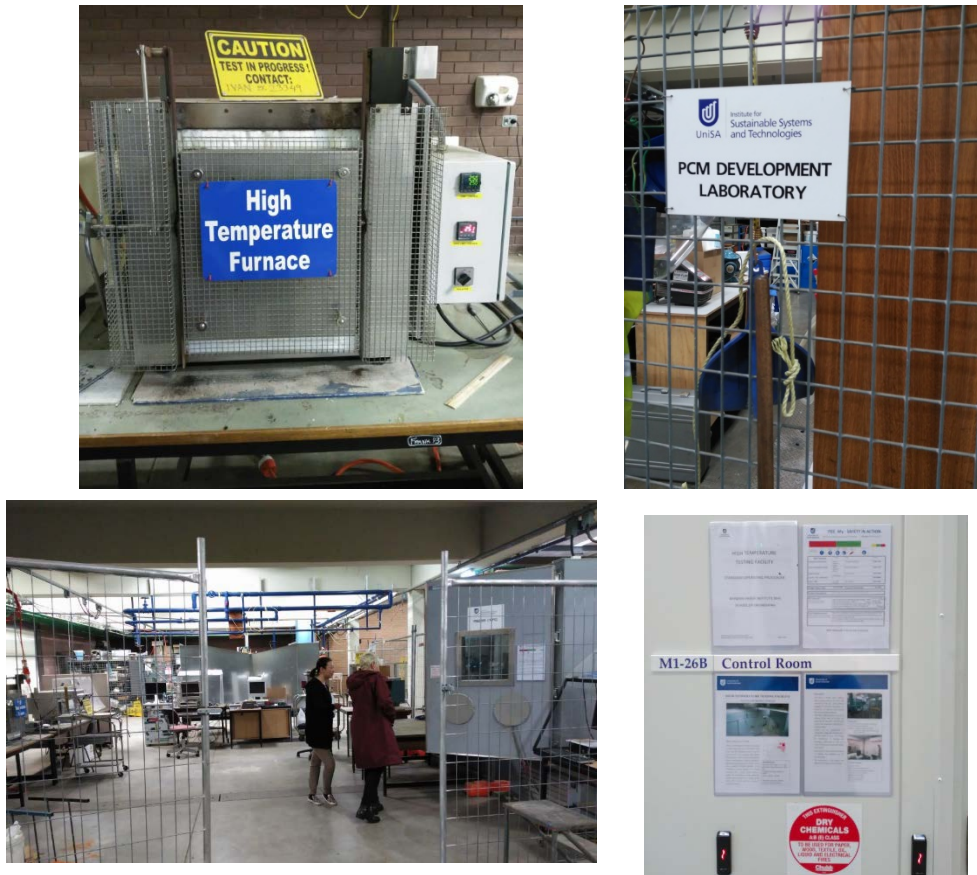


Figure 3. Laboratories and equipment of UniSA.