



Project no: 608578

Project acronym: SCARLET

**Project title: Scale-up of Calcium Carbonate Looping Technology
for Efficient CO₂ Capture from Power and Industrial Plants**

Deliverable D 8.2
First public workshop

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TU Darmstadt

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1 Introduction

During the course of the SCARLET project, a first public workshop was organized to inform relevant stakeholders about the results of the project, if possible as annex to an international conference. Stakeholders should be notified by email and through the website – energy engineers, utilities, academia and research institutions, industry, consultants and general public.

2 Preparations

The preparation of the workshop started in November 2015, after the date was fixed during the progress meeting in Athens. It was decided to hold the workshop on 20 April 2016 at the premises of the Technische Universität Darmstadt in order to provide the possibility to all participants to visit the 1 MW_{th} Calcium Carbonate Looping (CCL) pilot plant at the Institute for Energy Systems and Technology (EST). The participation was free of charge to attract as much people as possible. It was planned to inform interested people via email, through the website and various other announcements. The activities are listed:

- 15.02.2015: Save the date mail via email distributor list
- 08.03.2016: Official invitation, registration opened
- 08.04.2016: Reminder sent, registration elongated

In addition, the 1st Public SCARLET workshop was announced at different homepages in order to attract as many stakeholders as possible. The announcements are listed below:

- SCARLET homepage
<http://www.project-scarlet.eu/wordpress/?cat=1>
- idw – Informationsdienst Wissenschaft (idw – scientific information service)
https://idw-online.de/de/event53417?ipc_year=2016&ipc_month=4
- Calendar of events of Technische Universität Darmstadt
<http://www.tu-darmstadt.de/vorbeischauen/kalender/veranstaltung.de.jsp?id=79873&jahr=2016&tag=20&monat=3>

3 Workshop

The 1st Public SCARLET Workshop presented the results of the first phase of the project focusing on the long-term pilot testing of the Calcium Carbonate Looping (CCL) process and the development and validation of scale-up tools: process and 3D-CFD models. Also the possibility of a site visit of the 1 MW_{th} CCL pilot plant was given. The agenda is shown in Table 1 including a guest presentation from J. C. Abanades presenting the results from CCL testing in the La Pereda pilot plant.

Table 1: Programme of the 1st Public SCARLET Workshop

<i>Time</i>	<i>Topic, Presenter</i>
09:00	Welcome, <i>B. Epple, Technische Universität Darmstadt</i>
09:15	Introduction to the SCARLET project, <i>J. Ströhle, Technische Universität Darmstadt</i>
09:25	Long-term pilot testing in 1 MW _{th} scale with hard coal, <i>J. Hilz, Technische Universität Darmstadt</i>
10:30	Long-term pilot testing in 1 MW _{th} scale with lignite, <i>M. Helbig, Technische Universität Darmstadt</i>
11:00	Coffee break
11:20	Analysis of sorbents from pilot testing, <i>J. Emmerich, Lhoist Recherche et Développement</i>
11:35	In-bed flow pattern measurements, <i>A. Daikeler, Technische Universität Darmstadt</i>
12:00	Experiences from La Pereda pilot plant, <i>J. C. Abanades, Spanish Research Council CSIC-INCAR</i>
12:30	Open discussion on operational experience
12:45	Lunch break
13:30	Development and validation of a CCL process model, <i>M. Haaf, Technische Universität Darmstadt</i>
14:00	CCL reactor simulation with the discrete element method, <i>A. Stroh, Technische Universität Darmstadt</i>
14:30	CCL reactor simulation with the two-fluid model, <i>A. Nikolopoulos, Centre for Research & Technology Hellas</i>
15:00	Open discussion on model development
15:15	Coffee break
15:30	Scale-up of CCL to a 20 MW _{th} pilot plant, <i>C. Weingärtner, GE Carbon Capture GmbH</i>
15:45	Future work , open discussion and concluding remarks
16:00	Visit of the CCL 1 MW _{th} pilot plant
17:00	End of workshop

All presentations are available for download from the public SCARLET website. Download can be accessed by the following link:

http://www.project-scarlet.eu/wordpress/?page_id=630

Also, all stakeholder will be notified by the regularly newsletter to take a look and download the presentations from the public website.

The participants were experts from the SCARLET consortium partners, other research institutes and universities and industrial representatives – about 40 people in all. Table 2 summarizes the participants of the 1st Public SCARLET workshop.

Table 2: Participants of the 1st Public SCARLET Workshop

Family Name	First name	Organisation
Abanades	Carlos	Spanish Research Council. CSIC-INCAR
Alobaid	Falah	Technische Universität Darmstadt
Arlt	Wolfgang	Friedrich-Alexander-Universität Erlangen-Nürnberg
Ashok	Dave	Ulster University
Balfe	Michael	GE Carbon Capture GmbH
Beirow	Marcel	University of Stuttgart
Belete	Tesfaye	Dutch Institute for Fundamental Energy Research (DIFFER)
Bughin	Olivier	Carmeuse Research and Technology
Charitos	Alexandros	Outotec
Daikeler	Alexander	Technische Universität Darmstadt
Emmerich	Jens	Lhoist Recherche et Développement S.A.
Epple	Bernd	Technische Universität Darmstadt
Gomez	Rodrigo	ThyssenKrupp Industrial Solutions AG
Haaf	Martin	Technische Universität Darmstadt
Helbig	Martin	Technische Universität Darmstadt
Hilz	Jochen	Technische Universität Darmstadt
Hornberger	Matthias	University of Stuttgart
Lange	Matthias	German Aerospace Centre
Léonard	Geraldine	Carmeuse Research and Technology
Nikolopoulos	Aristeidis	Centre for Research and Technology Hellas (CERTH)
Obermeier	Jonas	Friedrich-Alexander-Universität Erlangen-Nürnberg
Peralta-Solorio	David	Uniper Technologies Limited
Poros	Patrick	Steinmüller Babcock Environment GmbH
Reitz	Michael	Technische Universität Darmstadt
Roeb	Martrin	German Aerospace Centre
Romano	Matteo	Politecnico di Milano
Spörl	Reinhold	University of Stuttgart
Stallmann	Olaf	GE Carbon Capture GmbH
Stroh	Alexander	Technische Universität Darmstadt
Ströhle	Jochen	Technische Universität Darmstadt
Unker	Steve	GE Steam Power Business
Vierrath	Helmut	en2consulting
Walter	Diethelm	Rheinkalk GmbH
Weingärtner	Christoph	GE Carbon Capture GmbH
Werner	Andreas	Vienna University of Technology
Wiechers	Georg	RWE Power AG

Some impressions of the workshop are shown in Figure 1 and Figure 2. Figure 1 shows the auditorium of the workshop, Figure 2 the guest speaker J.C. Abanades from the Spanish Research Council CSIC-INCAR presenting the results from La Pereda in order to discuss and compare with TU Darmstadt results from pilot tests.



Figure 1: Auditorium of the 1st Public SCARLET Workshop

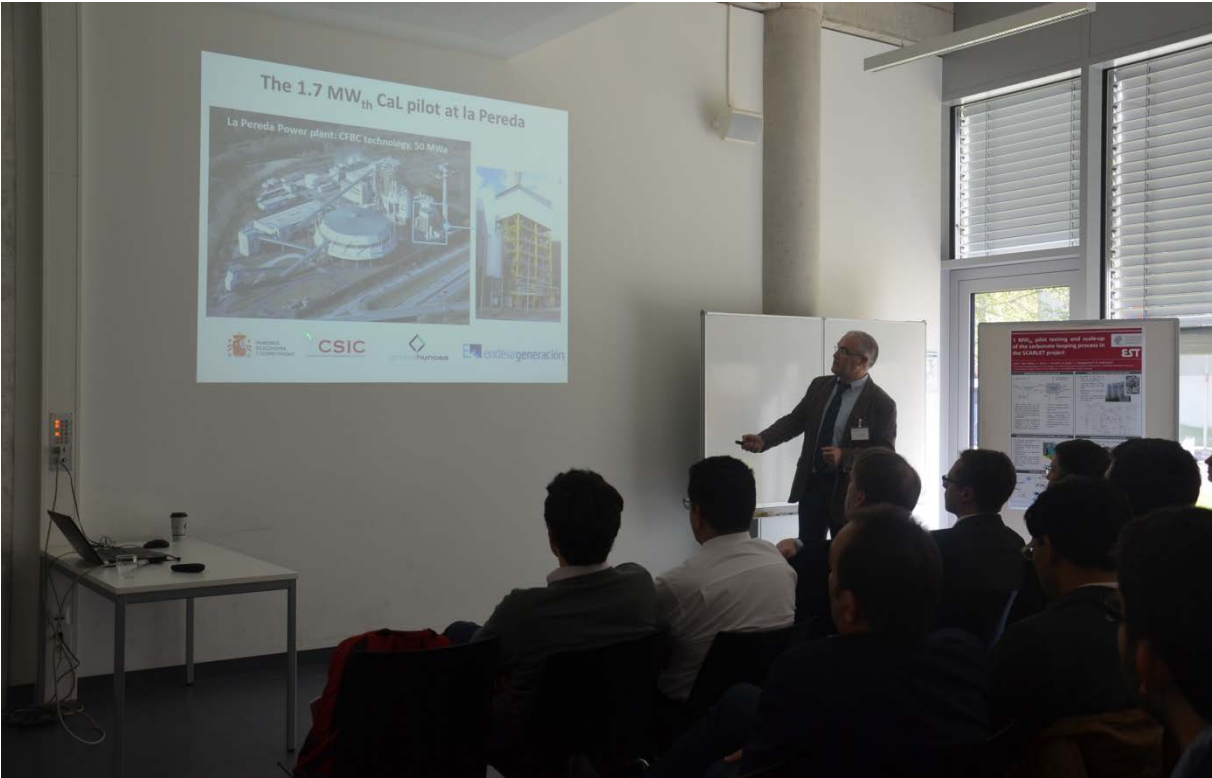


Figure 2: Presentation of the guest speaker J. C. Abanades presenting experiences from CCL testing in the La Pereda pilot plant in Spain

The participants had also the opportunity to attend a poster session, held during the breaks. Every Work Package of the SCARLET project was presented by a poster in the break room, where attendants had the possibility to take a look at. Figure 3 shows the posters.



Figure 3: Poster session in the break room

At the end of the workshop, participants were invited to visit the 1 MWth CCL pilot plant and the other research facilities of the EST (e.g. cold flow model, indirectly heated carbonate looping pilot etc.). Figure 4 shows the auditorium of the workshop in front of the pilot plant.



Figure 4: Pilot plant visit of the workshop participants