

**THIRD ANNUAL MEETING OF THE GROUND-MED CONSORTIUM
THIRD PROJECT REVIEW**

Venue: Instituto de Sistemas e Robotica - Universidade de Coimbra, Portugal

Date: 24-25 February 2011

LIST OF PARTICIPANTS

01-CRES	Dimitrios Mendrinos
02-CEA	-
03-EHPA	Thomas Nowak
04-FIZ	Axel Lehmann
05-CIAT	Eric Auzenet
06-HIREF	Andrea Quercioli, Alessandro Zerbetto
07-UOR	Marcel Rosca
08-ISR UC	Anibal de Almeida, Joao Fong, Fernando Martins, Anabela Carvalho
09-GEJZIR	Peter Kralj
10-GEOTEAM	Johann Goldbrunner
11-UPV	Jose Miguel Corberan, Carla Montagud
12-BESEL	-
13-ECO	Josep Puig
14-EGEC	Burkhard Sanner
15-GRETh	-
16-NUID UCD	Donal Finn
17-UNIPD	Davide del Col
18-EDRASIS	Vassilis Ramoutsakis
19-CETIAT	Ahmed Bensafi
20-OCHSNER	-
21-ESTSetubal	Luis Coelho, Joao Garcia, Rita Cerdeira, Nelson Tavares
22-GROENH	Henk Witte
23-KTH	Bjorn Palm
24-ENEREN	Alberto Salmistraro

PROGRAM

1st day - 24 February 2011

9:00 - 9:30	Welcome and coffee - Introduction	
9:30 - 9:50	Prof. J. M. Corberan, UPV	Engineering design of efficient ground source heat pump systems
9:50 - 10:10	Prof. D. del Col, UNIPD	Heat pump technology development and testing
10:10 - 10:30	Dr. D. Finn, UCD	Integrated heat pump system control
10:30 - 10:50	Prof. A. de Almeida, ISR-UC	Regional authority administration building in Coimbra, Portugal
10:50 - 11:20	Coffee-Break	
11:20 - 11:40	E. Auzenet, CIAT	CIAT Ground-Med prototypes: heat pumps, fan coils, AHUs and PCM
11:40 - 12:00	A. Quercioli, HIREF	HIREF Ground-Med prototypes
12:00 - 12:20	D. Mendrinós, CRES	OCHSNER Ground-Med prototypes
12:20 - 12:40	E. Auzenet, CIAT	CIAT subsidiary building in Septemes les Vallons, France
12:40 - 13:00	Prof. M. Rosca, UOR	University of Oradea campus building, Romania
13:00 - 13:20	P. Kralj, GEJZIR	Municipal hall in Benedikt, Slovenia
13:20 - 15:00	Light Lunch	
15:00 - 15:20	Anabela Carvalho, ISR-UC	Thermal storage systems
15:20 - 15:40	Nelson Tavares, IPS	Energy Building simulation of Coimbra prototype
15:40 - 16:00	Carla Montagud, UPV	University of Valencia campus building, Spain
16:00 - 16:20	J. Puig, ECOSERVEIS	La fàbrica del sol in Barcelona, Spain
16:20 - 16:40	A. Quercioli, HIREF	Hiref factory in Padova, Italy
16:40 - 17:00	V. Ramoutsakis, EDRAISIS	EDRAISIS head offices in Athens, Greece
17:00	End of day 1	
20:00	Dinner	

2nd day - 25 February 2011

9:00 - 9:30	Welcome and coffee	
9:30 - 9:50	Prof. A. de Almeida, ISR-UC	Data Acquisition hardware and software
9:50 - 10:10	Prof. A. de Almeida, ISR-UC	Installation of monitoring equipment
10:10 - 10:30	Dr. A. Bensafi, CETIAT	Technology evaluation methodology
10:30 - 10:50	A. Lehmann, FIZ	Ground-Med web site and dissemination of information
10:50 - 11:20	Coffee-Break	
11:20 - 11:40	workshop - all partners	Ground-Med Project coordination: planning next period
11:40 - 12:00	workshop - all partners	Ground-Med intermediate conference: program preparation
12:00 - 13:30	workshop - all partners	Preparation of 2nd project report
13:30 - 15:00	Light Lunch	
15:00 - 17:00	all partners	Visit to the Fábrica dos Mirandas demonstration site
17:00	End of meeting	

MINUTES

Project partners presented their work done for the project and planned next project activities and interaction between partners, following the program listed above. The main conclusions of the meeting are:

3rd project review

Work progress:

Activities for work package 2 progressed towards development of heat pump prototypes as well as towards development of fan-coil, air handling unit and thermal storage (PCM) prototypes. Tasks carried out included market survey of pumps, heat pump cycle computer simulation, development of heat exchangers technology, evaluation of different pump components and layouts, as well as new refrigerants and controllers, heat pump optimisation, evaluating flow switching options, evaluation of different fan-coil and PCM technologies. The first heat pump prototype has been completed and tested.

With the exception of one heat pump prototype, the delivery of which was delayed for 5 months in order to benefit for the available time until the corresponding demo site was constructed, all WP3 activities were accomplished according to plan, with four heat pump prototypes already delivered. Activities carried out included:

- Theoretical and experimental evaluation of diverse solutions for Ground Med heat pumps.
- Heat pump design and prototype development.
- Testing methodology.

With the exception of the data management system software and hardware, WP4 (integrated system control) is progressing under control with 4 months delay. Deliverables 4.1 (dynamic control model software), 4.2 (software validation studies), 4.5 (data acquisition control board) and the first part of 4.4 (data management system specifications) have been completed.

WP 5 progressed according to schedule with the engineering design of all borehole heat exchangers and indoor systems completed. All related project deliverables were also delivered on time.

Concerning WP6, all necessary permits were obtained for all project demonstration sites. Construction works show progress varying from site to site, with the demonstration sites of Padova, Oradea and Valencia already operational, but with minor modifications still pending, the BHE already in place in Barcelona and Septemes les Vallons and under construction in Coimbra and Athens, and scheduled to commence when the weather conditions allow it in Benedikt.

WP9 is also progressing according to schedule with the web site under continuous update, the first two training courses implemented in Madrid and Lyon, the first meeting in Brussels held in October and several publications done or under preparation.

Next period (year 2011):

As delivery of WP2 prototypes has fallen approximately 6 months behind schedule, all deliverables of WP2 were rescheduled for delivery in April (heat pumps) and June (air-handling unit, fan-coils and PCM). Delivery of the last WP3 heat pump prototype was rescheduled for April. Completion of deliverables 4.3 (control algorithms) and 4.4 (data management system) has been rescheduled for March and July respectively. In WP5, revision of systems engineering design is under way in some buildings and will continue during the next project period as well. In WP6, construction of BHEs should be completed in all sites in May, construction/installation works including data acquisition equipment in September and all sites should be fully functioning by December. Monitoring of energy performance should start in the first demo sites in September and in all sites by December. Next project events are the intermediate project conference in September-October and the seminar in Padova in December.

Administrative matters

Preparation of the second project report:

Work towards the 2nd progress report is underway, with submission expected towards the end of March or early April, due to the size of the project and the large number of the consortium.

Contract amendment:

The following requests for contract amendment have been registered:

- The man-month rate of UCD be re-costed at 3360 € per month with an associated man-month total of 61.6 months.
- The amount of 17.200 € to be transferred from UCD budget to HIREF, which corresponds to acquisition of a HiRef heat pump prototype for control algorithm testing purposes.
- The amount of 80.000 € to be transferred from ISR budget to CIAT corresponding to the following equipment for WP6:
 - Permanent motor fan coils
 - Room temperature controllers
 - System controller which can integrate the PCM thermal storage

Next project events

Intermediate project conference

Preliminary program and possible dates for the intermediate project conference to be held in Marseille, France were discussed. The final dates (6-7 October 2011) and program were defined later on during meeting follow-up with GRETh.

Seminar in Padova

The seminar will be held in Padova in December 2011, as planned.

2012 annual partners assembly

One offer was made by Dr. Peter Kralj, to organize the next project annual meeting in Benedikt. Dates and agenda will be defined later on.

Heat pump prototypes

As mentioned above, all heat pump prototypes should be ready in April 2011.

Works at demo sites

As mentioned above, works at demo sites including installation of BHEs, indoor heating/cooling system and data acquisition equipment should be completed by September 2011, before the intermediate project conference. Final tuning and adjustments in all sites should be completed in December 2011, so that the next two full years can be dedicated to monitoring, technology evaluation and dissemination of results.

Deliverables update

Deliverables already completed, submitted with the first and/or second reports are:

Del. no.	Deliverable name	Lead beneficiary	Dissemination level	Delivery date
1.1	1 st project report to the European Commission	1-CRES	CO	March 2010
	2 nd project report to the European Commission	1-CRES	CO	April 2011
3.1	Report on methods for improving heat pumps COP	17-UNIPD	RE	June 2009
3.3	2 heat pump prototypes of low capacity	6-HIREF	RE	October 2010
4.1	Generalised Dynamic Control model software	16-UCD	PU	October 2009
4.2	Report on the validation studies of the GCM software	16-UCD	PU	April 2010
4.3	Suite of control strategies for demonstration	16-UCD	PU	October 2010
4.5	Microprocessor control Board	8-ISR	PU	January 2011
5.1	Engineering design of CIAT offices demo system in Septemes les Vallons in France	5-CIAT	PU	October 2010
5.2	Engineering design of Oradea campus demo system, Romania	7-UOR	PU	October 2010
5.3	Engineering design of Fábrica dos Mirandas demo system, Coimbra, Portugal	8-ISR	PU	October 2010
5.4	Engineering design of Benedikt Municipal Cultural Centre demo system, Slovenia	9-GEJZIR	PU	October 2010
5.5	Engineering design of University Polytechnic of Valencia demo system, Spain	11-UPV	PU	October 2010
5.6	Engineering design of sun-factory demo system in Barcelona, Spain	13-ECOSERVEIS	PU	October 2010
5.7	Engineering design of HIREF factory demo system, Tribano, Italy	24-ENEREN	PU	October 2010
5.8	Engineering design of Edrasis HQ demo system near Athens airport, Greece	18-EDRASIS	PU	October 2010
9.2	Presentations at workshops and conferences	All partners	PU	March 2010 April 2011
9.3	Project website	4-FIZ	PU	June 2009
9.6	First meeting with EC officials in Brussels	3-EHPA	PP	October 2010
9.10	Training course in Spain	12-BESEL	PU	June 2010
9.11	Training course in France	19-CETIAT	PU	November 2010
9.16	Dissemination plan	1-CRES	PU	December 2009

Deliverables due next period and scheduled delivery dates are:

Del. no.	Deliverable name	Lead beneficiary	Dissemination level	Delivery date
1.1	3 rd project report to the European Commission	1-CRES	CO	March 2012
2.1	3 heat pump prototypes of large capacity	5-CIAT	RE	April 2011
2.2	Low temperature heat storage nodules	5-CIAT	RE	June 2011
2.3	Low energy fan coil units	5-CIAT	RE	June 2011
2.4	Air handling units using condensing heat	5-CIAT	RE	June 2011
3.2	3 heat pump prototypes of medium capacity	20-OCHSNER	RE	April 2011
4.4	Data management system	12-BESEL	PU	July 2011
6.1	CIAT offices demo system of Septemes les Vallons, France	5-CIAT	PU	September 2011
6.2	University of Oradea campus demo system, Romania	7-UOR	PU	April 2011
6.3	Fábrica dos Mirandas demo system, Coimbra, Portugal	8-ISR	PU	April 2011
6.4	Benedikt Municipal Cultural Centre demo system, Slovenia	9-GEJZIR	PU	September 2011
6.5	University Polytechnic of Valencia campus demo system, Spain	11-UPV	PU	April 2011
6.6	Sun-factory demo system in Barcelona, Spain	13-ECOSERVEIS	PU	April 2011
6.7	HiRef factory demo system, Tribano, Italy	6-HIREF	PU	April 2011
6.8	Edrasis HQ demo system near Athens airport, Greece	18-EDRASIS	PU	September 2011
9.2	Scientific publications, announcements	All partners	PU	January-December 2011
9.4	Intermediate project European conference	15-GRETh	PU	October 2011
9.12	Training course in Italy	17-UNIPD	PU	December 2011

Revised Gantt chart

	year:	2009												2010												2011												2012												2013											
		month:	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
WP1	Project management	Yellow												Yellow												Yellow												Yellow												Yellow											
WP2	Large capacity advanced GSHP prototypes and system	Blue												Blue												Cyan																																			
WP3	Low/medium capacity advanced GSHP prototypes	Blue												Blue												Cyan																																			
WP4	Integrated system control	Blue												Blue												Blue												Blue												Blue											
WP5	Integrated system engineering design	Dark Red												Dark Red												Orange																																			
WP6	Integrated ground source heat pump demonstration systems													Dark Red												Orange																																			
WP7	Demonstration, monitoring and fine tuning demo systems																									Dark Red												Dark Red												Dark Red											
WP8	Technology evaluation																									Dark Red												Dark Red												Dark Red											
WP9	Dissemination and training	Purple												Purple												Purple												Purple												Purple											

Verification of license/permit availability at each demo building

Project Review

Photos



Partners' assembly in the ISR meeting room.



Examining the data acquisition equipment at the ISR lab.



Visiting the Coimbra demo site: BHE construction works