PRODES Promotion of Renewable Energies for Water Production through Desalination

www.prodes-project.org

Report on the workshops

Deliverable WP 4.3

HELLAS ENERGY

Intelligent Energy Europe

Acknowledgements

This publication has been produced as part of the ProDes project. The logos of the partners cooperating in this project are shown below and further information about them and the project is available on www.prodes-project.org:

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ProDes is co-financed by the Intelligent Energy for Europe programme

(contract number IEE/07/781/SI2.499059)

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Introduction

Within the ProDes project four workshops have been organised and implemented, one workshop in each of the target countries, Italy, Spain, Greece and Portugal, during the 2nd year of the project. All workshops took place between February 2010 and May 2010. This document presents the reports relevant to these four workshops, while an organisational overview is given in the table below:

Country	Italy
Location	University of Palermo, Palermo (Italy)
Time scheduling	16/03/2010
Target group	Representatives of local authorities, companies, researchers, decision-makers and professionals
N° of participants	106
Country	Spain
Location	ITC facilities in Las Palmas of Gran Canaria, Gran Canaria Island (Spain)
Time scheduling	26/05/2010
Target group	Regional experts from companies in the sector of water and energy, public institutions linked to water management, energy or international cooperation, and potential customers with renewable desalination technology (as municipalities or agricultural cooperatives) and non-governmental organizations with projects in Africa.
N° of participants	47
Country	Greece
Location	Agricultural University of Athens, Athens (Greece)
Time scheduling	29/03/2010
Target group	Representatives of local authorities, companies, engineers, researchers, Professors and decision-makers.
N° of participants	44
Country	Portugal

Location	University of Algarve, Faro
Time scheduling	26/2/2010
Target group	Hotels, golfs, comping operators, water treatment and distribution companies, municipalities, renewable energy companies
N° of participants	About 75

1 Workshop in Italy

1.1 Introduction

Time and place of the workshop:

The workshop was held on the 16th of March 2010 in Palermo, in the conference room of the Engineering Faculty at the Università di Palermo.

Target Group:

The event was advertised in several different ways (leaflets, posters, phone calls for invitations, web sites of: University of Palermo (www.unipa.it, www.dicpm.unipa.it), external associations (www.ordineingegneriagrigento.it, www.ingpa.com, www.resintsicilia.net, www.riditt.it, www.economiasicilia.com), SINTESI (www.sintesi.unipa.it), etc.) in order to spread the news about its organisation to a wide target of interested people. Moreover, the invitation leaflet was sent to the whole list of actors identified in the preparation of the database for Italy. This included professionals and companies working in the field of water treatment and Renewable Energies, associations, municipalities and policy makers in general. Finally, many researchers from the University of Palermo, working in departments related to these topics, were invited too.

1.2 Implementation of the Workshop

The workshop was held on the 16th of March in Palermo. It was implemented by the staff of UNIPA with the support of a subcontractor (SINTESI), which previously supported UNIPA in the organisation of courses for professionals. SINTESI was very helpful in collecting lists of possible interested professionals and associations to be invited. All invited speakers, as well as representatives of public authorities, were contacted directly by UNIPA internal staff. On the other side, the invitation to all the others target groups was sent by SINTESI both by e-mail and by mail through a purposely designed and printed invitation leaflet developed in conjunction by UNIPA and SINTESI. A copy of the invitation leaflet is reported in Appendix 1.3.

Two translators were hired by SINTESI in order to allow the participation of both Italian and English speaking participants. In particular, the official language of the workshop was Italian, with all Italian speeches translated (by simultaneous translation) to English for foreigner participants (provided with headphones), and English speeches simultaneously translated to Italian.

Two coffee breaks and a lunch buffet were held in a room very close to the conference room. A "market place" was also organised, in an open space adjacent to the conference room, to host posters and desks for the representatives of RE-desalination companies, who participated in the workshop. This provided time and space for discussions between representatives from companies, professionals and policy makers, which were all quite enthusiastic to participating to such an event.

A list of all attendants was printed and distributed during the event in order to promote the networking.

All the presentations were made available (with the permission of all the speakers) as .pdf files to all participants through a link (in the web site of SINTESI), which was sent by e-mail few days after the workshop.

1.3 Participants – Speakers

Participation to the workshop was very successful. More than 150 participants registered to the event, although slightly more than 100 actually attended it. Attendants came from very different working fields. The graph below shows the actual percentage of participants coming from four different fields, namely: companies, universities, public authorities and individuals/professionals. A good balance among these three fields was achieved, although the majority of participants were professionals working in the field of RE or water treatment and representative of companies also involved in these fields. About 24% of attendants were academics, mainly from the Engineering and Science Faculties of the University of Palermo. A smaller percentage of participants, slightly below 10%, came from public authorities, i.e. from the regional government, from municipalities and from the water management office of the district of Messina (very interested in the water desalination technologies for the small islands in the archipelago of Eolie islands).

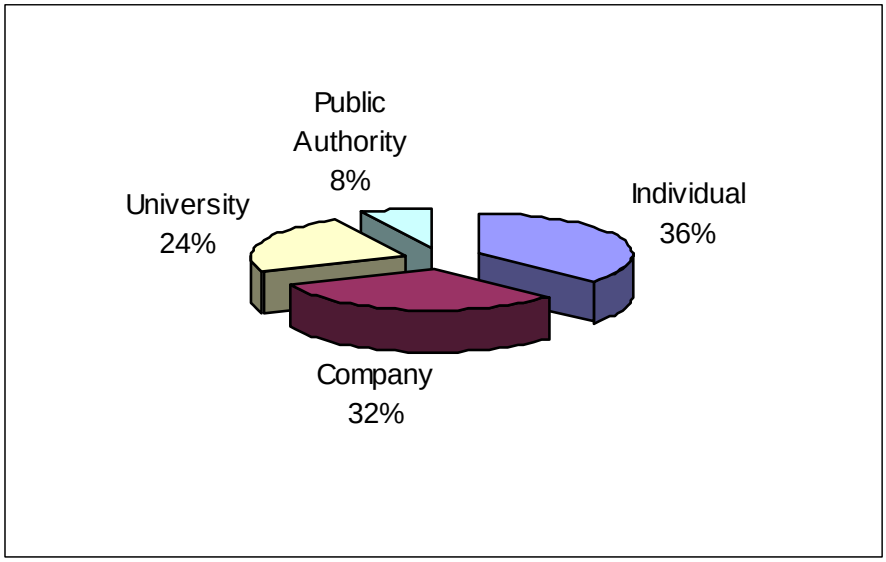


Fig.1.1 Distribution of workshop participants

A list of all participants, with the affiliation and e-mail address, is reported in the table below.

List of Participants

	Name	Individual or representing a company	E-mail address
1	Abisso Francesco	individual	abissofrancesco@gmail.com
2	Adelfio Gesualdo	AMAP	gesualdo.adelfio@amapsp.it
3	Agate Pietro	SELMAR	selmar@selmar.it
4	Albanese Santina	individual	santina.albanese@hotmail.it
5	Albani Stefano	SICILIACQUE	
6	Aliotta Chiara	individual	chiara.aliotta@alice.it
7	Anselmo Giovanni	individual	anselgio@gmail.com
8	Armata Nerina	University	nerina@cccp.unipa.it
9	Ascia Enrico	individual	e.ascia@tiscali.it
10	Barone Salvatore	University	salvatorebarone3118@yahoo.it
11	Bellipanni M. Carmen	HYDROPOWER	hidropowersrl@libero.it
12	Ben Farh Mohamed Ali	University	mohamedalibenfarh@gmail.com
13	Bevacqua Maurizio	individual	mauriziobevacqua@libero.it
14	Bonomo Gaetano	SMEDE	gaetano.bonomo@smede.it
15	Borruso Marco	RAIS	raisdimarcoborruso@alice.it
16	Brucato Valerio	University	vbrucato@dicpm.unipa.it
17	Busi Osvaldo	individual	osvaldo.bu@llibero.it
18	Cambria Eugenio	individual	eugeniocambria@hotmail.com
19	Campagna Giuseppe	SOFIP	
20	Campanella Lucia	individual	luxis81@hotmail.com

21	Cannella Giuseppe	University	cannellagiuseppe82@virgilio.it
22	Cappello Francesco	ENEA	francesco.cappello@enea.it
23	Caputo Giampaolo	ENEA	giampaolo.caputo@enea.it
24	Cardinale Vincenzo	COAGEN	vcardinale@coagen.com
25	Carollo Filippo	individual	filcarollo@katamail.com
26	Chiello Martina	individual	martinachiello@libero.it
27	Cinquemani Salvatore	individual	cisamr@gmail.com
28	Cipollina Andrea	University	cipollina@dicpm.unipa.it
29	Coniglio Orazio	SWS	swsinfo@swsonweb.com
30	Coniglio Attilio	AMAP	attilio.coniglio@amapspa.it
31	Costanza Giuseppe	individual	peppecostanza@libero.it
32	D'Alì Staiti Giacomo	University	dali@unipa.it
33	De Carmine Massimo	individual	decarminemassimo@libero.it
34	Di Salvo Giovanni	individual	ing.gdisalvo@alice.it
35	Evola Salvatore	ATQ	s.evola@atq.it
36	Fazio C. Franco	Public authority	ffazio@regione.sicilia.it
37	Finocchiaro Pietro	University	finocchiaro@dream.unipa.it
38	Fragale Fabio	individual	fabiofragale@libero.it
39	Frangipane Benedetto	University	benedetto.bf@libero.it
40	Galatioto Alessandra	University	alessandra.galatioto@dream.unipa.it
41	Galli Alessandra	individual	galliale5@gmail.com
42	Genna Giovanni	individual	vannigenna@tiscali.it
43	Giaconia Alberto	ENEA	alberto.giaconia@enea.it
44	Grisanti Francesca	individual	francesca.grisanti@virgilio.it
45	Heyn Nicolas	TERRAWATER	n.heyn@terrawater.de
46	Hoffmann Alessia	APSICILIANE	alessia.hoffmann@apsiciliane.it
47	Käufler Joachim	SYNLIFTSYSTEMS	j.kaeufler@synliftsystems.de
48	La Carrubba Vincenzo	University	lacarrubba@dicpm.unipa.it
49	La Pica Armando	University	lapica@unipa.it
50	La Rosa Francesco	individual	franck@hotmail.it
51	Lattanzi Vittorio	LATTANZI	vittorio@lattanzinyc.com
52	Li Causi Michele	individual	michelelicausi@hotmail.it
53	Lipari Alessandro	University	alelipa@libero.it
54	Lo Iacono Francesco	SERVIZI ENERGIA CALORE	loiacono@servizienergiacalore.it
55	Lo Piccolo Emiliano	SERVIZI ENERGIA CALORE	lopiccolo@servizienergiacalore.it
56	Luongo Giovanni	individual	giovanni.luongo@avens.it
57	Mannella Gianluca	University	g.mannella@dicpm.unipa.it
58	Marino Ionia	ATQ	i.marino@atq.it
59	Martinico Antonino	individual	agrmartinico@libero.it
60	Messineo Antonio	University	messineo@dream.it
61	Micale Giorgio	University	micale@dicpm.unipa.it
62	Micale Giuseppe	individual	
63	Midulla Ivano	SAIPHIL SUNNY	ivano@midulla.com
64	Mineo Carmelo	SICILIACQUE	mineo@siciliacquespa.it
65	Mingoia Vincenzo	Public authority	vincenzo.mingoia@regione.sicilia.it
66	Montagnino Fabio	EASY	f.montagnino@easyiint.it
67	Müller-Holst Hendrik	MAGE WATER MANAGEMENT	mueller-holst@mage-watermanagement.com
68	Muratore Davide	University	davide.muratore@unipa.it
69	Muratore Matteo	WATER SERVICE	info@waterservicesrl.it

			waterservicesrl@libero.it
70	Murgia Bartolo	individual	bmurgia@libero.it
71	Oddo Antonino	individual	oddo.nino@libero.it
72	Pampalone Salvatore	Public authority	pampalonesalvatore@libero.it
73	Parco Valentina	individual	v_parco@hotmail.com
74	Pernice Fulvio	individual	fulvio.pernice@tin.it
75	Piacentino Antonio	University	piacentino@dream.unipa.it
76	Privitera Luciano	individual	
77	Provenza Roberto	individual	roberto_provenza@libero.it
78	Rando Salvatore	Public authority	srando@regione.sicilia.it
79	Resini Ivan	REGGIANE	i.resini@reggiane.com
80	Rizzuti Lucio	University	rizzuti@dicpm.unipa.it
81	Romano Maria Concetta	AMAP	concetta.romano@amapspa.it
82	Rubino Teresa	University	trubino@unipa.it
83	Salamone Sergio	individual	
84	Salerno Andrea	individual	salandra79@libero.it
85	Salmeri Giacomo	SMEDE	giacomo.salmeri@smede.it
86	Salsedo Marco	individual	masalsedo@alice.it
87	Sammarco Ignazio	Public authority	netsam@libero.it
88	Sarto Valerio	individual	valesarto@libero.it
89	Scafidi Michele	individual	scafidi@dima.unipa.it
90	Scarcella Santino	Public authority	scarcella.santino@tiscali.it
91	Scarpinato Vincenzo	individual	ing.scarpinato@libero.it
92	Scarpulla Alessandro	SICILIACQUE	scarpulla@siciliacquespa.it tomasetta@siciliacquespa.it
93	Scavuzzo Carmelo	individual	carmeloscavuzzo@libero.it
94	Seidita Gianfranco	individual	arch.gseidita@alice.it
95	Sicilia Giuseppe	SICILIA ENERGIA	info@siciliaenergia.com
96	Sidoti Pinto Benedetto	Public authority	infoweb@atoacquemessina.it
97	Siragusa Angelo	AMAP	angelo.siragusa@gmail.com
98	Talamo Lorenzo	Public authority	
99	Tamburini Alessandro	University	alessandrotamburini@alice.it
100	Tasca Paolo	University	paolo.tasca@gmail.com
101	To Bill	SOLAR SPRING	bto.email@gmail.com
102	Torregrossa Valeria	University	vtorregrossa@unipa.it
103	Tucciarelli Tullio	University	tucciar@idra.unipa.it
104	Vitali Enrico	individual	enrico.vitali.pa@tele2.it
105	Viviani Gaspare	University	gviv@idra.unipa.it
106	Wieghaus Marcel	SOLAR SPRING	marcel.wieghaus@ise.fraunhofer.de

Speakers were also chosen from different areas of expertise. Three internal speakers from the University of Palermo chaired the event and gave general speeches on the Prodes project and on the current status of desalination and RE-desalination.

Two Italian speakers (both CEOs of two companies in the water management sector in Sicily and Sicilian minor islands) presented the current status of water

sources and production in Sicily and in Sicilian minor islands, while a third Italian speaker, Francesco Cappello (a senior researcher from ENEA, the most important Italian Research Institute for Renewable Energy), presented the state of the art of RE applications and potentials in Sicily. Finally, several representatives of European companies working in the field of RE and Desalination presented their ideas and products to the audience. The list of speakers is reported in the Table below.

List of Speakers

	Name	Individual or representing a company	Subject of speech	E-mail address
1	Albani Stefano	SICILIACQUE	*Current status of the Sicilian water network*	
2	Campagna Giuseppe	SOFIP	*Non conventional water sources in the Sicilian Minor Islands*	
3	Cappello Francesco	ENEA	*Renewable energy sources for desalination in Sicily*	francesco.cappello@enea.it
4	Cipollina Andrea	Università di Palermo	*The renewable energy desalination market*	cipollina@dicpm.unipa.it
5	Heyn Nicolas	TERRAWATER	*Desalination for remote areas*	n.heyn@terrawater.de
6	Käufler Joachim	SYNLIFTSYSTEMS	*Seawater Desalination (RO) as a Wind Powered Industrial Process - Technical and Economic Specifics*	j.kaeufler@synliftsystems.de
7	Micale Giorgio	Università di Palermo	*Desalination technologies for solving the world water crisis*	micale@dicpm.unipa.it
8	Midulla Ivano	SAIPHIL SUNNY	*PV green houses for coupling with desalination*	ivano@midulla.com
9	Müller-Holst Hendrik	MAGE WATER MANAGEMENT	*High recovery desalination using the MEH method with solar energy or waste heat*	mueller-holst@mage-watermanagement.com
10	Rizzuti Lucio	Università di Palermo	*Openings and presentation of the PRODES project*	rizzuti@dicpm.unipa.it
11	Wieghaus Marcel	SOLAR SPRING	*Solar-Driven Water Treatment*	marcel.wieghaus@ise.fraunhofer.de

1.4 Minutes of the workshop in Italy

Presentations – Discussions:

The workshop started with the opening by the head of the Engineering Faculty, hosting the event, and Prof. Lucio Rizzuti who presented the Prodes project and the agenda of the day. Then, Giorgio Micale presented the current status of desalination technologies, introducing the two subsequent speeches by Stefano Albani and Giuseppe Campagna on the current status of water sources and production in Sicily and in Sicilian minor islands. Interestingly, from these last speeches it emerged how seawater desalination appears to be the only reliable water source in minor islands, whereas it can be an option in the main land (Sicily), only if the price of produced water is maintained below 1 €/m^3, which is currently largely exceeded by the desalination plants operating in the island.

A first coffee break (30 mins) was offered, thus creating a good opportunity to open discussions between participants. Moreover, company's representatives had the opportunity to use some desks and to show their posters in a sort of "market place", where participants could ask for technical information, collect contact details and discuss about potential cooperation for future projects.

A slight "last minute" modification to the provisional Agenda was done by postponing the fourth speech, by Francesco Cappello, to the end of the workshop, while the subsequent speech by Andrea Cipollina was held just after the coffee break presenting the current status and general perspectives of RE-desalination technologies and market. Then, Giorgio Micale very briefly presented the current research activities of the University of Palermo in the field of RE-desalination and the funded research projects presently going on.

The morning session was closed by an open discussion, in which some of the participants asked questions to the speakers and one of them, namely Mr. Vittorio Lattanzi, was invited (following his proposition) to give a very brief speech on the potential use of freezing technologies for desalination.

A buffet lunch was then offered to participants, who spent about 2 hrs eating and discussing in the buffet room and the adjacent market place. During the lunch break, also some journalists (previously informed by the organisers) came to collect information on the event and on the research activities carried out by the University of Palermo on RE-desalination (see annex 1.4).

After lunch, representatives of several European companies presented their ideas and products for the use of Renewable Energy for fresh water production. Five speeches of 20 mins each, with a coffee break interval, allowed participants to get a good piece of information on the current status of the technology and to get in touch with several examples of real operating plants installed worldwide. The first speech was on "*High recovery desalination using the MEH method with solar energy or waste heat*" and it was given by Hendrik Müller-Holst from MageWatermanagement GmbH. The second speaker was Marcel Wieghaus who presented the company SolarSpring with a talk on "*Solar-Driven Water Treatment*" with particular regards to the solar Membrane Distillation technology commercialised by this company. Then Ivano Midulla, from Saiphil Sunny, presented a new concept of "*PV green houses for coupling with desalination*". The last two speeches were given by Joachim Käufler, from Synlift Systems GmbH, and Nicolas Heyn, from Terrawater GmbH, who presented respectively a speech on "*Seawater Desalination (RO) as a Wind Powered Industrial Process - Technical and Economic Specifics*" and "*Desalination for remote areas*" concerning the use of a Humidification/Dehumidification process for water desalination.

Finally, Francesco Cappello gave the final speech presenting the state of the art of RE applications and potentials in Sicily. Following this last speech, the workshop ended with a long and interesting discussion about the potentials for application of RE and RE-desalination technologies in Sicily.

Outcomes:

The workshop successfully achieved the main goal of creating a link between companies, researchers and potential clients. All attendants and speakers recognised the importance of such an event and the high quality of the organisation and presentations given during the day.

The distribution of the list of attendants and the possibility for participants to discuss freely during coffee breaks and lunch, also in the "market place", significantly promoted networking activities, which may be an important starting point for the development of future projects on RE-desalination.

Moreover, the organising staff of UNIPA also received several requests of information and available material (workshop proceedings) by many persons, who were not able to participate or had not been informed about the event, thus indicating that the news about the organisation of this event and its interesting contents were spread around by participants also after the event took place.

1.5 Agenda of the workshop in Italy

When:

Tuesday 16th of March 2010

Where:

Conference room of the Engineering Faculty within the University Campus in Palermo, Italy

Contact persons:

Andrea Cipollina, Tel. +39 091 23863780, e-mail: cipollina@dicpm.unipa.it
Giorgio Micale, Tel. +39 091 23863780, e-mail: micale@dicpm.unipa.it
Lucio Rizzuti, Tel. +39 091 23863717, e-mail: rizzuti@dicpm.unipa.it

Date: Tuesday, 16th of March 2010		
Time	**Content**	**Responsible**
09:00 – 09:30	*Openings and presentation of the PRODES project*	Lucio Rizzuti
09:30 – 10:15	*Desalination technologies for solving the world water crisis*	Giorgio Micale
10:15 – 10:45	*Current status of the Sicilian water network*	Stefano Albani
10:45 – 11:15	*Non conventional water sources in the Sicilian Minor Islands*	Giuseppe Campagna
11:15 – 11:45	*Coffee break*	
11:45 – 12:30	*The renewable energy desalination market*	Andrea Cipollina
12:30 – 12:45	*Research activities on Renewable Energy Desalination at Università di Palermo*	Giorgio Micale
12:45 – 13:15	*Open discussions*	
13:15 – 15:00	*Lunch*	
15:00 – 15:20	*High recovery desalination using the MEH method with solar energy or waste heat*	Hendrik Müller-Holst
15:20 – 15:40	*SolarSpring - Solar-Driven Water Treatment*	Marcel Wieghaus
15:40 – 16:00	*PV green houses for coupling with desalination*	Ivano Midulla
16:00 – 16:30	*Coffee break*	
16:30 – 16:50	*Seawater Desalination (RO) as a Wind Powered Industrial Process - Technical and Economic Specifics*	Joachim Käufler
16:50 – 17:10	*Terrawater – desalination for remote areas*	Nicolas Heyn

17:10 – 17:40	*Renewable energy sources for desalination in Sicily*	Francesco Cappello
17:40 – 18:30	*Open discussions*	

Annex 1.1: Photos from the workshop in Italy

The conference room of the Engineering Faculty where the workshop took place

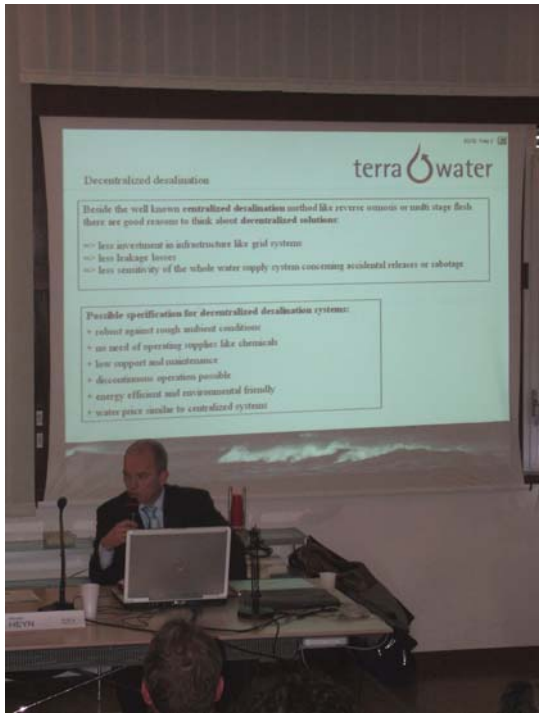
Ing. Stefano Albani, Ing. Giuseppe Campagna and Ing. Francesco Cappello during their speeches on the current status of water and RE sectors in Sicily

Hostesses (from SINTESI) welcoming participants and providing technical support, the market place with attendants discussing in front of the porters and the coffee break

Dr. Hendrick Müller-Holst and Ing. Marcel Wieghaus presenting their technologies

The translators following the presentation on their screens and (simultaneously) translating the speech

Ing. Ivano Midulla, Ing. Nicolas Heyn and Ing. Joachim Käufler presenting their technologies



Annex 1.2: Workshop Agenda

PRODES
Promotion of Renewable Energies for Water Production through Desalination

Programma del workshop

Martedì 16 Marzo 2010
Sala del Consiglio della Presidenza
Facoltà di Ingegneria – Università di Palermo

9.00-9.30
Saluti, presentazione del progetto PRODES e agenda della giornata
Prof. Ing. Francesco Paolo La Mantia, Preside della Facoltà di Ingegneria dell'Università di Palermo
Prof. Giuseppe Filardo, Direttore del Dipartimento di Ingegneria Chimica dei Processi e dei Materiali dell'Università di Palermo
Prof. Ing. Lucio Rizzuti, responsabile del Progetto PRODES

Opening

9.30-10.15
La dissalazione per affrontare il problema della crisi idrica mondiale
Desalination technologies for solving the world water crisis
Prof. Ing. Giorgio Micale, Dip. Ing. Chimica dei Processi e dei Materiali, Università di Palermo

10.15-10.45
L'attuale assetto della rete per l'approvvigionamento idrico in Sicilia
Current status of the Sicilian water network
Ing. Stefano Albani, Amm. Del. Siciliacque S.p.A.

10.45-11.15
Fonti di approvvigionamento idrico non-convenzionali nelle isole minori siciliane
Non conventional water sources in the Sicilian Minor Islands
Ing. Giuseppe Campagna, Amm. Del. SOFIP

11.15-11.30 - Coffee break

11.30-12.00
Energie rinnovabili per l'accoppiamento con processi di dissalazione
Renewable energy sources for desalination
Ing. Francesco Cappello, Responsabile Centro di Consulenza Energetica ENEA della Sicilia

12.00-12.45
Il mercato della dissalazione con energie rinnovabili
The renewable energy desalination market
Ing. Andrea Cipollina, Dip. Ing. Chimica dei Processi e dei Materiali, Università di Palermo

12.45-13.00
Le attività di Ricerca dell'Università di Palermo su Processi di Dissalazione con Energie Rinnovabili
Research activities on Renewable Energy Desalination at Università di Palermo
Prof. Ing.Giorgio Micale, Dip. Ing. Chimica dei Processi e dei Materiali, Università di Palermo

13.00-13.30
Discussione sulle necessità locali e potenziali di sviluppo
Discussion on potential to meet local needs

13.30-15.00: pranzo a buffet e visita stand espositori
Buffet lunch and visit to exhibitors' stands

15.00-16.30 – Presentazione delle tecnologie da parte delle aziende del settore (in inglese con traduzione)
Presentation of technologies by companies operating in the field

High recovery desalination using the MEH method with solar energy or waste heat
Dr.-Ing. Hendrik Müller-Holst, MAGE Water Management GmbH, Germany

SolarSpring - Solar-Driven Water Treatment
Dipl.Ing. Marcel Wieghaus, Solar Spring GmbH, Germany

Serre fotovoltaiche con unità di dissalazione per la coltivazione di prodotti ad alto valore aggiunto
Ing. Ivano Midulla, Saiphil Sunny Srl, Italia

Seawater Desalination (RO) as a Wind Powered Industrial Process - Technical and Economic Specifics
Dr. Ing. Joachim Käufler, Synlift Systems GmbH, Germany

Terrawater – desalination for remote areas
Nicolas Heyn, Terrawater GmbH, Germany

16.30-17.00 - Coffee break & stands

17.00 -18.30 – Dibattito e chiusura lavori
Discussion and closure

PRODES project is supported by
Intelligent Energy Europe

SINTESI

Interverranno autorità locali, professionisti, ricercatori e aziende del settore;
Contributions from public authorities, professionals, researchers and companies operating in the field

Annex 1.3: Workshop invitation leaflet (1/2)

Annex 1.3: Workshop invitation leaflet (2/2)

Programma del workshop

Martedì 16 Marzo 2010

9.00-9.30
Saluti, presentazione del progetto PRODES e agenda della giornata
Opening

9.30-11.15
La dissalazione per affrontare il problema della crisi idrica mondiale
Desalination technologies for solving the world water crisis
L'attuale assetto della rete per l'approvvigionamento idrico in Sicilia
Current status of the Sicilian water network
Fonti di approvvigionamento idrico non-convenzionali nelle isole minori siciliane
Non conventional water sources in the Sicilian Minor Islands

11.15-11.30 - Coffee break

11.30-13.30
Energie rinnovabili per l'accoppiamento con processi di dissalazione
Renewable energy sources for desalination
Il mercato della dissalazione con energie rinnovabili
The renewable energy desalination market
Discussione sulle necessità locali e potenziali di sviluppo
Discussion on potential to meet local needs

13.30-15.00
Pranzo a buffet e visita stand espositori
Buffet lunch and visit to exhibitors' stands

15.00-16.30
Presentazione delle tecnologie da parte delle aziende del settore (in inglese con traduzione)
Presentation of technologies by companies operating in the field

16.30-17.00 - Coffee break & stands

17.00-18.30
Dibattito e chiusura lavori
Discussion and closure

The availability of *freshwater* is of *paramount importance* in all geographical areas where the uncertainty of freshwater sources may hamper or even stop agricultural, industrial and civil activities.
Since last century desalination processes have been proposed to help solving water crisis in many areas of the world, with sustainable production costs lowering down to or below 1Euro/m³ up to present date.
However, the large energy requirements of conventional desalination processes poses a number of problems related to the availability of energy sources and environmental sustainability, particularly in those cases where the desalination facility is installed in a remote site disconnected form the electric grid. To this regard the coupling with renewable sources of energy may well represent a major step forward towards the goal of overall (i.e. economic and environmental) sustainability for current and future desalination technologies.
The main objective of this workshop is to make all actors operating in the field discuss about the current scenario and future potentials of renewable energy desalination technologies. The workshop is aimed at professionals, technicians, academic and industrial researchers, private and public companies/institutions operating in the sector.
The workshop is organized within the framework of the European Research Project ProDES, i.e. Promotion of Renewable Energy for Water production through Desalination (www.prodes-project.org), with Università di Palermo acting as one of the consortium partners.

PRODES
Intelligent Energy Europe

Interverranno autorità locali, professionisti, ricercatori e aziende del settore.
Contributions from public authorities, professionals, researchers and companies operating in the field.

Il problema dell'approvvigionamento idrico oggi risulta di primaria importanza, specie in tutte quelle aree in cui l'incertezza della disponibilità idrica compromette o impedisce lo svolgimento delle attività civili, agricole ed industriali.
Da alcuni decenni la dissalazione viene proposta come utile strumento per la risoluzione di crisi idriche in molti paesi del mondo, garantendo una fonte di approvvigionamento idrico di sicura qualità, di sicuro accesso, con costi sostenibili (ormai ben al di sotto di 1 €/m³ di acqua prodotta), a dispetto dell'imprevedibilità della disponibilità idrica legata ai livelli di piovosità annuali.
L'elevata richiesta energetica dei tradizionali processi di dissalazione, però, ha posto dei vincoli importanti legati ai costi di produzione, ad aspetti ambientali ed alla disponibilità di fonti energetiche, ad esempio di fondamentale importanza quando la produzione di acqua dissalata risulta necessaria in un sito isolato difficilmente raggiungibile da mezzi di trasporto e/o dalla rete elettrica. Alla luce di ciò, l'accoppiamento con fonti di energia rinnovabile può costituire un importante gradino verso uno sviluppo sostenibile di tali tecnologie.
Obiettivo di questo workshop è quello di far incontrare in una giornata di studio/lavoro tutti gli attori potenzialmente interessati alle tematiche sopra esposte. In particolare il workshop sarà rivolto a ricercatori, tecnici, professionisti, aziende ed enti pubblici che lavorano nei settori delle acque e delle energie rinnovabili e che possono essere in qualche modo interessati ad un aggiornamento sulle più moderne tecnologie per la dissalazione di acque marine e salmastre attraverso l'utilizzo di fonti energetiche non-convenzionali.
Il workshop si inquadra all'interno di un programma di attività supportate dal Progetto di Ricerca Europeo ProDES (www.prodes-project.org), di cui l'Università di Palermo è partner attivo, volte alla promozione dell'utilizzo di Energie Rinnovabili per la produzione di acqua potabile attraverso tecnologie di Dissalazione.

Annex 1.4: Workshop dissemination

Il caso Un prototipo capace di produrre 5 mila litri di acqua sarà installato sull'isola di Pantelleria

Il dissalatore diventa fotovoltaico

Realizzato a Palermo nell'ambito del progetto Eu Mediras

DI **ANGELO MELI**

Realizzato a Palermo un dissalatore che funziona con l'energia solare. Soluzione ideale per garantire approvvigionamento idrico alle piccole isole e in tutte le zone difficili da raggiungere e senza energia elettrica. Un prototipo capace di produrre 5 mila litri di acqua al giorno sta per esser installato sull'isola di Pantelleria, un altro più piccolo sul tetto dell'Università di Palermo. Il progetto è stato realizzato nell'ambito del progetto Eu Mediras (MEmbrane DIstillation for Remote AreaS - *www.mediras.eu*), coordinato a Palermo dai docenti Lucio Rizzuti, Giorgio Micale e dall'ingegner Andrea Cipollina. Il dissalatore su Pantelleria sarà installato in collaborazione con il prestigioso istituto di ricerca tedesco Fraunhofer Institute for Solar Energy Systems. L'unità prototipo utilizzerà la tecnologia di «distillazione a membrana», nella quale una corrente di vapore (acqua pura) viene separata dalla corrente di acqua salata (riscaldata per mezzo di collettori solari) attraverso una membrana idrofobica, che permette cioè il passaggio del vapore, ma non della soluzione salina liquida, spiega Cipollina. Inoltre il calore di scarto, proveniente dal circuito di raffreddamento di un generatore diesel della centrale termoelettrica dell'isola, verrà usato come fonte di energia ausiliaria insieme ai collettori solari.

L'altro impianto pilota, di capacità inferiore al precedente (100-200 litri al giorno), verrà istallato sul tetto del dipartimento di Ingegneria chimica di Palermo e poi trasferito presso la Facoltà di Scienze di Tunisi nell'ambito del progetto Lympha, progetto di cooperazione Italia-Tunisia coordinato da Valerio Brucato.

CONTINUA A PAGINA XI

Foto di gruppo Il team che ha messo a punto il dissalatore a energia solare

Newspaper article concerning the Prodes workshop and the research activities of University of Palermo in the field of RE-desalination (15/03/2010, Corriere della Sera, supplemento economia nella sezione Corriere del Mezzogiorno)

Il dissalatore... solare

SEGUE DALLA PRIMA

All'interno dello stesso progetto sono state coinvolte anche le aziende siciliane Energia (per la parte relativa all'energia solare) e Idea (per lo sviluppo del modulo di distillazione a membrana).

Il progetto di dissalatore a energia solare verrà presentato domani presso la presidenza della Facoltà di Ingegneria di Palermo durante un Workshop informativo su «Processi di dissalazione con energie rinnovabili». Il workshop rientra in una serie di attività di promozione delle tecnologie per la produzione di acqua dissalata con l'uso di energie rinnovabili che l'Ateneo palermitano, insieme ad un consorzio di partner europei, sta portando avanti nell'ambito del Progetto Prodes (PROmotion of renewable energy for seawater DESalination-www.prodes-project.org) finanziato dalla Comunità europea con il programma "Intelligent Energy", con il coordinamento locale dei docenti Lucio Rizzuti, Giorgio Micale e dell'Ingegner Andrea Cipollina. «Obiettivo del workshop sarà quello di creare una giornata di incontro tra i vari attori che operano nel settore delle acque e dell'energia, dagli enti pubblici alle aziende private, dai professionisti locali ai rappresentanti della comunità scientifica nazionale ed internazionale», spiega ancora Cipollina. L'organizzazione del workshop è, in realtà, a corollario di una serie di altre attività di ricerca che il dipartimento di Ingegneria chimica dell'Università di Palermo diretto dal professor Giuseppe Filardo ha portato avanti negli ultimi anni, rilanciando la visibilità dell'Ateneo palermitano a livello europeo ed internazionale.

«Il problema dell'approvvigionamento idrico oggi risulta di primaria importanza, specie in tutte quelle aree in cui l'incertezza della disponibilità idrica compromette o impedisce lo svolgimento delle attività civili, agricole ed industriali — continua Cipollina —. Da alcuni decenni la dissalazione viene proposta come utile strumento per la risoluzione di crisi idriche in molti paesi del mondo, garantendo una fonte di approvvigionamento idrico di sicura qualità, di sicuro accesso, con costi sostenibili (ormai ben al di sotto di un euro al metrocubo di acqua prodotta), a dispetto dell'imprevedibilità della disponibilità idrica legata ai livelli di piovosità annuali».

ANGELO MELI

Within the red windows, presentation of the ProDes workshop and project aims

2 Workshop in Spain

2.1 Introduction

Time and place of the workshop:

The workshop took place on the 26th of May at the ITC facilities in Las Palmas of Gran Canaria. It was organized by the Water Department of the Canary Islands Institute of Technology (ITC), with the collaboration of the cluster RICAM (Innovative Enterprise Association of renewable energies, environment and water resources of the Canary Islands) http://www.clusterricam.org/. Also, the Canary Islands Agency for Research, Innovation and Information Society (ACIISI) http://aciisi.itccanarias.org/agencia/, as an entity aimed at the promotion, development and monitoring of business innovation in the Canary Islands, was considered very appropriate to celebrate this event and was sponsored too.

Target Group:

Regional experts from companies in the sector of water and energy, public institutions linked to water management, energy or international cooperation, and potential customers with renewable desalination technology (as municipalities or agricultural cooperatives) and non-governmental organizations with projects in Africa. Divided into 3 main groups for the participatory work groups:

- Private companies linked to water and/or renewable energies.
- Representatives of local authorities, public enterprises and R&D in the field of energy and water sectors.
- Potential users and other decision-makers relating to cooperation for development and international promotion.

2.2 Implementation of the Workshop

The workshop was divided in two main parts (see section 2.5 – Agenda). The first part (from 9:00 to 12:00) was dedicated to give to the participants an overview of the PRODES project, the state of the art of desalination driven by renewable energies, and the points of view and experiences of different local and international organizations and companies about the future and the potential of these technologies. Together with the local speakers, two additional PRODES

contributions were made, both in English, by video conference with simultaneous translation.

- "Solar multi-effect distillation", by Hendrik Müller-Holst, from MAGE Watermanagement GmbH.
- "Membrane distillation using solar energy, experiences in the Canary Islands", by Bill To, from Solar Spring.

In the second part of the workshop (from 12:00 to 13:30), and thanks to a participatory EASW methodology (http://cordis.europa.eu/easw/home.html), the workshop participants were able to express their concerns and ideas on the implementation of these technologies as a driving force in the Canary Islands and Spanish economy. The participants were divided into 3 differentiated small groups (explained above in *Target Group*), in order to discuss and identify technical, economical, institutional and social barriers hindering the development of autonomous desalination plants with RES, with the dual role of local and international cooperation projects.

From the final discussion (from 13:30 to 14:30) was concluded unanimously that RE desalination is a necessary application, essential and strategic for the Canary Islands and to be led to the outside. Furthermore, it is seen as a technological solution to fossil fuels dependence and a business opportunity for small and medium-sized enterprises (SME) of the sector.

2.3 Participants – Speakers

List of Participants

	Name	Individual or representing a company	E-mail address
1	Alberto Santana Monagas	Dirección General de Energía	asanmonx@gobiernodecanarias.org
2	Alejandra González Hernández	DEBEOCAN S.L.	dbo@canaldirecto.com
3	Annia Thoel Carballo	Universidad de La Laguna (ULL)	npadron@ull.es
4	Antonio Cárdenas Carrillo	Consorcio Insular de Aguas de Lanzarote	cial.lourdes@cabildodelanzarote.com
5	Antonio Casañas	Dow Chemical Ibérica, S.L. - Dow Water & Process	acasanas@dow.com

		Solutions	
6	Carmen Delia Rodríguez Artiles		
7	Celedonio Medina Jiménez	FORTEMAYO (Cabo Verde)	alpargata2006@hotmail.com
8	Clara Nadal	R&LB Engineering Consulting, S.L.	IMONTESDEOCA@telefonica.net
9	Ernesto Iglesias Groth	Ayuntamiento de la Villa de Adeje	soniagb@adeje.es
10	Esther Cabrera Hernández	CAAF	telecontrol@caaf.es
11	Federico Noval Toyos	Mancomunidad del Sureste de Gran Canaria	mancomunidad@surestegc.org
12	Felipe Delgado Ramos	Ayuntamiento de la Villa de Adeje	soniagb@adeje.es
13	Fernando Andrés Ojeda Pérez	JULIANO BONNY GOMEZ, SL	fojeda@bonny.es
14	Fernando Caballero Roig	RICAM	dir.tecnico@clusterricam.org
15	Fernando J. Suárez Pérez	INEXA	fsuarez@inexa.es
16	Francisco José Moreno Cabrera	CANARAGUA	agperez@agbar.es
17	Isabel Montesdeoca	R&LB Engineering Consulting, S.L.	IMONTESDEOCA@telefonica.net
18	Javier Mazorra		mgonzalez@daea.ulpgc.es
19	Javier Pérez del Toro	VALPE 21	info@valpe21.com
20	José Juan Hernández Duchemín	Consejo Insular de Aguas de Lanzarote	cial.lourdes@cabildodelanzarote.com
21	José Rafael Sánchez Ramírez	Mancomunidad del Sureste de Gran Canaria	mancomunidad@surestegc.org
22	Bárbara Quintana	Pangea Medioambiente S.L.	info@pangea.com.es
23	Juan Gamez Garcia	ADAPTA IGT, S.L.	jgamez@galener.com
24	Juan José Rodríguez González	EMALSA	jjrodriguez@emalsa.es
25	Juan Lozano	(SOSLAIRES - GAMESA)	gamesacanarias@gmail.com
26	Julio Hernández	Eneris	julio.h@eneris.es
27	Lorenzo Suarez Herrera	ORELECT S.L.	orelect@telefonica.net
28	M. del Pino Santana Herrera	Dirección General de Aguas-GobCan	msanherr@gobiernodecanarias.org
29	Mª Verónica Arvelo Iglesias	DGRA	marvigl@gobiernodecanarias.org

30	María Celeste Arévalo González	Dirección General de Aguas-GobCan	maregon@gobiernodecanarias.org
31	Matias Gonzalez Hernandez	ULPGC	mgonzalez@daea.ulpgc.es
32	Miguel Acosta Pérez	Instalaciones Carla Perdomo, S.L	CARLA.PERDOMO@terra.es
33	Noemi Padrón Fumero	ULL	npadron@ull.es
34	Pilar Moreno Martínez	PROEXCA	pilar.moreno@proexca.es
35	Rogelio Viña Padrón	Rogelio Viña, SL	rogelio_villas@hotmail.com
36	Tomás Espino Domínguez	ITC	tespino@itccanarias.org
37	Julio González	DRACE (Medio Ambiente)	

List of Speakers

	Name	Individual or representing a company	Subject of speech	E-mail address
1	Vicente J. Subiela Ortin	ITC	Need for RE desalination. Prodes Project Presentation	vsubiela@itccanarias.org
2	Baltasar Peñate Suárez	ITC	Desalination technologies using RE. PV-RO system. ITC Experience	baltasarp@itccanarias.org
3	Julián Monedero	RICAM cluster	RICAM presentation	
4	Luis Barber	R&LB Consulting	Installing autonomous wind system in Senegal	
5	Hendrik Müller-Holst	MAGE Watermanagement GmbH	Solar multi-effect distillation	mueller-holst@tinox.com
6	Bill To	Solar Spring	Membrane distillation using solar energy.	bill.to@solarspring.de
7	Fernando Suárez	INEXA	Supply and installation of four PV-RO systems in Morocco.	
8	Gilberto Martel	ITC		gmartel@itccanarias.org
9	Adriana Regidor	ITC		aregidor@itccanarias.org
10	Juan A. de la Fuente	ITC		jdelafuente@itccanarias.org

2.4 Minutes of the workshop in Spain

Presentations – Discussions:

Some barriers were identified, like the excessive bureaucracy when planning and implementing projects where renewable energies involved, and the little public information existing about the potential and economic viability of water, which could be obtained through other energy sources.

INTRODUCTORY LECTURES:

Necessity of desalination by renewable energies (Vicente J. Subiela, ITC)

Vicente presented the basic ideas of water shortage and renewable energy resources in the world as an introduction to the PRODES project; the partnership, main objectives, activities, and relevant websites of the project were mentioned.

Renewable energies driven desalination technologies. The experience of the ITC (Baltasar Peñate, ITC)

Baltasar summarized the combinations of RE resources and desalination processes, pointing out the projects developed by ITC

Presentation of the cluster RICAM (Association of Canary Islands companies in renewable energies, environment and water resources)

Summary of the history, main activities and members of this entity, co-organizer of the workshop.

LECTURES ON TECHNOLOGIES:

Reverse osmosis by solar photovoltaic energy (Baltasar Peñate, ITC)

Baltasar presented the concept of the system, which is linked to a patent of the ITC, the main relevant ongoing projects and a dissemination video, with the aim of inviting companies and investors that can be interested in exploiting the patent.

Supply and installation of four reverse osmosis systems powered by solar energy in Morocco (Fernando Suárez, INEXA)

The manager of the company INEXA, subcontracted for the supply and installation of the four systems, explained the practical field experience in Morocco, mentioning operation data and anecdotic elements as how it was possible to download the equipment from a truck without a crane, just by the use of human force.

Installation of an autonomous wind system in Senegal (Isabel García, Clara Nadal, R&LB consulting)

Engineers of this local company, which has a long experience in cooperation projects in Africa, presented a summary of the main activities of R&LB and the field experience in a rural area of Senegal, wherein an autonomous wind system, with PV support, will be installed to supply energy to a set of several loads, as pump, water purification unit or lighting.

Use of solar driven multi effect humidification distillation in remote areas. Experiences in the last 15 years (Hendrik Müller-Holst, MAGE-Water Management, GmbH) (By SKYPE connection from Germany)

Hendrik presented the fundamentals of the operation of the solar MEH system, the main components and a summary of the installed units with a selection of photos. He included also information about costs.

Solar membrane distillation (Bill To, SOLAR SPRING) (By SKYPE connection, from Canada)

Bill presented the operation of the MD process, pointing out the most relevant aspects of the technology as, the concept of hydrophobic membranes. He completed the theoretical explanation with pictures of the systems installed in Spain, Egypt, Jordan, Morocco and a 3D diagram for the pre-designed system ordered for Namibia.

Outcomes:

Policy proposals and strategies could be identified in the area of the Canary Islands and in international cooperation, to overcome or reduce the identified barriers.

Among other proposals highlighted, the ones to move forward in promoting regional level technology within a Canary Islands platform for the promotion of desalination with RES, and promoting increased training at all levels in the Canary Islands and nearby Africa. Both proposals should be integrated by all public authorities, R & D agents and cooperation, and regional public enterprises sector.

Also, a proposal is born to amend the regional regulatory framework that promotes the use of renewable energy associated with desalination and improves public-private cooperation in the archipelago.

2.5 Agenda of the workshop in Spain

When:

Wednesday 26th of May 2010

Where:

ITC facilities in Las Palmas of Gran Canaria (C/. Cebrián nº 3), Spain

Contact persons:

Baltasar Peñate, Tel. +34 928727511, e-mail: baltasarp@itccanarias.org

Vicente J. Subiela, Tel. +34 928727520, e-mail: vsubiela@itccanarias.org

Date: Wednesday, 26th of May 2010		
Time	**Content**	**Responsible**
08:30 – 09:00	Registration and delivery of documentation	Juan Antonio de la Fuente
09:00 – 09:15	Welcome and workshop inauguration	Representatives of ITC, ACIISI and RICAM.
09:15 – 09:25	Need for RE desalination. Prodes Project Presentation.	Vicente Subiela, Jefe de Sección. Departamento de Agua. ITC
09:25 – 09:45	Desalination technologies using RE. ITC Experience.	Baltasar Peñate, Jefe del Departamento de Agua. ITC
09:45 – 10:00	Presentation of the cluster RICAM "Innovative Business Association of Renewable Energy, Environment and Water Resources of the Canary	Julián Monedero, president of RICAM.

	Islands".	
10:00 – 11:00	Examples of initiatives and experiences I • PV-RO system • Supply and installation of four PV-RO systems in Morocco. • Installing autonomous wind system in Senegal.	Baltasar Peñate (ITC) Fernando Suárez (INEXA) Luis Barber (R&LB Consulting)
11:00 – 11:30	Coffee break	
11:30 – 12:00	Examples of initiatives and experiences II • Solar multi-effect distillation. • Membrane distillation using solar energy.	Hendrik Müller-Holst (MAGE Watermanagement GmbH) Bill To (Solar Spring)
12:00 – 13:30	Participatory work groups: identifying proposals to promote renewable energy desalination	Vicente Subiela (ITC) Gilberto Martel (ITC) Adriana Regidor
13:30 – 14:30	Sharing, conclusions.	All participants
14:30 – 14:35	Farewell and thanks	Baltasar Peñate (ITC)
14:35	Cocktail-lunch	

Annex 2.1: Photos from the workshop in Spain

WP 4.3: Promotional and networking workshops




WORK IN 3 GROUPS

FINAL COCKTAIL

Annex 2.2: Workshop dissemination

TECNOLOGÍAS Y OPORTUNIDADES DE NEGOCIO EN EL SECTOR DE LA DESALACIÓN CON ENERGÍAS RENOVABLES

TALLER DE DIVULGACIÓN DE LAS TECNOLOGÍAS DE DESALACIÓN CON ENERGÍAS RENOVABLES

Organizado por el Instituto Tecnológico de Canarias en colaboración con el clúster RICAM "Agrupación Empresarial Innovadora de Energías Renovables, Medioambiente y Recursos Hídricos de Canarias"





INSTITUTO TECNOLÓGICO DE CANARIAS (ITC)

C/ CEBRIÁN 3

LAS PALMAS DE GRAN CANARIA

26 DE MAYO DE 2010

8:30 h

itc INSTITUTO TECNOLÓGICO DE CANARIAS — Gobierno de Canarias

ricam — PRODES

INTRODUCCIÓN

Las tecnologías de desalación se han ido incorporando progresivamente como una contribución al suministro de agua potable. **Canarias**, región pionera en estas instalaciones, es un ejemplo evidente en dónde la **desalación** desempeña un papel clave en el suministro de agua dulce; el caso más claro es el de la isla de Lanzarote, donde más del 90 % del agua de abasto se obtiene en plantas desaladoras. Por ello, ya son muchas las **empresas** canarias que han decidido dirigir sus iniciativas comerciales en el campo de la desalación.

El inconveniente principal asociado a la desalación es su elevada **demanda energética** que implica un consumo de recursos fósiles, el consiguiente incremento de la dependencia energética exterior y el impacto ambiental asociado. Una forma de superar esta problemática es el empleo de las **energías renovables** en el suministro energético. De esta forma es posible producir agua dulce mediante un recurso energético local, como la energía solar, la energía eólica u otras fuentes.

Naciones Unidas estima que en el mundo hay más de mil millones de personas sin acceso a un agua potable segura, situación que afecta principalmente a los países empobrecidos del **África** subsahariana. Otro ámbito de situación desfavorable lo constituyen los **archipiélagos** con bajo régimen de lluvias y con escasa o nula disponibilidad de recursos energéticos. Por lo tanto, las **perspectivas** de **desarrollo** de la desalación con renovables son muy amplias, especialmente si se considera el incremento de los precios de los combustibles.

OBJETIVOS

- Informar a los asistentes de las posibilidades y potencialidades de las tecnologías de desalación con energías renovables.
- Establecer vínculos empresariales entre los asistentes.
- Intercambiar puntos de vista entre los distintos sectores.
- Identificar oportunidades potenciales de negocio.

PROGRAMA

8:30	Acreditación y entrega de documentación
9:00	Bienvenida a asistentes e Inauguración de la jornada. (Representantes del ITC, ACIISI y RICAM)
9:15	*Necesidad de la desalación con renovables. Presentación del proyecto ProDes.* (Vicente J. Subiela, Jefe de Sección. Departamento de Agua. ITC)
9:25	*Las tecnologías de desalación con energías renovables. La experiencia del ITC.* (Baltasar Peñate, Jefe del Departamento de Agua. ITC)
9:45	*Presentación del clúster "Agrupación Empresarial Innovadora de Energías Renovables, Medioambiente y Recursos Hídricos de Canarias"* – RICAM (Julián Monedero, presidente de RICAM)
10:00	**EJEMPLOS DE INICIATIVAS Y EXPERIENCIAS (I)** • *Ósmosis inversa con energía solar fotovoltaica* (Baltasar Peñate, Jefe del Departamento de Agua. ITC) • *Suministro e instalación de cuatro sistemas de ósmosis inversa con fotovoltaica en Marruecos.* (Fernando Suárez, Director Gerente, INEXA). • *Experiencias de la empresa Dobon's Technologies* (Julián Monedero, presidente de RICAM) • *Instalación de sistema eólico autónomo en Senegal.* (Luis Barber, Director Gerente de R&LB Consulting)
11:00	PAUSA. CAFÉ
11:30	**EJEMPLOS DE INICIATIVAS Y EXPERIENCIAS (II)** • *La destilación por membranas mediante energía solar.* (Bill To, Solar Spring). • *La destilación multiefecto por energía solar* (Hendrik Müller-Holst, MAGE Watermanagement GmbH) (Estas ponencias se realizarán por videoconferencia en inglés, con traducción simultánea)
12:00	Trabajo participativo por grupos: Identificar propuestas para promover la desalación con energías renovales
13:30	Puesta en común. Debate
14:30	Despedida y agradecimientos
14:35	Cocktail - almuerzo

DIRIDIDO A

El taller está dirigido fundamentalmente a los empresarios canarios del sector agua y energía, a las instituciones públicas vinculadas a la gestión del agua, la cooperación o la internacionalización de las actividades canarias, y a los principales usuarios de agua (ayuntamientos, cooperativas agrícolas, complejos hoteleros...)

PATROCINADORES

El taller se desarrolla como una actividad dentro del marco del proyecto europeo ProDes (Promoción del desarrollo de energías renovables a través de la desalación), www.prodes-project.org, cofinanciado a través del programa "Energía Inteligente para Europa"

Intelligent Energy Europe

La Agencia Canaria de Investigación, Innovación y Sociedad de la Información cofinancia este evento como actividad dirigida a la promoción, fomento y seguimiento de la innovación empresarial.

Gobierno de Canarias
Agencia Canaria de Investigación, Innovación y Sociedad de la Información

INSCRIPCIÓN y CONTACTO

Enviar correo electrónico a prodes@itccanarias.org

Teléfonos: 928 72 75 03; 928 72 75 00

NOTA: El aforo es limitado

3. Workshop in Greece

3.1 Introduction

Time and place of the workshop:

The workshop was implemented in the premises of the Agricultural University of Athens (Iera Odos 75, Athens) on the 29th of March 2010. The event took place in the main building of the university in the "Room of multiple uses".

The selected place for the workshop organization is suitable, since it is located in the city center, it is very easy to find, and the room is large enough (capacity of 120 people) and well equipped.

Target Group:

All participants were relevant to the subject of the organized event. Most of them were representatives from renewable energy companies, mainly from the solar energy sector, and fewer from the wind energy sector, since in Greece there are many more companies, which deal with solar energy than with wind energy. A large part of the participants was also from the desalination sector, mainly dealing with reverse osmosis applications, since this desalination method is much more popular in Greece.

Another part of the participants was decision-makers, mayors, technical advisors of municipalities, representatives of prefectures etc. An interesting participation was from a greek NGO called "Solon", which deals with environmental issues (mainly with water provision, renewable energy and sustainable development), and was responsible for the video capturing of the workshop (some parts to be hosted in their site: www.solon.org.gr).

It was of importance that some people dealing with economics/management also participated, since it becomes evident that more and more effort is given to investigate from the economic point of view the viability of RE–desalination systems. Also, some Professors of the AUA, University of Patras and NTUA participated, since there are many relevant research topics dealing with this kind of applications.

In the beginning of the event, the ProDes project was briefly described and a general overview of the partners, the tasks implemented so far, and the expected results were presented. Focus has been given on the courses for students

organized in Greece, as well as the e-learning course of the ProDes project, which gathered much attention.

Afterwards, representatives from Municipalities and Associations pointed out the past, present and the estimated future status of the water and RE sector, focusing on the greek islands, where the water provision issue is more intense, and how the local authorities can take part in some major decisions, concerning the sustainable provision of water.

Then, representatives of local companies and researchers presented some technologies, paying attention to the ones that have already been commercialised and are available mainly in the greek market. Some successful examples of such applications in the greek islands have been also presented, such as the one in Milos island, which drew most of the attention and a large part of the discussion at the end of the event.

3.2 Implementation of the Workshop

All major aspects of the renewables and water sector have been discussed in the workshop, together with some comments concerning the legislation issues. Focus given on the implementation of RE–desalination systems in the islands, and more general how the critical issue of water provision can be solved.

For the workshop implementation the help from the faculty of the Agricultural University of Athens is acknowledged, since they have assisted Hellas Energy to organize this event, concerning some aspects, such as the room availability dates, the selection of catering service, the participation of a Professor from AUA and the rector of AUA, who made also a welcome speech in the beginning of the event.

During the workshop the personnel of Hellas Energy assisted a lot. The registration desk was operated by them, and provided to the participants all of the available ProDes project informative material.

Many photos were taken during the workshop and video as well.

3.3 Participants – Speakers

The number of the participants was 44, while the number of the speakers was 10. All of them cover many sectors of interest, such as local authorities, companies (RE and desalination), Professors and Engineers. The list of participants and speakers is shown next.

List of Participants

	Name	Individual or representing a company	E-mail address
1	Αλάσης Εμίλ	ΗΛΙΟΔΥΝΑΜΗ ΕΠΕ	ealasis@pertip.gr, ealasis@otenet.gr
2	Αναγνωστόπουλος Ιωάννης	ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ / ΕΡΓΑΣΤΗΡΙΟ ΥΔΡΟΔΥΝΑΜΙΚΩΝ ΜΗΧΑΝΩΝ	anagno@fluid.mech.ntua.gr
3	Αντωνίου Αντώνης	LIVING PROSPECTS	Aant.gis@gmail.com
4	Αραβίδης Άρις	ΤΡΑΠΕΖΑ ΠΕΙΡΑΙΩΣ	aravidisa@piraeusbank.gr
5	Βελλής Αριστείδης	-	arisvellis@gmail.com
6	Δημάσης Κώστας	ΑΓΡΟΓΗ ΑΕ – ΔΙΕΥΘΥΝΣΗ ΧΑΡΑΞΗΣ ΓΕΩΡΓΙΚΗΣ ΣΤΡΑΤΗΓΙΚΗΣ & ΠΕΡΙΒΑΛΛΟΝΤΙΚΗΣ ΑΝΑΠΤΥΞΗΣ (ΔΙ.ΧΑ.ΓΕ.Σ.Π.Α.)	konstantinos.dimasis@agrogi.gr
7	Δημητρίου Ευάγγελος	ΔΗΜΗΤΡΙΟΥ ΣΤΑΥΡΟΣ ΜΗΧΑΝΟΛΟΓΟΣ - ΗΛΕΚΤΡΟΛΟΓΟΣ	vdimt@otenet.gr

		ΜΗΧ.	
8	Δημητρίου Σταύρος	ΔΗΜΗΤΡΙΟΥ ΣΤΑΥΡΟΣ ΜΗΧΑΝΟΛΟΓΟΣ – ΗΛΕΚΤΡΟΛΟΓΟΣ ΜΗΧ.	sdimt@tee.gr
9	Διγενής Άγγελος	MARITES LTD – ΝΑΥΤΙΛΙΑΚΕΣ ΤΕΧΝΙΚΕΣ ΕΞΥΠΗΡΕΤΗΣΕΙΣ ΕΠΕ	info@marites .gr
10	Εμμανουηλίδης Γιώργος	ΕΝΕΡΓΕΙΑΚΟ ΓΡΑΦΕΙΟ ΑΙΓΑΙΟΥ	g.manou@hotmail.com
11	Θανόπουλος Χαράλαμπος	AGROKNOW TECHNOLOGIES	CThanopoulos@agroknow.gr
12	Καπαράκης Άρης	Μ.Κ.Ο. "ΣΟΛΩΝ ΓΙΑ ΤΗ ΣΥΝΘΕΣΗ ΚΑΙ ΤΟΝ ΟΙΚΟΛΟΓΙΚΟ ΠΟΛΙΤΙΣΜΟ"	aris@solon.org.gr
13	Κίτσιος Γεώργιος	ΑΓΡΟΓΗ ΑΕ – ΔΙΕΥΘΥΝΣΗ ΧΑΡΑΞΗΣ ΓΕΩΡΓΙΚΗΣ ΣΤΡΑΤΗΓΙΚΗΣ & ΠΕΡΙΒΑΛΛΟΝΤΙΚΗΣ ΑΝΑΠΤΥΞΗΣ (ΔΙ.ΧΑ.ΓΕ.Σ.Π.Α.)	georgios.kitsios@agrogi.gr
14	Κολογγιός Ζώης	ΤΕΜΑΚ ΑΕ	info@temak.gr
15	Κολοκυθά Δήμητρα	Μ.Κ.Ο. "ΣΟΛΩΝ ΓΙΑ ΤΗ ΣΥΝΘΕΣΗ ΚΑΙ ΤΟΝ ΟΙΚΟΛΟΓΙΚΟ ΠΟΛΙΤΙΣΜΟ"	solon@solon.org.gr
16	Κουκούλη Μαρία	ΕΡΓΑΣΤΗΡΙΟ ΠΛΗΡΟΦΟΡΙΚΗΣ, ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ	mkou@aua.gr
17	Λαμάρης Παναγιώτης	SOLE S.A.	export@sole.gr
18	Μανολόπουλος Χρήστος	ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ, ΣΧΟΛΗ ΜΗΧΑΝΟΛΟΓΩΝ, ΤΟΜΕΑΣ ΡΕΥΣΤΩΝ, ΕΡΓ.ΒΙΟΡΕΥΣΤΟΜΗΧΑΝΙΚΗΣ	manopoul@central.ntua.gr
19	Μελισσαρίδης Ελευθέριος	WATER HELLAS A.E.	waterhellas@yahoo.gr
20	Μεντής Δημήτρης	ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ	jmentis@hotmail.com
21	Μπαΐλας Δημήτρης	ΝΟΜΑΡΧΙΑΚΗ ΑΥΤΟΔΙΟΙΚΗΣΗ ΚΥΚΛΑΔΩΝ - ΝΟΜΑΡΧΗΣ ΚΥΚΛΑΔΩΝ	nomarxis.kykladon@1730.syzefxis.gov.gr
22	Μπάμπου Επιφανεία	ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ	fanie@aua.gr
23	Μπελέτης Αντώνης	ΤΕΜΑΚ Α.Ε.	smgr@temak.gr
24	Μπιδικούδη Μαρία	ΜΕΤΑΠΤΥΧΙΑΚΗ ΦΟΙΤΗΤΡΙΑ	
25	Μπουζιάνας Κώστας	ΕΝΕΡΓΕΙΑΚΗ ΕΛΛΑΔΟΣ, Κ.ΜΠΟΥΖΙΑΝΑΣ-Δ.ΜΟΣΧΟΒΙΤΗΣ & ΣΙΑ Ε.Ε.	Info@hellasenergy.gr
26	Μπουτζικούδη Γεωργία	SOLE S.A.	export@sole.gr
27	Νικολαΐδης Κωνσταντίνος	ΝΙΚΟΛΑΪΔΗΣ ΚΩΝΣΤΑΝΤΙΝΟΣ	info@filtercosmos.gr
28	Παπανικολάου Φανή	ΑΓΡΟΓΗ ΑΕ – ΔΙΕΥΘΥΝΣΗ ΧΑΡΑΞΗΣ ΓΕΩΡΓΙΚΗΣ ΣΤΡΑΤΗΓΙΚΗΣ & ΠΕΡΙΒΑΛΛΟΝΤΙΚΗΣ ΑΝΑΠΤΥΞΗΣ	fani.papanikolaou@agrogi.gr

		(ΔΙ.ΧΑ.ΓΕ.Σ.Π.Α.)	
29	Πηλίτσης Λουκάς	ΤΡΑΠΕΖΑ ΠΕΙΡΑΙΩΣ	aravidisa@piraeusbank.gr
30	Πιτούλης Ν.	ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ	neapit@yahoo.com
31	Προδρομίδου Ειρήνη	ΑΓΡΟΓΗ ΑΕ – ΔΙΕΥΘΥΝΣΗ ΧΑΡΑΞΗΣ ΓΕΩΡΓΙΚΗΣ ΣΤΡΑΤΗΓΙΚΗΣ & ΠΕΡΙΒΑΛΛΟΝΤΙΚΗΣ ΑΝΑΠΤΥΞΗΣ (ΔΙ.ΧΑ.ΓΕ.Σ.Π.Α.)	eirini.prodromidou@agrogi.gr
32	Ρελάκης Γιώργος	ΟΜΙΛΟΣ ΕΤΑΙΡΕΙΩΝ ΙΤΑ	gnr@itagroup.gr
33	Σαμουήλ Ευάγγελος	SIGMA ΗΛΙΑΚΑ - ΓΕΩΘΕΡΜΙΚΑ ΣΥΣΤΗΜΑΤΑ	sigma@sigma-sa.com
34	Σολωμονίδης Νίκος	ΤΕΜΑΚ Α.Ε.	info@temak.gr
35	Σουμπασάκης Ευστράτιος	ΣΤΡΑΤΟΣ ΕΠΕ	Soubassakis@gmail.com
36	Σταυρακάκης Νίκος	ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ	nikosstavr@gmail.com
37	Τερζής Κωνσταντίνος	ΤΕΧΝΙΚΟ ΓΡΑΦΕΙΟ ΗΛΕΚΤΡΟΛΟΓΩΝ ΜΗΧΑΝΙΚΩΝ	kosterzis@energy-trading.gr
38	Τσιγκόϊδα Αφροδίτη	ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ	tsigoida@aua.gr
39	Τσιρώνη Σοφία	ΑΓΡΟΓΗ ΑΕ – ΔΙΕΥΘΥΝΣΗ ΧΑΡΑΞΗΣ ΓΕΩΡΓΙΚΗΣ ΣΤΡΑΤΗΓΙΚΗΣ & ΠΕΡΙΒΑΛΛΟΝΤΙΚΗΣ ΑΝΑΠΤΥΞΗΣ (ΔΙ.ΧΑ.ΓΕ.Σ.Π.Α.)	sofia.tsironi@agrogi.gr
40	Υφαντής Δ.Κ.	ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ	dyfantis@ntua.gr
41	Φαράκη Τερέζα	ΤΡΑΠΕΖΑ ΠΕΙΡΑΙΩΣ	aravidisa@piraeusbank.gr
42	Φωστίνης Αναστασίος	IFB INTEREXPERTS – ΦΩΣΤΙΝΗΣ Α. – ΜΠΑΚΟΥΛΑΣ Α. ΟΕ	info@interexperts.gr
43	Ψαρράς Νικόλαος	AID ENGINEERING LTD	npsarras@aidengineering.gr
44	Mohamed Essam	ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ	esamsh@aua.gr

List of Speakers

	Name	Individual or representing a company	Subject of speech	E-mail address
1	Zervas G.	AUA	Introduction	
2	Manolakos D	Hellas Energy	ProDes project description	dman@aua.gr
3	Efthimiopoulos I	Aegean Energy Office	Technical, legislative and environmental issues in the Aegean islands	
4	Tzen E	CRES	Water desalination with renewables	etzen@cres.gr

5	Papadakis G	Professor at AUA	Autonomous RE-desalination systems – The ADIRA project	gpap@aua.gr
6	Kosmadakis G	Hellas Energy	Solar Organic Rankine cycle for RO desalination	gkosmadakis@gmail.com
7	Tripanagnostopoulos Y	Professor at Univ. of Patras	Solar thermal collectors for industrial use	yiantrip@physics.upatras.gr
8	Kologios Z	TEMAK	Operational cost of small and large-scale desalination systems coupled with renewables	info@temak.gr
9	Sigalas M	PHOTOVOLTAIC	Application of PV systems at isolated areas	info@photovoltaic.gr
10	Yfantis N	Sychem Advanced Water Technologies	Combination of wind energy with RO desalination: The Milos island system	dyfantis@ntua.gr

3.4 Minutes of the Workshop in Greece

Presentations – Discussions:

The rector of the Agricultural University of Athens (G. Zervas) gave an introductory speech, welcoming all the participants in this event, which was held in the premises of the Agricultural University of Athens. He pointed out some critical issues concerning the availability of water, not only in the greek islands, but also in the mainland, the scarcity of water in the agricultural sector, and the extreme wasteful use of water in some areas.

Afterwards, Dr. Dimitris Manolakos (Hellas Energy) gave an overview of the ProDes project, its results and activities so far and the expected impact it could have in Greece. One of the activities that attracted attention is the e-learning course, which was impressed many participants. Some requested to get a live presentation of these lectures, which

was unfortunately impossible, since there was no wireless internet connection available.

The first series of speeches were from representatives of local authorities. Mr. Efthimiopoulos (Aegean Energy Office) made a detailed analysis of the existing situation in the Aegean islands, concerning the water provision, elaborating the framework, economic situation, cost of water in the islands, and a general description of the required measures (desalination, water recycling, different use of the available water resources, infrastructures etc.), in order to solve this issue.

Since Mr. Chalaris (the Mayor of Oia, Santorini) could not participate, Mr. Efthimiopoulos extended his speech, covering many aspects of the acts that municipalities can take, in order to proceed to sustainable solutions for the water provision.

The workshop continued with the presentation regarding the available RE–desalination systems. Eftihia Tzen (CRES) gave a quick overview of the available RE–desalination systems, together with a brief description of such installed systems.

George Papadakis (AUA) continued by presenting the results of some autonomous systems, implemented within the ADIRA project. Then, George Kosmadakis (Hellas Energy) gave a speech, presenting the solar organic Rankine cycle for RO desalination, focusing on the cost and market-related aspects of this promising technology. This round of presentations ended with the detailed analysis of the solar thermal collectors that are market-available or are at a late research stage by Yiannis Tripanagnostopoulos (Univ. of Patras), which can be used in the industry, including of course the RE–desalination sector.

Lunch followed, which gave some time to the participants to discuss the issues elaborated so far.

After a break for lunch and further discussion of the relevant issues discussed, Zois Kologios (TEMAK) gave a speech, concerning the operational cost of small and large-scale desalination systems coupled with renewables. He focused on the low power demand that modern desalination units can have, which makes them ideal for coupling with renewables. He also commented on the very time-consuming procedures, in order for a project to proceed, by analysing an example, which his company faces, when it has to wait for two or three years for a project to get started.

The next speech was from Marios Sigalas (PHOTOVOLTAIC), who gave emphasis on the applications of PV systems at isolated areas. This kind of systems can be used successfully for autonomous RE–desalination systems, which was something he focused on.

The last speech was by Nikos Yfantis (Sychem Advanced Water Technologies),

who presented the Milos island system, which is actually a successful combination of wind energy with RO desalination, implemented in Milos island, providing the 100% of the island's water, and operated by Sychem Advanced Water Technologies. He did not focus a lot on the technical details of this system, which was kind of outside the scope of this workshop, but gave the motivation for relevant projects to be implemented, since it seems that the potential of such systems in the Aegean islands is very high.

Outcomes:

The most important outcome of the discussions that took place, involve the viability of the RE–desalination systems. Since the last speaker (Nikos Yfantis) presented the wind–RO system installed in Milos island, the conversation focused on that system, where a private company operates the plant successfully. Similar applications could be realized in other islands as well, if the appropriate funds were raised, since the potential is huge in many islands.

Another common outcome expressed by most of the participants is that a better planning of all the tasks of such projects should be made. Municipalities should get better informed about all the available solutions for covering the water demand in their respective areas. RE–desalination is of course one of them, and when referring to the Aegean islands, it could be one of the most sustainable solutions proposed.

An important result was also the information at local level that was expressed by some people dealing with such applications. For example, representatives from municipalities expressed their will to find a more sustainable solution for the provision of water than the existing one (water transportation by tankers, having a high cost ~ 8 €/m^3). Desalination is one of the main solutions they are sceptical with, and if it is even coupled with renewables is welcomed too. On the other hand, representatives from companies showed their anxiety that not many things are promoted, since the issue of water provision is known and discussed frequently, but the ministry does not put to action some measures, in order to promote more viable solutions mainly for the Aegean islands.

3.5 Agenda of the workshop in Greece

When:

Monday 29th of March 2010 from 09:00 until 17:00

Where:

Agricultural University of Athens, main building, "Room of multiple uses", Iera Odos str. 75, 11855, Athens, Greece

Contact persons:

Dimitris Manolakos, Tel. +30 2105294036, e-mail: dman@aua.gr

Efi Nikopoulos, Tel. +30 2105294033, e-mail: efinik@aua.gr

George Kosmadakis, Tel. +30 2105294036, e-mail: gkosmadakis@gmail.com

Date: Monday, 29th of March 2010		
Time	**Content**	**Responsible**
09:00 – 09:20	Registration	Hellas Energy
09:20 – 09:30	Welcome speech	Rector of AUA (G. Zervas)
09:30 – 09:45	ProDes Project Overview – Description	Hellas Energy (D. Manolakos)
09:45 – 10:15	Technical, legislative and environmental issues in the Aegean islands	Aegean Energy Office (I. Efthimiopoulos)
10:15 – 10:45	Implementation of desalination systems with the contribution of municipalities	Mayor of Oia (G Chalaris)
10:45 – 11:15	Coffee break	
11:15 – 11:35	Water desalination with renewables	CRES (E. Tzen)
11:35 – 11:55	Autonomous RE-desalination systems – The ADIRA project	AUA (G. Papadakis)
11:55 – 12:15	Solar Organic Rankine cycle for RO desalination	Hellas Energy (G. Kosmadakis)
12:15 – 12:35	Solar thermal collectors for industrial use	Univ. of Patras (Y. Tripanagnostopoulos)
12:35 – 13:35	Lunch	
13:35 – 13:55	Operational cost of small and large-scale desalination systems coupled with renewables	TEMAK (Z. Kologios)
13:55 – 14:15	Application of PV systems at isolated areas	PHOTOVOLTAIC (M. Sigalas)
14:15 – 14:35	Combination of wind energy with RO desalination: The Milos island system	Sychem Advanced Water Technologies (N. Yfantis)
14:35 – 16:00+	Discussion / Questions	ALL

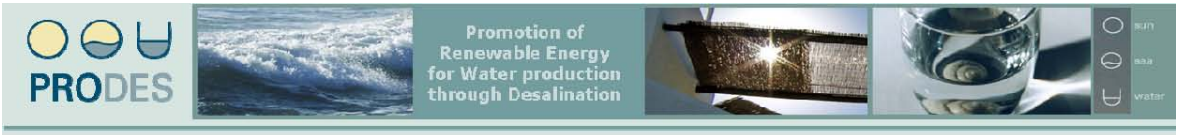
Annex 3.1: Photos from the workshop in Greece

WP 4.3: Promotional and networking workshops

WP 4.3: Promotional and networking workshops

WP 4.3: Promotional and networking workshops

Annex 3.2: Workshop leaflet (1/2)



Το Γεωπονικό Πανεπιστήμιο Αθηνών, σας προσκαλεί να παρευρεθείτε στην ημερίδα με θέμα:

ΠΡΟΩΘΗΣΗ ΤΕΧΝΟΛΟΓΙΩΝ ΑΦΑΛΑΤΩΣΗΣ ΜΕ ΑΝΑΝΕΩΣΙΜΕΣ ΠΗΓΕΣ ΕΝΕΡΓΕΙΑΣ ΓΙΑ ΑΕΙΦΟΡΟ ΑΝΑΠΤΥΞΗ

που θα πραγματοποιηθεί στα πλαίσια του έργου Intelligent Energy Europe με τίτλο "**Promotion of Renewable Energy for Water production through Desalination**" και χρηματοδοτείται από την Ευρωπαϊκή Επιτροπή.

Αντικείμενο της ημερίδας:

- Παρουσίαση και ανάλυση του υφιστάμενου τεχνικού, θεσμικού και περιβαλλοντικού πλαισίου
- Ο ρόλος της τοπικής αυτοδιοίκησης
- Τεχνολογίες Ανανεώσιμων Πηγών Ενέργειας και δυνατότητες συνδυασμού με τεχνολογίες αφαλάτωσης
- Παρουσίαση επιτυχημένων εφαρμογών αφαλάτωσης με ΑΠΕ
- Μέτρα για την προώθηση των αφαλατώσεων με ΑΠΕ

Πληροφορίες για τη διοργάνωση

Ημερομηνία:	Δευτέρα, 29 Μαρτίου 2010
Τόπος Διεξαγωγής:	Γεωπονικό Πανεπιστήμιο Αθηνών Ιερά οδός 75, Βοτανικός Κεντρικό Κτίριο ΓΠΑ, Αίθουσα Πολλαπλών Χρήσεων
Διοργανωτής:	Ενεργειακή Ελλάδος & Σια ΕΕ

Η συμμετοχή είναι ελεύθερη. Θα τηρηθεί σειρά προτεραιότητας.

Παραμένουμε στη διάθεσή σας για περισσότερες πληροφορίες και λεπτομέρειες.

Επικοινωνία
κα Ε. Νικοπούλου
Γεωπονικό Πανεπιστήμιο Αθηνών, Ιερά οδός 75, Βοτανικός
Τηλ. 210-5294033
Email: efinik@aua.gr
PRODES web-site: http://www.prodes-project.org/

HELLAS ENERGY

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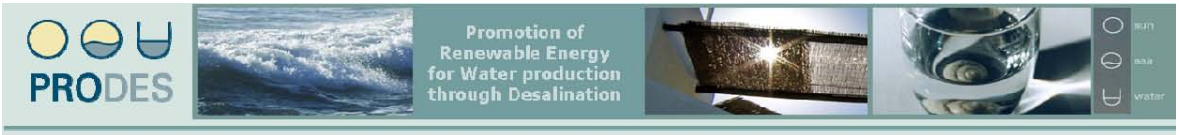
ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ

Intelligent Energy Europe

Annex 3.2: Workshop leaflet (2/2)



Πρόγραμμα ημερίδας με θέμα: "Προώθηση Τεχνολογιών Αφαλάτωσης με Ανανεώσιμες Πηγές Ενέργειας για Αειφόρο Ανάπτυξη"

Ημερομηνία: Δευτέρα, 29 Μαρτίου 2010

Τόπος Διεξαγωγής: Γεωπονικό Πανεπιστήμιο Αθηνών,
Ιερά οδός 75, Βοτανικός, Κεντρικό Κτίριο ΓΠΑ, Αίθουσα Πολλαπλών Χρήσεων

9:00-9:20	***Προσέλευση - Εγγραφή συμμετεχόντων***	
9:20-9:30	**Χαιρετισμός**	*Γ. Ζέρβας* Πρύτανης Γ.Π.Α.
9:30-9:45	**Παρουσίαση έργου ΙΕΕ: Προώθηση των ΑΠΕ για Παραγωγή Νερού με Αφαλάτωση**	*Γ. Κοσμαδάκης,* Ενεργειακή Ελλάδας
Το Υπάρχον Πλαίσιο Ανάπτυξης Αφαλατώσεων με ΑΠΕ & ο Ρόλος της Τοπικής Αυτοδιοίκησης		
9:45-10:15	**Τεχνικά, Θεσμικά και Περιβαλλοντικά Ζητήματα για Αφαλατώσεις με ΑΠΕ στα Νησιά του Αιγαίου**	*Ηλίας Ευθυμιόπουλος,* Γ.Διευθυντής Ενεργειακού γραφείου Αιγαίου
10:15-10:45	**Σχεδιασμός με Συμμετοχή των ΟΤΑ**	*Γιώργος Χάλαρης,* Δήμαρχος Κοινότητας Οίας, Σαντορίνης, Πρόεδρος Δικτύου Δάφνη
10:45-11:15	***Διάλειμμα καφέ***	
Τεχνολογίες Αφαλάτωσης και ΑΠΕ		
11:15-11:35	**Αφαλάτωση νερού με χρήση ΑΠΕ**	*Ευτυχία Τζεν,* Κέντρο Ανανεώσιμων Πηγών Ενέργειας
11:35-11:55	**Αυτόνομα Συστήματα αφαλάτωσης με ΑΠΕ-Το έργο ADIRA**	*Γιώργος Παπαδάκης,* Καθηγητής Γ.Π.Α.
11:55-12:15	**Οργανικός Ηλιακός Κύκλος Rankine για αφαλάτωση Νερού**	*Δημήτρης Μανωλάκος,* Γ.Π.Α.
12:15-12:35	**Ηλιακοί θερμικοί συλλέκτες για βιομηχανικές εφαρμογές**	*Γιάννης Τρυπαναγνωστόπουλος,* Αν. Καθηγητής Πανεπιστημίου Πατρών
12:35-13:35	***Γεύμα***	
13:35-13:55	**Κόστος λειτουργίας μικρών και μεγάλων αφαλατώσεων-ανανεώσιμες πηγές ενέργειας**	*Ζώης Κολογγιός,* TEMAK A.E, Επεξεργασία Νερού
13:55-14:15	**Εφαρμογές Φωτοβολταϊκών Συστημάτων σε Απομακρυσμένες Περιοχές**	*Μάριος Σιγάλας,* PHOTOVOLTAIC
14:15-14:35	**Συνδυασμός Αιολικής Ενέργειας και Αντίστροφης Όσμωσης: Το σύστημα της Μήλου**	*Νίκος Υφαντής,* Sychem Advanced Water Technologies
15:35-16:00+	**Συζήτηση - Ερωτήσεις**	

ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ

HELLAS ENERGY

Annex 3.3: Workshop dissemination

A greek NGO called "Solon", which deals with environmental issues (mainly with water provision, renewable energy and sustainable development), was also invited in the workshop. Two participants from this association were present and found the subject of the workshop interesting and fruitful for their further activities. It was arranged that they capture video, but only the speakers, who are not related to companies. They have uploaded a brief description of the event in their web site: http://www.solon.org.gr/index.php/2008-07-15-19-12-42/54-2008-07-15-14-19-18/1734-afalatosi-ape.html, as well as one of the speeches, concerning one of the available technologies for RE-desalination using solar energy (http://www.youtube.com/watch?v=HyPPQWbv0Pc).

4 Workshop in Portugal

4.1 Introduction

Time and place of the workshop:

The workshop was conducted in the University of Algarve, in Faro, on the 26th of February 2010. It was scheduled to coincide with the course for professionals within the Prodes project conducted by INETI/LNEG in the same university to maximize attendance.

Algarve is the southern region of the mainland of Portugal and although there is a sufficient potable water supply from public network, some water stress in years of lower rainfall exists. Studies have been made to evaluate the possibility of desalination to provide an alternative water source.

Target Group:

The workshop targeted two main groups:

- Potential clients for RE Desalination. As in Portugal there is no serious water stress and additionally the electricity cost is low, the implementation of a RE Desalination plant would have to use other motives than necessity or economics. The major motivation is environmental and ecologic image as a mean to promote such business activity. In Portugal there is a well-developed tourism sector, which was targeted, such as hotels and spa, golf courses, camping operators etc. Also municipalities, water distribution companies and military organizations were contacted.

- Potential suppliers of RE Desalination equipment: mainly renewable energy and water treatment companies were contacted in this group.

4.2 Implementation of the Workshop

Workshop location, date and basic structure

The workshop had the support of the University of Algarve for the space, multimedia and logistic support, such as photocopies and others. The date was fixed to coincide with the course for professionals of the ProDes project, being conducted by INETI/LNEG in the same university.

The possibility of having lunch and snack in the university and a technical tour to a nearby hotel that has a desalination unit defined the workshop duration as one full day.

Speaker invitation and selection

Portuguese speakers were invited from different related areas, such as water treatment and renewable energy companies, lawyer companies, water network operators, desalination unit owners and sector regulators. Also, foreign technology providers and developers were invited to give a speech during the workshop. In total about 58 contacts were found as potential speakers.

Finally, a selection was made that provided: an introduction to existing technologies, studies and overview, technology providers, legal framework presentation, alternative/complementary views.

Divulgation

A poster was created and circulated to the Prodes database with an invitation email. It was also posted in the Prodes website in the news section. AO SOL's group (DREEN) contacts were used for invitation as well. The Portuguese Golf federation was contacted and publicised the workshop in their own website.

A press release was conducted and sent to the media. Local newspapers and radios of Algarve were contacted by phone. About 65 contacts were made, including also some related websites. Network publicity in internet (Facebook and LinkedIn) was also used.

Articles were published in the local and speciality newspapers. One radio interview was conducted during the workshop.

Traveling and accommodation setup

For those coming from abroad a selection of hotels and public transportation was done. A .PDF file was sent with full instructions (see Appendix).

Workshop

The participants came from a broad range of fields, such as:

- Water related industries
- Renewable energies (solar thermal, PV, wind, wave)
- AVAC companies

- Water treatment and pumping companies
- Municipal water distribution companies and regulators
- City halls
- Engineering consulting
- Golf clubs and hotels
- Ambient associations
- University students
- Horticulture producer

The speakers gave a very good overview and content of the renewable energy driven desalination. Namely:

- Principles and technologies overview: LNEG
- Regulators: state water distribution company and Hydrographic Network of Algarve Administration
- Legal framework: lawyer company
- Related product/services providers: AO SOL, Enkott (R.O.), DeViris (water), Mage-water management (Hendrik Müller-Holst), Solar Spring / ISE (Daniel Winter), Nymphea (fresh water submarine resources), Synwater (wind R.O.)

The workshop started at around 9h30. There was a coffee break during morning and a lunch was offered in the university. During these breaks was the ideal time for networking. The coffee break was ordered from a local catering company.

Outside the room, Prodes material was available, including newsletter and commercial technology providers leaflet. The workshop program and publicity material from the speakers was also available.

Technical tour

A bus was hired to take the participants to the technical tour location and return them. For those willing to take their own vehicle a map hand-out was prepared and printed.

The technical tour had a great success from the attendance and interest point of view. Participants stayed until after 19h asking questions and visiting the desalination plant of the Pestana hotel group in Alvor.

Workshop follow-up

After the workshop, the speakers' presentations and a completed participant list were sent by email to the registered persons, to complete the information already given during the workshop and enhance the networking opportunities.

4.3 Participants – Speakers

List of Participants

	Name	Individual or representing a company	E-mail address
1	Carlos Póvoa	AdP - Águas de Portugal, SGPS, S.A.	c.povoa@adp.pt
2	António Teixeira	Agresi,LDA	nunesteixeira@sapo.pt
3	Roxo da Silva	Agresi,LDA	roxo.da.silva@gmail.com
4	Vera Lúcia Augusto Domingos	Almargem - Associação de Defesa do Património Cultural e Ambiental do Algarve	veragos@hotmail.com
5	João Miguel Silva	Aquadom - Sistemas de Tratamento de Água Lda	joaosilva@aquadom.pt
6	José Vilela	Aquadom - Sistemas de Tratamento de Água Lda	josevilela@aquadom.pt
7	Anabela Ramos Sequeira Rebelo	ARH - Administração da Rede Hidrográfica do Algarve	arebelo@arhalgarve.pt
8	Maria Beatriz Xavier Neves	ARH - Administração da Rede Hidrográfica do Algarve	bneves@arhalgarve.pt
9	Paulo Cruz	ARH - Administração da Rede Hidrográfica do Algarve	presidencia@arhalgarve.pt
10	Pedro Coelho	ARH - Administração da Rede Hidrográfica do Algarve	pcoelho@arhalgarve.pt
11	Carlos Pedroso	Câmara Municipal de Sines Divisão de Serviços Urbanos Serviços de Águas e Esgotos	carlospedroso@mun-sines.pt
12	Pedro Silva	Câmara Municipal de Sines Divisão de Serviços Urbanos Serviços de Águas e Esgotos	psilva@mun-sines.pt
13	Aníbal Moreira e Silva	Climasol Instalações de Aquecimento, Lda	anibal@climasol.pt
14	António Gomes Gaspar	Climasol Instalações de Aquecimento, Lda	agaspar@climasol.pt
15	João Papa	De Viris Natura e Ambiente S.A.	joao.papa@deviris-pt.com
16	Manuel Collares Pereira	De Viris Natura e Ambiente S.A.	manuel.collarespereira@dreen.eu
17	Pedro Adão	De Viris Natura e Ambiente S.A.	pedro.adao@aosol.pt
18	Vitor Santos	De Viris Natura e Ambiente S.A.	vitor.santos@aosol.pt
19	Raul Manuel Rebelo Cunha	DST solar /DST Renovaveis	raul.cunha@dstsgps.com
20	Valente Silva	Enerpraxis - Projecto e Consultoria Energética LDA	enerpraxis@gmail.com
21	António Sérgio Sena	ENERSENSE, Lda	sena@enersense-pt.com
22	Nuno Gião	ENERSENSE, Lda	giao@enersense-pt.com

23	Engº Carlos Carvalho	Enkrott-Gestão e Tratamento de Águas SA	carlos.carvalho@enkrott.pt
24	Jorge Taboada	Enkrott-Gestão e Tratamento de Águas SA	jorge.taboada@enkrott.pt
25	Francisco Vila Luz	EPAL - Empresa Portuguesa das Águas Livres, S.A. Avenida da Liberdade, nº 24 1250-144 Lisboa	francisco.luz@epal.pt
26	Rita Alexandre Estevão Monteiro	EPAL - Empresa Portuguesa das Águas Livres, S.A. Avenida da Liberdade, nº 24 1250-144 Lisboa	ritamont@epal.pt
27	Ana Ramos	ERSAR - Entidade Reguladora dos Serviçoes de Água e Resíduos	ana.ramos@ersar.pt
28	Paula Freixial	ERSAR - Entidade Reguladora dos Serviçoes de Água e Resíduos	paula.freixial@ersar.pt
29	Rita Ferreira	ERSAR - Entidade Reguladora dos Serviçoes de Água e Resíduos	Rita.Ferreir@ersar.pt
30	Joao Pereira	FPS-Sa	jpereira@fps-sa.com
31	João Nunes	Gasfomento SA	jcnunes@gasfomento.pt
32	Luis Filipe Barradas Mendes	Gasfomento SA	filipemendes@hotmail.com
33	Ana Sofia Navalho	Grupo Procme	ana.navalho@com.pt
34	Vítor Manuel Brandão Perdigão	Hidromethos, Lda	perdigao@hidromethos.pt
35	Mónica Neves*	Hubel Indústria da Água	mneves@hubel.pt
36	NunoPinho	ITT PORTUGAL, Lda	nuno.pinho@itt.com
37	Oliver Durao	ITT PORTUGAL, Lda	oliver.durao@itt.com
38	Pedro Horta	Laboratório Nacional de Energia e Geologia	pedro.horta@ineti.pt
39	Rúben Hilário	Laboratório Nacional de Energia e Geologia	ruben.hilario@ineti.pt
40	José Carlos Amador	MartiferSolar SA	jose.amador@martifer.com
41	Regina Raquel Freitas Correia	Município de Tavira	rcorreia@com-tavira.pt
42	Rui Manuel Dias Pereira	Município de Tavira	rdias@cm-tavira.pt
43	Telma Maria Da Conceição	Município de Tavira	tconceicao@cm-tavira.pt
44	Carlos Pinho	Nortecoffe, Comércio e Instalação Equipamentos Climatização, Hotelaria, Lda	nortecoffe@gmail.com
45	Vicente Duchiron (Business Developer)	Nymphea Enviroment	v.duchiron@nymphea.fr
46	Gaspar Pedro	Oficina Aberta ,LDA	gasparpedro@rolear.pt
47	Alexandre Silva	Organizações Fesil, LDA	alexandre.ferreiradasilva@gmail.com
48	Ângelo Octávio Guerreiro da Rosa	Individual	angelo-rosa@hotmail.com
49	Pedro Tavares	Individual	pt0459@gmail.com
50	Rogério Estrela	Individual	rogerioestrela@portugalmail.pt
51	Tomás Coelho	Individual	tppcoelho@hotmail.com
52	José António Loureiro	PBG TECNITROM, SA-Energia e Telecomunicações SA	jloureiro@tecnitrom.com
53	Adolfo Goncalves	Planze	adolfo@planze.pt

54	Maria José Coelho Gonçalves	Quinta da Horta Alegre, Unipessoal Lda	quinta.horta .alegre@gmail.com
55	Jorge Pina Rodrigues	Sea For Life, LDA	jorge.pina@seaforlife.com
56	Francisco Garcia	Sintra 2001 - Consultadoria e Projectos de Engenharia,LDA	info@sintra2001.pt
57	Pedro Manuel Henriques Santo	Solar Connect Lda	geral@solarconnect-energias.com
58	Adriana Jacinto	Tivoli Hotels and Resorts	adriana.jacinto@tivolihotels.com
59	Luis Filipe Gomes	Tivoli Hotels and Resorts	luis.filipe@tivolihotels.com
60	Irlando Delgado Ramos	Universidade do Algarve	irlandocb@hotmail.com
61	Ana Isabel de Oliveira Catarino	Universidade do Algarve	anna-catarino@hotmail.com
62	Armando Inverno	Universidade do Algarve	ainverno@ualg.pt
63	Monica Allexandra Soares Ferreira	Universidade do Algarve	moniskaferreira@gahoo.com
64	Raul Lana Miguel	Universidade do Algarve	rmiguel@ualg.pt
65	Sonia Fernanda Afonso de Brito	Universidade do Algarve	sonia-de-brito@hotmail.com
66	Ignácio José Pinto Coelho	VALE DO LOBO, Resort Turístico de Luxo, S.A. Clube de Golf Vale de Lobo	ignacio@vdl.pt
67	Luís Matos	VALE DO LOBO, Resort Turístico de Luxo, S.A. Clube de Golf Vale de Lobo	luism@vdl.pt
68	Luís Rebelo	VALE DO LOBO, Resort Turístico de Luxo, S.A. Clube de Golf Vale de Lobo	hslrebelo@gmail.com
69	Joachim Käufler	Synwater	j.kaeufler@synliftsystems.de
70	Daniel Winter	Solar Spring / ISE	daniel.winter@ise.fraunhofer.de
71	Hendrik Müller-Holst.	Mage – Water Management	mueller-holst@tinox.com
72	Francisco da Cunha Ferreira	Uría Menéndez	lisboa@uria.com

(Some participants did not fill in the registration form)

List of Speakers

	Name	Individual or representing a company	Subject of speech	E-mail address
1	Armando Inverno	University of Algarve	Welcome	ainverno@ualg.pt
2	Vítor Santos	Ao Sol, Energias renováveis	Opening of the session	Vitor.santos@aosol.pt
3	Pedro Horta	Laboratório Nacional de Energia e Geologia	Renewable energy desalination technologies	Pedro.horta@ineti.pt
4	Carlos Póvoa	Águas de Portugal.	Implications of water and energy management in desalination with	c.povoa@adp.pt

			renewable energy: the challenge of competitivity and sustainability.	
5	Amílcar Ambrósio	AMBIO	Examples of studies for desalination made for Portugal	amilcar.ambrosio@ambio.pt
6	Paulo Cruz	Algarve Hidrographic Network Administration	Integrated management of the water resources in Algarve.	pcruz@arhalgarve.pt
7	Manuel Collares Pereira	Ao Sol, Energias Renováveis	CPC collectors and solar thermal desalination	Manuel.collarespereira@dreen.eu
8	Carlos Carvalho	Enkrott-Gestão e Tratamento de Água	Reverse osmosis desalination technology	carlos.carvalho@enkrott.pt
9	João Papa	De Viris - Natura e Ambiente	Desalination / re-utilization in Portugal, strategy and economy	Joao.papa@deviris-pt.com
10	Francisco da Cunha Ferreira	Uría Menéndez	Legal framework of desalination with renewable energies in Portugal	lisboa@uria.com
11	Hendrik Müller-Holst.	Mage – Water Management	Watercone and humidification/de-humidification solar systems	mueller-holst@tinox.com
12	Daniel Winter	Solar Spring / ISE	Solar thermal distillation with membranes – Technology, systems and developments	daniel.winter@ise.fraunhofer.de
13	Vincent Duchiron	Nymphea Environnement	Research and sustainable and ecological production of submarine fresh water sources	m-becker@nympheawater.com
14	Joachim Käufler	Synwater	Desalination with wind energy	j.kaeufler@synliftsystems.de
15	Manuel Abecasis	Dreen Europe	Closing of the session	Manuel.abecasis@dreen.eu

4.4 Minutes of the workshop in Portugal

Presentations – Discussions:

The participants and speakers were welcomed by the University of Algarve and then the session started with a brief intervention by the AO SOL administrator.

Then, a representative from the National Laboratory of Energy and Geology presented in half an hour the different available technologies for renewable energy driven desalination.

Representatives from the national water distribution company (Águas de Portugal) and the administration of the water network of Algarve made presentations focused on the available resources and challenges for the future.

Additionally, a lawyer company presented an overview of the legal framework for renewable energy driven desalination.

Several related product/service providers contributed with their experience and product range from the available technologies side, such as: AO SOL, Enkott, DeViris, Mage-water management, Solar Spring / ISE, Nymphea, Synwater.

Finally, a technical tour to a (non-RE) RO plant took place in the end of the event.

Outcomes:

From the presentations of the existing RE desalination technologies was visible that a wide range of technical possibilities exist or are being developed at the moment. The different physical principles, production ranges and development stages from pure R&D to commercial was evident.

From the regulators' perspective for the mainland of Portugal there is not sufficient water stress in Portugal that justifies priority of investment in desalination. Even so, it was presented that some regions in Algarve have a moderate water stress, and the possibility of desalination as a complementary source of fresh water was not totally excluded. The national water distributor has ordered in the past feasibility studies to evaluate the scenario of moderate size desalination plants to be installed in Algarve.

From the technology providers several possibilities were presented. AO SOL presented examples of realized solar thermal desalination installations with Compound Parabolic Collectors (CPC) technology, taking advantage of the concentration without the need for tracking of the sun. The increased efficiency of

these collectors at higher than normal domestic hot water temperature gives them advantage in several applications.

A representative from Enkott presented several interesting aspects of the relation between energy consumption and water quality and practical aspects of RO installations. The specific company has many years of expertise in this field.

Mage-water management presented the Water Cone and their humidification/de-humidification solar systems, with several examples of realized installations and clear economical data.

Synwater presented their experience and economics on wind driven RO, as well as different ways of sizing/designing/controlling wind driven RO plants.

Solar Spring presented their membrane technology that although is in an early R&D stage, it shows a very good potential, and is ready to be applied in specific conditions.

Then, Nymphea Enviroment presented an interesting alternative to desalination: the possibility to detect, capture and explore near-shore sea submarine fresh water springs.

Deviris focused during their presentation on re-utilization of water to the maximum before the need to desalination, as the most ecological and economical way of utilizing water.

As a general image, the conclusions of the workshop can be summed up as follows:

- Firstly water from existing fresh water resources should be utilized in the most rational way, minimizing transport losses, water wastage, by properly exploring water recycling and re-utilization. This is the most environmental and economical sound way of planning water resources.

- When the available water is not enough, then desalination is an option and given the very significant amount of energy that it normally consumes, it is from the environmental point of view the first solution to be considered, and preferably driven by renewable energies.

- The incentives to renewable energy driven desalination are not sufficient at present and make RE desalination not able to compete with conventional electricity driven RO. This should be improved to allow the interested buyers to consider RE sources without being economically disadvantaged.

At present, in the mainland of Portugal the water stress is considered moderate and is generally not regarded as sufficiently serious, in order for a desalination public investment to take place.

4.5 Agenda of the workshop in Portugal

When:

Friday 26th of February 2010

Where:

University of Algarve, Faro, Portugal

Contact person:

Pedro Adão, Tel. +351 960025926, e-mail: pedro.adao@aosol.pt

Date: Friday, 26th of February 2010		
Time	Content	Responsible
09:30 – 09:35	Welcome	Armando Inverno (University of Algarve, Department of Mechanical Engineering)
09:35 – 09:40	Opening of the session	Vítor Santos (Ao Sol, Energias renováveis, Administrator)
09:40 – 10:10	Renewable energy desalination technologies	Pedro Horta (Laboratório Nacional de Energia e Geologia, Hired Research Assistant)
10:10 – 10:20	Implications of water and energy management in desalination with renewable energy: the challenge of competitivity and sustainability	Carlos Póvoa (Águas de Portugal, R&D Director)
10:20 – 10:25	Examples of studies for desalination made for Portugal (Presented study on behalf of AMBIO)	Carlos Póvoa (Águas de Portugal, R&D Director)
10:25 – 10:35	Integrated management of the water resources in Algarve	Paulo Cruz (Algarve Hidrographic Network Administration, Vice-

		President)
10:35 – 10:55	CPC colectors and solar thermal desalination	Manuel Collares Pereira (Ao Sol, Energias Renováveis, R&D Director)
10:55 – 11:05	Questions and answers	
11:05 – 11:25	Coffee break / networking	
11:25 – 11:40	Reverse osmosis desalination technology	Jorge Taboada (Enkrott-Gestão e Tratamento de Água, Technical consultant)
11:40 – 11:55	Desalination / re-utilization in Portugal, strategy and economy	João Papa (De Viris - Natura e Ambiente, Administrator)
11:55 – 12:05	Legal framework of desalination with renewable energies in Portugal	Francisco da Cunha Ferreira (Uría Menéndez, Lawyer)
12:05 – 12:25	Watercone and humidification/de-humidification solar systems	Hendrik Müller-Holst (Mage – Water Management, Technical director)
12:25 – 12:35	Questions and answers	
12:35 – 13:45	Lunch / Networking	
13:45 – 14:05	Solar thermal distilation with membranes – Technology, systems and developments	Daniel Winter (Solar Spring / ISE, Researcher)
14:05 – 14:25	Research and sustainable and ecological production of submarine fresh water sources	Vincent Duchiron (Nymphea Environnement, Commercial Manager)
14:25 – 14:45	Desalination with wind energy	Joachim Käufler (Synwater, Director)
14:45 – 14:55	Questions and answers	
14:55 – 15:00	Closing of the session	Manuel Abecasis (Dreen group CEO)
15:00 – 15:25	Map distribution and leaving room to the rented bus	
15:25 – 16:25	Departure for Alvor	
16:25 – 17:55	Technical tour: desalination unit of Pestana Group	
17:55 – 18:55	Return to Faro	
18:55	Arrival to faro	

Annex 4.1: Photos from the workshop in Portugal

Just before workshop opening the speakers from the national water distribution company and the water network administration of Algarve talking.

Slide from the technologies overview presentation

General view of the audience

General view of the audience

Technical tour RO

Technical tour auxiliary equipments

Annex 4.2: Workshop leaflet (1/2)

Annex 4.2: Workshop leaflet (2/2)

PRODES

Promoção da Produção de Água por Dessalinização com Energias Renováveis

- PROGRAMA -

9:30 Boas vindas – Universidade do Algarve. Director Dep. Engenharia Mecânica, Ilídio Mestre.
- Abertura da sessão - Ao Sol, Energias renováveis. Administrador, Vítor Santos.
- Laboratório Nacional de Energia e Geologia: "Tecnologias de dessalinização com energias renováveis." Assistente de Investigação Contratado, Pedro Horta.
- Águas de Portugal. "Implicações da gestão da água e da energia na dessalinização com energia renovável: o desafio da competitividade e da sustentabilidade." Director Investigação e Desenvolvimento, Carlos Póvoa
- Administração da Rede Hidrográfica do Algarve. "Gestão integrada dos recursos hídricos no Algarve." Vice-Presidente, Paulo Cruz.
- Ambio, Consultores de Engenharia e Tecnologia do Ambiente. "Exemplos de estudos de dessalinização elaborados para Portugal." Sócio Gerente, Amílcar Ambrósio.
- Ao Sol, Energias Renováveis. "Colectores do tipo CPC e a dessalinização por via térmica." Director Investigação e Desenvolvimento, Manuel Collares Pereira.

11:10 Coffee break e networking

11:30 Enkrott-Gestão e Tratamento de Água. "Tecnologia de dessalinização por osmose inversa." Consultor Técnico, Jorge Taboada.
- De Viris - Natura e Ambiente. "Dessalinização / re-utilização em Portugal, estratégia e economia." Administrador, João Papa
- Uría Menéndez. "Enquadramento legislativo da dessalinização com recurso a renováveis em Portugal." Advogado, Francisco da Cunha Ferreira.
- Mage – Water Management. "Watercone e sistemas de humidificação/desumidificação solar." Director Técnico, Hendrik Müller-Holst.

12:40 Almoço nas instalações da Universidade e networking

13:40 Aquamarine Power. "Dessalinização com energia das ondas." Responsável Desenvolvimento Comercial, Sian McGrath.
- Solar Spring / ISE. "Destilação solar térmica por membranas – Tecnologia, sistemas e desenvolvimentos." Investigador, Daniel Winter.
- Nymphea Environnement "Pesquisa e produção sustentável e ecológica de fontes submarinas de água doce." Gestor Comercial, Michael Becker.
- SYNLIFT Systems. "SYNWATER® - Dessalinização com energia eólica". Director, Joachim Käufler.
- Encerramento da sessão – Grupo Dreen. CEO, Manuel Abecasis.

15:40 Saída para o Alvor
16:40 Visita técnica: unidade de dessalinização do Grupo Pestana.
18:10 Volta a Faro (chegada pelas 19h10)

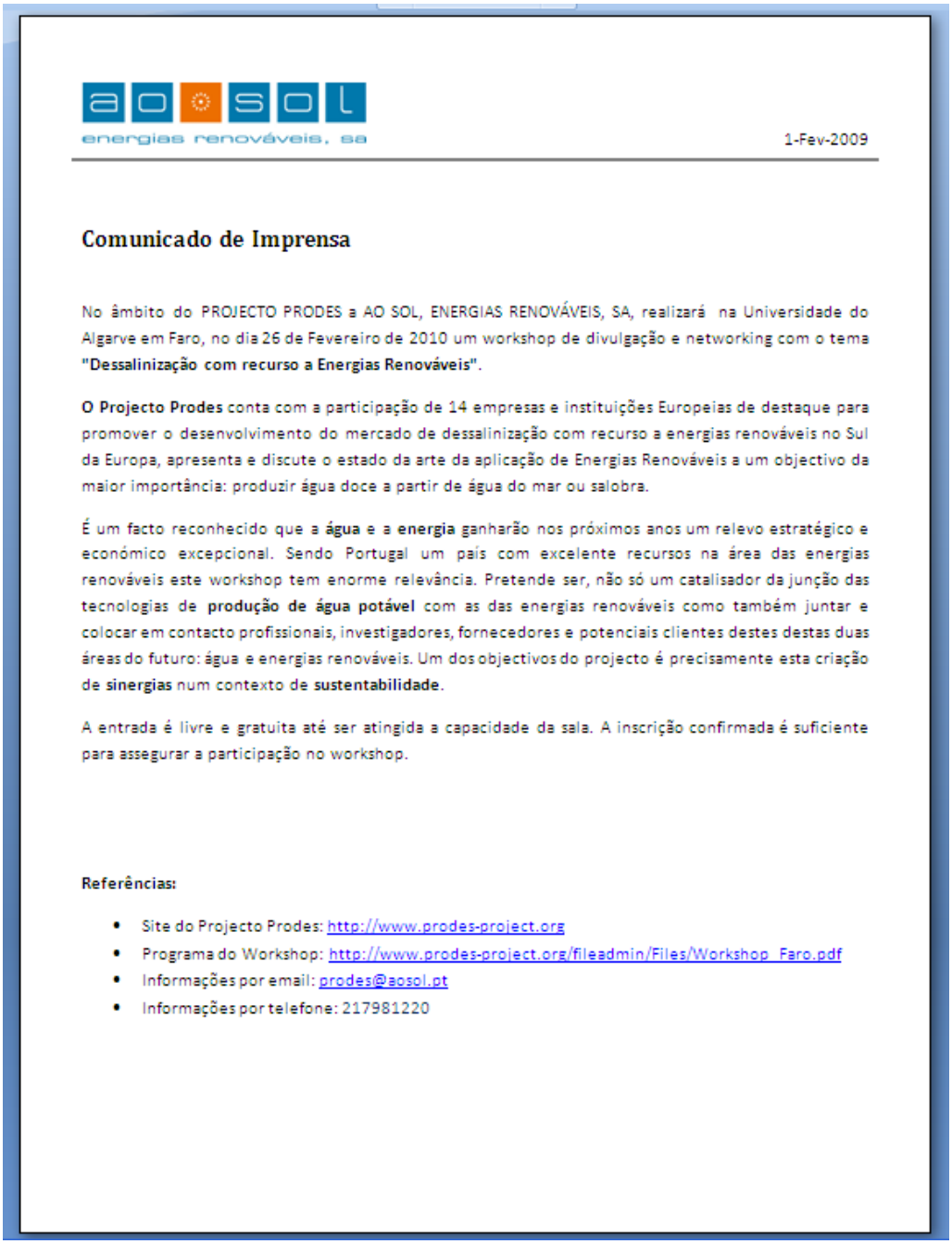
No final de cada sessão haverá tempo para perguntas.

Complexo Pedagógico do Campus da Penha Universidade do Algarve

Organização

Apoios

Annex 4.3: Workshop dissemination



ao sol
energias renováveis, sa

1-Fev-2009

Comunicado de Imprensa

No âmbito do PROJECTO PRODES a AO SOL, ENERGIAS RENOVÁVEIS, SA, realizará na Universidade do Algarve em Faro, no dia 26 de Fevereiro de 2010 um workshop de divulgação e networking com o tema **"Dessalinização com recurso a Energias Renováveis"**.

O Projecto Prodes conta com a participação de 14 empresas e instituições Europeias de destaque para promover o desenvolvimento do mercado de dessalinização com recurso a energias renováveis no Sul da Europa, apresenta e discute o estado da arte da aplicação de Energias Renováveis a um objectivo da maior importância: produzir água doce a partir de água do mar ou salobra.

É um facto reconhecido que a **água** e a **energia** ganharão nos próximos anos um relevo estratégico e económico excepcional. Sendo Portugal um país com excelente recursos na área das energias renováveis este workshop tem enorme relevância. Pretende ser, não só um catalisador da junção das tecnologias de **produção de água potável** com as das energias renováveis como também juntar e colocar em contacto profissionais, investigadores, fornecedores e potenciais clientes destes destas duas áreas do futuro: água e energias renováveis. Um dos objectivos do projecto é precisamente esta criação de **sinergias** num contexto de **sustentabilidade**.

A entrada é livre e gratuita até ser atingida a capacidade da sala. A inscrição confirmada é suficiente para assegurar a participação no workshop.

Referências:

- Site do Projecto Prodes: http://www.prodes-project.org
- Programa do Workshop: http://www.prodes-project.org/fileadmin/Files/Workshop_Faro.pdf
- Informações por email: prodes@aosol.pt
- Informações por telefone: 217981220

Press release

Prodes workshop in Portuguese Golf Federation website news section

água & ambiente
antecipamos o futuro
10 ANOS
O jornal de negócios do ambiente

Roteiro da dessalinização quase pronto

Um projecto europeu pretende catalisar a introdução da tecnologia de dessalinização com incorporação de renováveis, cujo desenvolvimento tem sido comprometido pela falta de incentivos e de articulação entre os sectores da água e energia.

Apesar de faltarem nove meses para o final do projecto "PRODES", está praticamente pronto aquele que será o roteiro para a inclusão das energias renováveis no mercado da dessalinização. O objectivo do programa – que conta com 14 empresas e instituições europeias – era trabalhar na promoção das tecnologias e a Ao Sol, uma das parceiras no projecto, considera como uma das grandes conclusões a necessidade de as diferentes partes envolvidas – agentes da área da dessalinização e das energias renováveis – trabalharem juntas para catalisar a introdução da tecnologia, para além da criação de incentivos, à semelhança de outros programas lançados como a "Medida Solar Térmico 2009".

Vitor Santos, director-geral da Ao Sol, sublinha que começa a existir um

Esta solução pode diminuir o elevado impacte ambiental causado pelo processo de dessalinização

mento de informações relativas a Portugal, reitera que há um grande interesse público na dessalinização. «No âmbito do "PRODES", foram organizados em Portugal pelo Laboratório Nacional de Energia e Geologia, o

avanço desta tecnologia estão, segundo a empresa, a falta de apoio do regulador, que acaba por recusar o licenciamento das instalações. Sendo que a dessalinização consome grande quantidade de energia, a empresa

Printed news in monthly Jornal Água & Ambiente, leading newspaper in water and environment

JORNAL do ALGARVE

O SEMANÁRIO DE MAIOR EXPANSÃO DO ALGARVE

Fundador: José Barão | Director: Fernando Reis | Quinta-feira | 4 de Março de 2010 | Ano LIII - N.º 2762 | Preço 1,00 € | Porte Pago - Taxa Paga | www.jornaldoalgarve.pt

DESSALINIZAÇÃO REÚNE ESPECIALISTAS NA UALG

Energias verdes transformam água do mar em água potável

Os especialistas acreditam que dentro de uma década estaremos a debater-nos com preços elevados para obter energia eléctrica e de água potável em virtude da sua escassez. "Hoje regamos jardins com a mesma água que bebemos. Isso é claramente insustentável", afirma o empresário Vítor Santos. Investigadores e empresários estão a procurar outras soluções. A dessalinização da água através de energias renováveis é uma hipótese P 6

Algarve investe em instalações de aquicultura P 3

Portimão entrega nova casa à Comissão de Protecção de Crianças e Jovens P 9

ENTIDADES LIGADAS AO TURISMO

MENOS TRÊS MILHÕES DE DORMIDAS

veis.

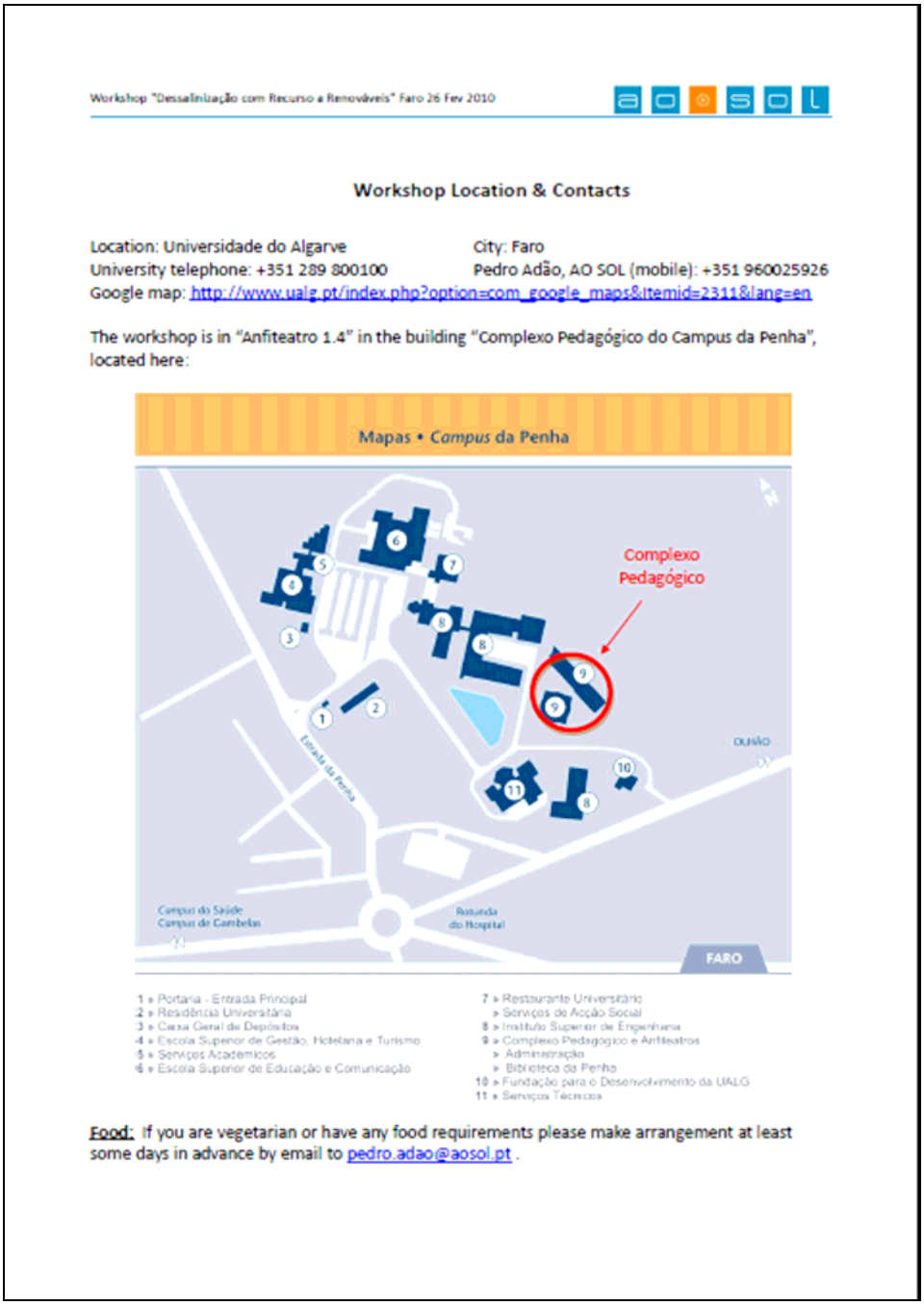
A iniciativa foi promovida através do Projecto Prodes, que conta com a participação de 14 empresas e instituições europeias que pretendem promover o desenvolvimento do mercado de dessalinização com recursos a energias renováveis no Sul da Europa.

Nesse sentido, a organização garantiu a presença de di-

First page news in Jornal do Algarve, local leading newspaper, with ¾ page development

Logo of Antena 1, leading Portuguese radio station that conducted a radio interview during the Workshop

Annex 4.4: Other



Workshop "Dessalinização com Recurso a Renováveis" Faro 26 Fev 2010

Workshop Location & Contacts

Location: Universidade do Algarve
University telephone: +351 289 800100
Google map: http://www.ualg.pt/index.php?option=com_google_maps&Itemid=2311&lang=en

City: Faro
Pedro Adão, AO SOL (mobile): +351 960025926

The workshop is in "Anfiteatro 1.4" in the building "Complexo Pedagógico do Campus da Penha", located here:

Mapas • *Campus* da Penha

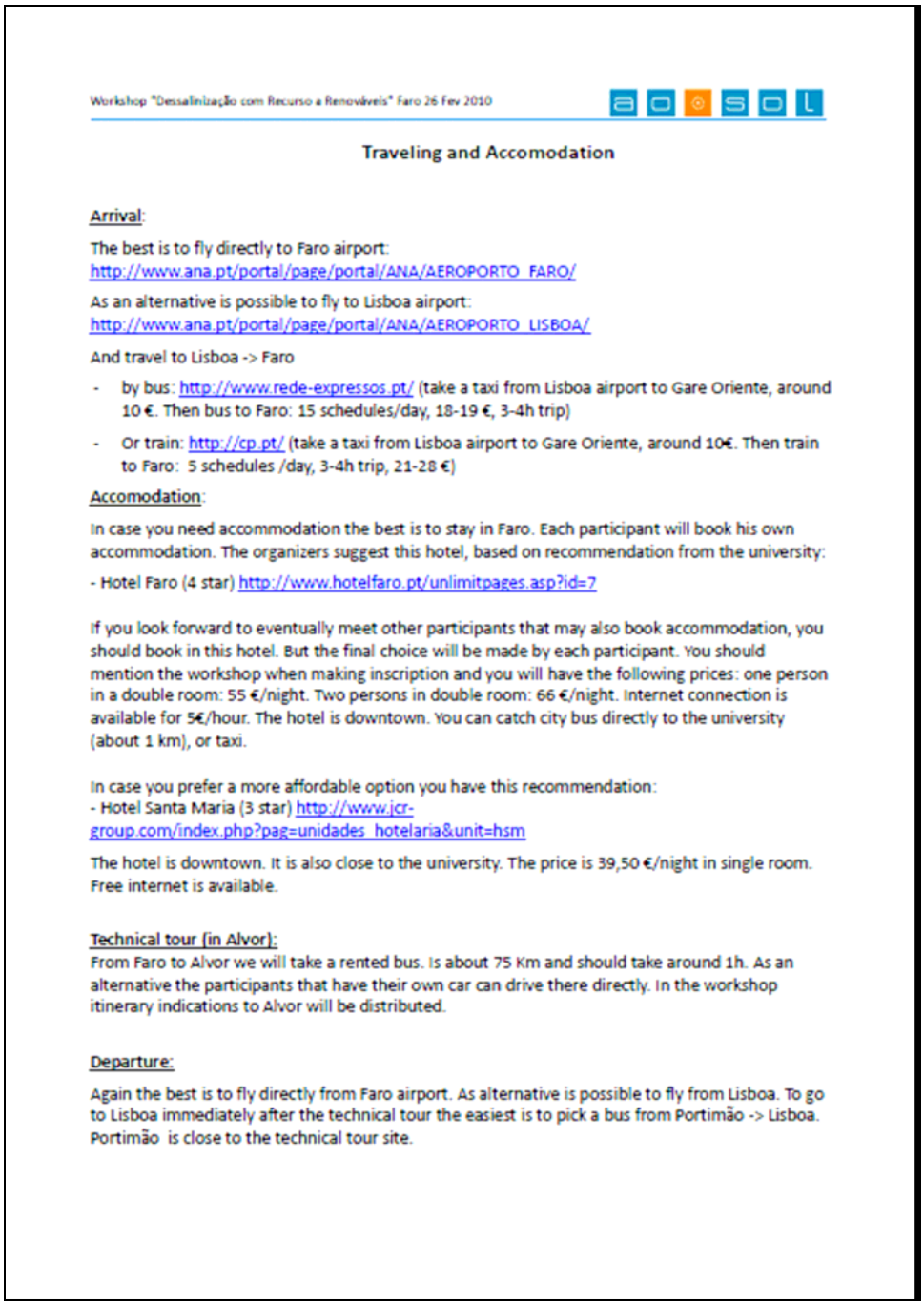
Complexo Pedagógico

FARO

1 » Portaria - Entrada Principal
2 » Residência Universitária
3 » Caixa Geral de Depósitos
4 » Escola Superior de Gestão, Hotelaria e Turismo
5 » Serviços Académicos
6 » Escola Superior de Educação e Comunicação
7 » Restaurante Universitário
» Serviços de Acção Social
8 » Instituto Superior de Engenharia
9 » Complexo Pedagógico e Anfiteatros
» Administração
» Biblioteca da Penha
10 » Fundação para o Desenvolvimento da UALG
11 » Serviços Técnicos

Food: If you are vegetarian or have any food requirements please make arrangement at least some days in advance by email to pedro.adao@aosol.pt .

Travel and accommodation instructions, page 1



Workshop "Dessalinização com Recurso a Renováveis" Faro 26 Fev 2010

Traveling and Accomodation

Arrival:

The best is to fly directly to Faro airport:
http://www.ana.pt/portal/page/portal/ANA/AEROPORTO_FARO/

As an alternative is possible to fly to Lisboa airport:
http://www.ana.pt/portal/page/portal/ANA/AEROPORTO_LISBOA/

And travel to Lisboa -> Faro

- by bus: http://www.rede-expressos.pt/ (take a taxi from Lisboa airport to Gare Oriente, around 10 €. Then bus to Faro: 15 schedules/day, 18-19 €, 3-4h trip)
- Or train: http://cp.pt/ (take a taxi from Lisboa airport to Gare Oriente, around 10€. Then train to Faro: 5 schedules /day, 3-4h trip, 21-28 €)

Accomodation:

In case you need accommodation the best is to stay in Faro. Each participant will book his own accommodation. The organizers suggest this hotel, based on recommendation from the university:

- Hotel Faro (4 star) http://www.hotelfaro.pt/unlimitpages.asp?id=7

If you look forward to eventually meet other participants that may also book accommodation, you should book in this hotel. But the final choice will be made by each participant. You should mention the workshop when making inscription and you will have the following prices: one person in a double room: 55 €/night. Two persons in double room: 66 €/night. Internet connection is available for 5€/hour. The hotel is downtown. You can catch city bus directly to the university (about 1 km), or taxi.

In case you prefer a more affordable option you have this recommendation:
- Hotel Santa Maria (3 star) http://www.jcr-group.com/index.php?pag=unidades_hotelaria&unit=hsm

The hotel is downtown. It is also close to the university. The price is 39,50 €/night in single room. Free internet is available.

Technical tour (in Alvor):
From Faro to Alvor we will take a rented bus. Is about 75 Km and should take around 1h. As an alternative the participants that have their own car can drive there directly. In the workshop itinerary indications to Alvor will be distributed.

Departure:

Again the best is to fly directly from Faro airport. As alternative is possible to fly from Lisboa. To go to Lisboa immediately after the technical tour the easiest is to pick a bus from Portimão -> Lisboa. Portimão is close to the technical tour site.

Travel and accommodation instructions, page 2

First page of the map hand-out to the technical tour location