



## Collated and updated list of solar cooling installations in participating countries

Task Report 5.3.1

## ITW

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> Quality Assurance in solar therma heating and cooling technology keeping track with recent and upcoming developments



## 1 Collated and updated list of solar cooling installations in participating countries

Solar thermal cooling is a young but growing market. Systems with different configurations facing a great variety of climatic conditions can be found all around the world. Despite the geographical distribution the number of solar thermal cooling installations is still several orders smaller than the number of cooling installations using electricity driven compression chillers. Hence, a lot of the up to date installed systems are prototype systems. But with the start of a market for solar thermal cooling installations a few manufacturers have entered the market with small series production. Normally each manufacturer concentrates on only one thermo-chemical process or technology in general used for cooling purpose.

For the development of requirements for durability and performance testing of such solar thermal cooling systems it is important to have an overview on the available technologies and their applications. Hence this document provides an ordered list of solar thermal cooling installations. This list makes no claim to be complete but it gives a broad overview on the installed technologies.

Within Task 38 - Solar Air Conditioning and Refrigeration of the Solar Heating and Cooling program (SHC) of the International Energy Agency (IEA) an overview has been carried out on thermally driven chillers and solar thermal technologies used in realized systems [1]. The aim of this overview was to collect information on existing solar heating and cooling systems in order to derive a first identification of proven design solutions in terms of selection of technologies and dimensioning in relationship with location, final use and size of the building.

The list of Task 38 was taken as a starting point. It included 303 solar thermal heating and cooling installations spread over the entire world (state of September 2010). In the project QAiST a survey on existing solar thermal cooling installations in the participating countries has been carried out. This was performed by distributing a questionnaire to owners and operators of solar thermal cooling systems. The questionnaire can be found in the annex. A detailed analysis of the outcome of the questionnaire is given in TR 5.3.2. The information gathered from this survey was used to expand the list of Task 38.

The list was expanded by 24 installations and information on 33 already listed installations was completed or updated. To indicate this in the list there are three colours of cell marking. New information data to the list from the QAiST survey is indicated in green, confirmed information in grey and updated or corrected information in red.



In the first column the installations included in the QAiST survey are marked by the number used within the QAiST database consisting of a country code of two letters and a consecutive numbering for each country. All other columns follow the initial list of Task 38. The scale type differs between L and S which stands for large and small installations. Small installations have a cooling capacity of up to 20 kW. The columns "Abs", "Ads", "DECs" and "DECI" categorize the used sorption process and the nominal thermal cooling capacity of the installations. Closed cycles using absorption or adsorption are indicated by "Abs" or "Ads", whereas desiccant evaporative cooling systems with open cycle are indicated as "DECs" if using a solid sorption material for example in a sorption rotor or as "DECI" if using a liquid sorption material. The cooling capacity of DEC systems is usually indicated by the nominal volume flow rate given in m<sup>3</sup>/h. 200 m<sup>3</sup>/h is approximately 1 kW of cooling capacity.



QAiST No.	No	Country	Country label	Continent	Name of Owner Company/Project	City	Application type	Application label	Year of completion	Scale type	Abs [kW]	Ads [kW]	DECs [m³/h]	DECI [m³/h]	Manufacturer
	1	Armenia	Armenia	Asia	DESODEC	Yerivan	University	School/University/Education centre		L			8,500		
	2	Australia	Australia	Australia	CSIRO Energy Centre	Newcastle	Office building	Office	2008	S	17.5				Yazaki (Water/LiBr)
	3	Australia	Australia	Australia	Milk Factory	Wyong	Industry	Industry	2009	S		10			InvenSor (Water/Zeolith)
	4	Australia	Australia	Australia	Ipswich Hospital	Ipswich	Hospital	Hospital		L	300				
	5	Austria	Austria	Europe	Weinbaubetrieb Peitler	Leutschach	Wine cellar	Other Service	2003	S	10				Pink (Ammonia/Water)
	6	Austria	Austria	Europe	Fa. SOLID	Graz	Office building	Office	2003	S	2				Kunze (Ammonia/Water)
AT03	7	Austria	Austria	Europe	Fa. SOLution	Sattledt	Office building	Office	2005	S	15				EAW (Water/LiBr)
AT04	8	Austria	Austria	Europe	Privathaus Jungreithmayr	Sattledt	Residential building	Residential	2007	S		5.5			SorTech (Water/Silicagel)
AT01	9	Austria	Austria	Europe	Fa. Bachler	Gröbming	Training centre	Other Service	2007	S	9				Pink (Ammonia/Water)
	10	Austria	Austria	Europe	Fa. Manschein	Gaweinstal	Office and industrial building	Industry	2008	S		7.5			SorTech (Water/Silicagel)
AT07	11	Austria	Austria	Europe	Fa. Kreuzroither	Schörfling	Office and industrial building	Industry	2008	S		15			SorTech (Water/Silicagel)
AT06	12	Austria	Austria	Europe	Fa. SOLID	Graz	Office building	Office	2008	S	17.5				Yazaki (Water/LiBr)
AT08	13	Austria	Austria	Europe	Municipality of Vienna Section 34	Vienna	Office building	Office	2009	S		7.5			SorTech (Water/Silicagel)
AT02	14	Austria	Austria	Europe	Oköpark	Hartberg	Office	Office	2000	L			6,000		Munters (Water/Silicagel)
	15	Austria	Austria	Europe	BH Rohrbach	Rohrbach	Office	Office	2007	L	30				
	16	Austria	Austria	Europe	General Solar	St. Veit a.d. Glan	Office	Office		L	35				
	17	Austria	Austria	Europe	Ferngas OÖ	Haid	Office	Office		L	70				
	18	Austria	Austria	Europe	Gasokol	Saxen	Office	Office		L	30				
AT05	19	Austria	Austria	Europe	Rathaus Gleisdorf	Gleisdorf	Town hall and offices	Office	2008	L	35		6.180		Yazaki (Water/LiBr)/Klingenburg (Water/Silicagel)
	-	Austria	Austria	Europe	SOLution Solartechnik, new site	Sattledt	Office	Office		L		60	-,		· · · · · · · · · · · · · · · · · · ·
		Austria	Austria	Europe	Fa. Paar	Graz	Office	Office		L	105	00			
	22	Austria	Austria	Europe	Raiffeisenbank Trofaiach	Trofaiach	Office (bank)	Office		L	70				
		Austria	Austria	Europe	Feistritzwerke Gleisdorf	Gleisdorf	Office	Office		L	24				
	24	Austria	Austria	Europe	Sunmaster	Eberstalzell	Office	Office		Ē	80	-			
		Austria	Austria	Europe	ENERGYbase	Wien	Office	Office	2008	Ē	00		2x8,000		
	-	Belgium		Europe	Renewable Energy House	Brussels	Office	Office	2000	L	35	-	2,0,000		
		China	China	Asia	Public building	Hong Kong	Public building	Other Services	2007	S	4.5				Rotartica (Water/LiBr)
		China	China	Asia	Residential building	Beijing	Residential building	Residential	2007	S	4.5	7.5			SorTech (Water/Silicagel)
						, ,			2008	-	470	7.5			Sol Tech (Water/Silicager)
		China	China China	Asia Asia	Solar Energy Hall	Rushan (Shandong)	Exhibition hall	Other Services		L	176 100		-		
		China	China	Asia	Tinner	Jiangmen (Canton)	Multi-use Office	Other Services Office		L	200	-			
		China			Tianpu	Beijing		Office		_	500		-		
		China	China Other EU Countries	Asia Europe	Olympic Village Logistic Center	Qingdao	Logistic/Office centre Office	Office		L	70				
		Denmark			Skive municipal administration building	Skive			0000				-		Duration (Marcalline)
		Egypt	Egypt	Africa	Hostel	Sharm el Sheikh	Hostel	Hotel	2008	S	13.5				Rotartica (Water/LiBr)
	35	France	France	Europe	Laboratory	Lannion	Laboratory set up	Laboratory	2006	S	4.5				Rotartica (Water/LiBr)
55.00		France	France	Europe	Laboratory	Moret sur Loing	Laboratory set up	Laboratory	2007	S	4.5				Rotartica (Water/LiBr)
	37	France	France	Europe	Résidence du Lac / SIEL	Maclas	Residential building	Residential	2007	S	10		ļ		Sonnenklima (Water/LiBr)
FR02	38	France	France	Europe	SOLACLIM	Perpignan	Laboratory set up	Laboratory	2008	S	05	7.5			SorTech (Water/Silicagel)
FR04	39	France	France	Europe	CSTB	Sophia Antipolis	Office and laboratory	Laboratory		L	35		-		Yazaki (Water/LiBr)
	40	France	France	Europe	DIREN	Basse Terre	Office	Office	2003	L	35				
FR01	41	France	France	Europe	Cave GICB	Banyuls	Wine cellar	Other Services	1991	L	52				Yazaki (Water/LiBr)
$\vdash$	42	France	France	Europe	Usine Givaudan	ArgenteuiL	Office	Office		L	105	<u> </u>			
		France	France	Europe	Usine GALDERMA	Sophia Antipolis	Office	Office	2002	L	210				
	44	France	France	Europe	TECHNIFROID	Le Port	Industry	Industry		L	35				
	45	France	France	Europe	Kristal - Ile de La Réunion	Saint Denis Réunion	Office	Office	2006	L	35				
	46	France	France	Europe	RAFSOL	Saint Pierre (Réunion)	University	School/University/Education centre	2008	L	30				
	47	France	France	Europe	Cultural center	Sainte Maxime	Public building	Other Services		L		35			
	48	France	France	Europe	CRES	Vignola (Corse)	Office	Office		L		35			
	49	France	France	Europe	High Quality Environmental labelled high school	Port-Louis (Guadaloupe)	School	School/University/Education centre		L		175			
	50	France	France	Europe	ISTAB	Talence	Laboratories	Laboratory		L		35	1		



QAiST No.	N°	Country	Country label	Continent	Name of Owner Company/Project	City	Application type	Application label	Year of completion	Scale type	Abs [kW]	Ads [kW]	DECs [m³/h]	DECI [m³/h]	Manufacturer
	51	Germany	Germany	Europe	FH Ingolstadt	Ingolstadt	Test plant	Laboratory	2004	S	15				EAW (Water/LiBr)
	52	Germany	Germany	Europe	WEGRA-Anlagenbau GmbH	Westenfeld	Office building	Office	2004	S	15				EAW (Water/LiBr)
	53	Germany	Germany	Europe	Schüco International KG	Bielefeld	Office building	Office	2005	S	15				EAW (Water/LiBr)
	54	Germany	Germany	Europe	Private company	Braunschweig	Offices	Office	2006	S	4.5				Rotartica (Water/LiBr)
	55	Germany	Germany	Europe	Conergy AG	Rangsdorf	Office building	Office	2006	S	15				EAW (Water/LiBr)
DE12	56	Germany	Germany	Europe	Fa. Solar Next	Rimsting	Office building	Office	2007	S	15				EAW (Water/LiBr)
	57	Germany	Germany	Europe	Sonnenalternativtechnik	Strukum	Office building / workshop	Office	2007	S	15				EAW (Water/LiBr)
	58	Germany	Germany	Europe	QS-Grimm GmbH	Gutach	Office / production rooms	Office	2007	S	15				EAW (Water/LiBr)
	59	Germany	Germany	Europe	ZAE Bayern	Garching	Laboratory set up	Laboratory	2007	S	10				Sonnenklima (Water/LiBr)
DE04	60	Germany	Germany	Europe	Fraunhofer ISE	Freiburg	Canteen	Other Services	2007	S		5.5			SorTech (Water/Silicagel)
	61	Germany	Germany	Europe	Citrin Solar	Moosburg	Office building	Office	2007	S		5.5			SorTech (Water/Silicagel)
	62	Germany	Germany	Europe	TKIZ GmbH	Barby	Office building	Office	2008	S	15				EAW (Water/LiBr)
	63	Germany	Germany	Europe	radiological practice	Berlin	Radiological practice	Other Services	2008	S	10				Sonnenklima (Water/LiBr)
	64	Germany	Germany	Europe	Residential building	Wiesloch	Residential building	Residential	2008	S		7.5			SorTech (Water/Silicagel)
	65	Germany	Germany	Europe	Office and apartment building	Bad Waldsee	Office and apartment building	Office	2008	S		7.5			SorTech (Water/Silicagel)
		Germany	Germany	Europe	Residential building	Alzenau	Residential building	Residential	2008	S	1	7.5			SorTech (Water/Silicagel)
		Germany	Germany	Europe	Fa. Schneider	Megesheim	Office building	Office	2008	S		5.5			SorTech (Water/Silicagel)
	-	Germany	Germany	Europe	Fa. Zink	Unterensingen	Office building	Office	2008	S	1	5.5	İ	l	SorTech (Water/Silicagel)
	69	Germany	Germany	Europe	Solarzentrum	Wietow	Office building / showroom	Office	2009	S	15				EAW (Water/LiBr)
	70	Germany	Germany	Europe	Siemens Erlangen	Erlangen	Test plant	Laboratory	2009	S	15				EAW (Water/LiBr)
		Germany	Germany	Europe	University Stuttgart	Stuttgart	Laboratory set up	Laboratory	2009	S	10				ITW Uni Stuttgart (Ammonia/Water)
		Germany	Germany	Europe	Raiffeisenbank Miesbach	Miesbach	Bank	Office	2009	S	20				Pink (Ammonia/Water)
			Germany	Europe	Technologiezentrum Köthen	Köthen	Office building	Office	2000	S	15				r int () introduct (dol)
	-	Germany	Germany	Europe	Wollferts	Köln	Office	Office		Ľ	70				<u>+</u>
		Germany	Germany	Europe	Press and Information Centre of the Government	Berlin	Office	Office		L	44				
		Germany	Germany	Europe	Ott & Spies	Langenau	Office	Office		L	35				Yazaki (Water/LiBr)
0200	_	Germany	Germany	Europe	Fraunhofer Umsicht	Oberhausen	Office & Laboratory	Office		L	58				Tazani (Traton zibi)
		Germany	Germany	Europe	Ministery for Traffic, Building and Housing	Berlin	Office	Office		L	70				
DE01		,	Germany	Europe	University hospital	Freiburg	Laboratory	Laboratory	1999	L	10	70			Nishyodo (Water/Silicagel)
	_	Germany	Germany	Europe	Stadtwerke	Remscheid	Office	Office	1000	L		105			Then year (Trater, encager)
		Germany	Germany	Europe	Zander	Stuttgart	Office	Office		L		100			+
		Germany	Germany	Europe	Bautzener	Dresden	Office	Office		L		71			+
		Germany	Germany	Europe	Götz	Würzburg	Office	Office		L		70			+
	_	Germany	Germany	Europe	Landesamt für Umweltschutz	Augsburg	Office	Office		L	-	352			+
		,	Germany	Europe	Malteser Kankenhaus	Kamenz	Hospital	Hospital		L		105			+
			Germany	Europe	IHK	Freiburg	Seminar rooms	Office		L		105	10,200		DehuTech (Water/Silicagel)
-	_	Germany	Germany	Europe	Ecotec	Bremen	Office	Office		L		70	30 kW		Denureen (water/Sincager)
		Germany	Germany	Europe	Stadtwerke	Bückeburg	Office	Office		-		10	30 kW		4
		Germany	Germany	Europe	Fa. Maier	Alt-Hengstett	Office	Office		L			30 KW		
		Germany	Germany	Europe	AUDI logistic center	Ingolstadt	Multipurpose	Other Services	2006	L			76 kW		
			,						2006				76 KVV	75 114/	
		Germany	Germany	Europe	Email-Fabrik	Amberg	Industry	Industry	2000	L	54			75 kW	<b></b>
		Germany	Germany	Europe	Paradigma	Karlsbad-Langensteinbach	Office	Office	2006	L	54	60			
			Germany	Europe	Federal Environmental Agency	Derssau	Office	Office		_	-	69			Maughana (Matas/Oilige ag)
DE11	_	Germany	Germany	Europe	FESTO technology center	Esslingen	Industry	Industry		L	64	1,050			Mayekawa (Water/Silicagel)
		Germany	Germany	Europe	Ritter Museum	Waldenbuch	Exhibition	Other Services		L	54				<b></b>
		,	Germany	Europe	?	Bad Schandau	Office	Office		L	50				
	_	Germany	Germany	Europe	IBA-AG	Fürth	Office	Office	2007	L	30				EAW (Water/LiBr)
		Germany	Germany	Europe	IT-school	Rodewisch	Classrooms	School/University/Education centre		L	32				<b>.</b>
		Germany	Germany	Europe	Solar Info Center (SIC)	Freiburg	Seminar rooms	Seminar rooms	2007					1,500	
DE07	100	Germany	Germany	Europe	Technical College for Engineering	Butzbach	College building	College building	2008		23				Sonnenklima (Water/LiBr)



QAiST No.	N°	Country	Country label	Continent	Name of Owner Company/Project	City	Application type	Application label	Year of completion	Scale type	Abs [kW]	Ads [kW]	DECs [m³/h]	DECI [m <sup>3</sup> /h]	Manufacturer
DE08	101	Germany	Germany	Europe	ITW University of Stuttgart	Stuttgart	Auditorium	Auditorium	2011	S		9			InvenSor (Water/Zeolith)
DE09	102	Germany	Germany	Europe	Solera	Binsdorf	Office	Office	2010	S		10			InvenSor (Water/Zeolith)
DE10	103	Germany	Germany	Europe	BLS	Forchtenberg	Office	Office	2010	S		8			SorTech (Water/Silicagel)
	104	Greece	Greece	Europe	American college I	Athens	Office	Office		L	168				
GR04	105	Greece	Greece	Europe	Solar Lab Demokritos	Athens	Office	Office		L	35				Yazaki (Water/LiBr)
GR07	106	Greece	Greece	Europe	Rethymno Village hotel	Rethymno	Hotel	Hotel		L	105				SOLE S.A. (Water/LiBr)
GR06	107	Greece	Greece	Europe	Hotel Lentzakis Crete	Rethymno	Hotel	Hotel		L	105				SOLE S.A. (Water/LiBr)
GR01	108	Greece	Greece	Europe	Sol Energy company	Palaio Faliro	Office	Office	2007	L	35				Yazaki (Water/LiBr)
GR05	109	Greece	Greece	Europe	Sarantis cosmetic factory	Viota	Industry	Industry		L		700			GBU (Water/Silicagel)
GR02	110	Greece	Greece	Europe		Lavrio	Public	Public	2007					1,100	Klingenburg (Water/LiCl)
GR03	111	Greece	Greece	Europe	High Combi-CRES	Athens	Office	Office		L	35				SOLE S.A. (Water/LiBr)
HU01	112	Hungary	Hungary	Europe	Tesco Super Market	Budapest	Public	Public		L	250				SOLE S.A. (Water/LiBr)
	113	Israel	Israel	Asia	Technion – IsraeL Institute of Technology	Haifa	Laboratory	Laboratory		S	new				
	114	Israel	Israel	Asia	Tel-Ashomer Hospital	Tel Hashomer	Hospital	Hospital		L	new				
	115	Italy	Italy	Europe	Private company	Arezzo	Private company	Office	2007	S	4.5				Rotartica (Water/LiBr)
	116	Italy	Italy	Europe	Private company	Perugia	Private company	Office	2007	S					Rotartica (Water/LiBr)
	117	Italy	Italy	Europe	Paradigma	Darzo	Office building	Office	2006	S	15				EAW (Water/LiBr)
IT02	118	Italy	Italy	Europe	ISSA	Milano	Office building	Office	2007	S	4.5				Rotartica (Water/LiBr)
	119	Italy	Italy	Europe	CRA-VIV	Pescia	Green house	Other Services	2008	S		7.5			SorTech (Water/Silicagel)
	120	Italy	Italy	Europe	Schüco International	Sarmeola	Office building	Office	2008	S	12				Pink (Ammonia/Water)
	121	Italy	Italy	Europe	Kindergarden Polimi	Milano	Kindergarten	School/University/Education centre	2009	S	15				EAW (Water/LiBr)
	122	Italy	Italy	Europe	Ebner Solartechnik	Eppan	Office building	Office	2009	S		8.5			SorTech (Water/Silicagel)
	123	Italy	Italy	Europe	University Cassino	Cassino	University	School/University/Education centre	BI	S	15				EAW (Water/LiBr)
	124	Italy	Italy	Europe	Company	Concorrezzo	Offices	Office	2008	S				80 kW	Menerga (Water/Silicagel)
	125	Italy	Italy	Europe	University Palermo	Palermo	Test plant	Laboratory	2008	S	17.5				Yazaki (Water/LiBr)
	126	Italy	Italy	Europe	AVIS	Bologna	Office	Office	2009	L	17.5				Yazaki (Water/LiBr)
	127	Italy	Italy	Europe	Baxter	Pergine	Office	Office		L	105				
	128	Italy	Italy	Europe	EURAC	Bolzano	Education centre	School/University/Education centre	2002	L	300				Thermax (Water/LiBr)
	129	Italy	Italy	Europe	Luigi Einauidi	Bolzano	Education centre	School/University/Education centre		L	300				
	130	Italy	Italy	Europe	San Maurizio	Bolzano	Nurse training centre	School/University/Education centre		L	250				
	131	Italy	Italy	Europe	Fire Station Bolzano	Bolzano	Fire fighters headquarter	Other Services		L	175				
	132	Italy	Italy	Europe	Ecomensa	Turin	Office canteen	Office		L			15,000		
	133	Italy	Italy	Europe	Dongo's gym	Dongo (Co)	Gym	Other Services	2008	L	35				Yazaki (Water/LiBr)
	134	Italy	Italy	Europe	Como Municipality	Como	Offices	Office		L	480				
	135	Italy	Italy	Europe	Pubblic Library	Como	Library	School/University/Education centre		L	280				
	136	Italy	Italy	Europe	METRO Cash & Carry	Roma	Wholesale, Offices and canteen	Office		L	700				
	137	Italy	Italy	Europe	DREAM	Palermo	Office and lab	Office	2007	L			1,250		
	138	Italy	Italy	Europe	Scuola media ecosostenibile "Pedagna"	Imola	School	School/University/Education centre		L	35				
	139	Italy	Italy	Europe	Fortec srl	Correggio	Industry	Industry		L	44				
	140	Italy	Italy	Europe	Pertusati	Pavia	Nursing home	Other Services	2009	L	70				Broadi (Water/LiBr)
	141	Italy	Italy	Europe	Santa Margherita	Pavia	Nursing home	Other Services	2009	L	70				Broadi (Water/LiBr)
	142	Italy	Italy	Europe	Polistudio AES	Riccione	Offices	Office	2007	L	35				
	143	Italy	Italy	Europe	Klobe headquarter	Bovolone (VR)	Offices	Office	2008	L				80 kW	Menerga (Water/Silicagel)
	144	Italy	Italy	Europe	Seminary	Vallo della Lucania (SA)	Canteen	Other Services	2005	L	35				Yazaki (Water/LiBr)
	145	Italy	Italy	Europe	ENEA	Casaccia - Roma	Offices	Office	BI	L	70				Yazaki (Water/LiBr)
IT01	146	Italy	Italy	Europe	Ebner Solartechnik	Appiano	Commercial	Commercial		S	15				EAW (Water/LiBr)
IT03	147	Italy	Italy	Europe	Business Centre	Pergine	Office	Office		L	70				LG (Water/LiBr)
IT04	148	Italy	Italy	Europe	Asilo Politecnico	Milano	School	School	2010	S		8			
	149	Japan	Japan	Asia	Toyama Geriatric Hospital	Toyama	Hospital	Hospital		L	?				
		Japan	Japan	Asia	Yatsushiro National College of Technology	Yatsushiro	Research centre	School/University/Education centre		L	?				



QAiST No.	۰° C	Country	Country label	Continent	Name of Owner Company/Project	City	Application type	Application label	Year of completion	Scale type		Ads [kW]		DECI [m³/h]	Manufacturer
1	51 K	Kosovo	Other EU Countries	Europe	Bureaux Union Européenne	Pristina	Office	Office		L	90				
1	52 L	ichtenstein	Other EU Countries	Europe	Baugemeinschaft Rietli	Schaan	Residential building	Other Services	2008	S	15				EAW (Water/LiBr)
1	53 N	/lalta	Other EU Countries	Europe	Retirement home Kalkhara	Kalkhara	Retirement home	Hospital	2008	S	10				Pink (Ammonia/Water)
1	54 N	/lalta	Other EU Countries	Europe	Headquater of Eco Group	Kordin	Office building	Office	2009	S	10				Pink (Ammonia/Water)
1	55 N	/lexico	Mexico	Central America	Gütermann Polygal	Jiutepec	Sewing threads and yarns factory	Other Services		L		290			
1	56 N	letherlands	Other EU Countries	Europe	Verhulst	Waalwijk	Industrial	Industry		L			22 kW		
1	57 N	letherlands	Other EU Countries	Europe	régie électrique EZK	Heemsteede	Office	Office		L			46.2 kW		
1	58 P	Portugal	Portugal	Europe	Private company	Lisbon	Private company	Office	2007	S	4.5				Rotartica (Water/LiBr)
1	59 P	Portugal	Portugal	Europe	Private company	Chegancas	Private company	Office	2008	S	4.5				Rotartica (Water/LiBr)
1	60 P	Portugal	Portugal	Europe	AoSol	Lisbon	Office building	Office	2009	S	8				AO SOL (Ammonia/Water)
PT01 1	61 P	Portugal	Portugal	Europe	INETI	Lisbon	Office	Office	1999	L				5,000	MODULAIR AG SACHSEN (Water/LiCl)
1	62 P	Portugal	Portugal	Europe	ATECNIC	Sintra	Office	Office		L			57.6 kW		
1	63 P	Portugal	Portugal	Europe	Centrale contrôle traffic autoroutier	Sintra	Office	Office		L	70				
PT02 1	64 P	Portugal	Portugal	Europe	Vajra Solar thermal design and distribution company	Algarve	Office	Office	2005	L	36				Yazaki (Water/LiBr)
1	65 P	Portugal	Portugal	Europe	CGD Caixa Geral de Depósitos	Lisbon	Office (bank)	Office		L	545				
1	66 S	Singapore	Singapore	Asia		Singapore	Office	Office		L				350 kW	
1	67 S	South Africa	South Africa	Africa	Netcare Moot hospital	Pretoria	Hospital	Hospital	BI	L	35				
1	68 S	Spain	Spain	Europe	Private House	Barcelona	Residential building	Residential	2006	S	4.5				Rotartica (Water/LiBr)
ES09 1	69 S	Spain	Spain	Europe	Sports Centre	Zaragoza	Sports Centre	Other Services	2006	S	4.5				Rotartica (Water/LiBr)
	70 S		Spain	Europe	Private Company	Sarriguren-Navarra	Offices	Office	2006	S	4.5				Rotartica (Water/LiBr)
1	71 S	Spain	Spain	Europe	Public Building	Puerto Lumbreras-Murcia	Sport Centre	Other Services	2006	S	4.5				Rotartica (Water/LiBr)
1	72 S	Spain	Spain	Europe	Private Company	Sevilla	Offices	Office	2006	S	4.5				Rotartica (Water/LiBr)
1	73 S	Spain	Spain	Europe	Private House	Madrid	Residential building	Residential	2006	S	4.5				Rotartica (Water/LiBr)
	74 S		Spain	Europe	Private Company (Food)	Noreña-Asturias	Private Company (Food)	Other Services	2006	S	4.5				Rotartica (Water/LiBr)
	75 S		Spain	Europe	Private House	Bilbao	Residential building	Residential	2006	S	4.5				Rotartica (Water/LiBr)
	76 S		Spain	Europe	School	Segovia	School	School/University/Education centre	2006	S	4.5				Rotartica (Water/LiBr)
	77 S		Spain	Europe	School	Santurtzi	School	School/University/Education centre	2006	S	4.5				Rotartica (Water/LiBr)
	78 S		Spain	Europe	Private hospital	Tenerife	Hospital	Hospital	2006	S	4.5				Rotartica (Water/LiBr)
	79 S		Spain	Europe	Retirement home	Las Palmas-Canarias	Retirement home	Hospital	2006	S	4.5				Rotartica (Water/LiBr)
	80 S		Spain	Europe	Private Company	Sevilla	Offices	Office	2006	S	9				Rotartica (Water/LiBr)
	81 S		Spain	Europe	Private Company	Basauri-Bizkaia	Offices	Office	2006	S	9				Rotartica (Water/LiBr)
	82 S		Spain	Europe	Public Building	Errenteria-Gipuzkoa	Public Building	Other Services	2006	S	4.5				Rotartica (Water/LiBr)
	83 S		Spain	Europe	Private Company	Basauri-Bizkaia	Offices	Office	2006	S	13.5				Rotartica (Water/LiBr)
	84 S		Spain	Europe	Trainning Centre	Guadalaiara	Training Centre	Other Services	2006	S	4.5				Rotartica (Water/LiBr)
	85 S		Spain	Europe	Trade Exhibition Center	Gijón	Trade Exhibition Centre	Other Services	2006	S	4.5				Rotartica (Water/LiBr)
	86 S		Spain	Europe	Experimental Installation	Arganda del Rey-Madrid	Experimental Installation	Laboratory	2006	S	4.5				Rotartica (Water/LiBr)
	87 S		Spain	Europe	Private House	Villajoyosa-Alicante	Residential building	Residential	2007	S	4.5				Rotartica (Water/LiBr)
	88 S		Spain	Europe	School	Molina de Segura	School	School/University/Education centre	2007	S	4.5				Rotartica (Water/LiBr)
	89 S		Spain	Europe	Private House	Madrid	Residential building	Residential	2007	S	4.5				Rotartica (Water/LiBr)
	90 S		Spain	Europe	Private House	Olivares-Sevilla	Residential building	Residential	2007	S	4.5				Rotartica (Water/LiBr)
	91 S		Spain	Europe	Private Company (Food)	Estepa-Sevilla	Private Company (Food)	Other Services	2007	S	4.5				Rotartica (Water/LiBr)
	92 S		Spain	Europe	Private House	Brunete-Madrid	Residential building	Residential	2007	S	4.5				Rotartica (Water/LiBr)
	93 S		Spain	Europe	Private House	Zuia-Araba	Residential building	Residential	2007	S	4.5				Rotartica (Water/LiBr)
	94 S		Spain	Europe	University	Yecla-Murcia	Common Zones	Other Services	2007	S	4.5		+		Rotartica (Water/LiBr)
	95 S		Spain	Europe	Camping	Aznalcazar-Sevilla	Camping	Other Services	2007	S	4.5		+		Rotartica (Water/LiBr)
	95 S		Spain	Europe	Private Company	Gazteiz-Araba	Show Room	Other Services	2007	S	4.5		-		Rotartica (Water/LiBr)
	90 S 97 S		Spain	Europe	Technological Research Centre	Miñano-Araba	Technological Research Centre	School/University/Education centre	2007	S	4.5				Rotartica (Water/LiBr)
	97 S 98 S		Spain			Santander	0	School/University/Education centre	2007	S	4.5				Rotartica (Water/LiBr)
	98 S 99 S		Spain	Europe	University Office		University Office	Office	2007	S	4.5 4.5				Rotartica (Water/LIBr) Rotartica (Water/LiBr)
				Europe		Sanlucar Lamayor-Sevilla Granada			2007						
2	00 S	pain	Spain	Europe	Museum	Granada	Museum	Other Services	2007	S	4.5				Rotartica (Water/LiBr)



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	201 Spain	Spain	Europe	Public Building	La Moncloa-Madrid	Public Building	Other Services	2007	S	18				Rotartica (Water/LiBr)
	202 Spain	Spain	Europe	Private House	Puerto Santamaría-Cádiz	Residential building	Residential	2007	S	4.5				Rotartica (Water/LiBr)
	203 Spain	Spain	Europe	University Rooms	Univ. Cartagena	University Rooms	School/University/Education centre	2007	S	4.5				Rotartica (Water/LiBr)
	204 Spain	Spain	Europe	Tourism Office	Matalascañas-Huelva	Tourism Office	Office	2007	S	4.5				Rotartica (Water/LiBr)
	205 Spain	Spain	Europe	Public Building	Molina de Segura-Murcia	Public Building	Other Services	2007	S	4.5				Rotartica (Water/LiBr)
	206 Spain	Spain	Europe	Sports Centre	La Carlota-Córdoba	Sports Centre	Other Services	2007	S	4.5				Rotartica (Water/LiBr)
	207 Spain	Spain	Europe	Private company	Fuente Alamo	Private company	Other Services	2007	S	9				Rotartica (Water/LiBr)
	208 Spain	Spain	Europe	Public Building (Room)	Tivissa-Tarragona	Public Building (Room)	Other Services	2007	S	9				Rotartica (Water/LiBr)
	209 Spain	Spain	Europe	Public Building	León	Public Building	Other Services	2007	S	4.5				Rotartica (Water/LiBr)
	210 Spain	Spain	Europe	University Laboratory	Tarragona	University Laboratory	Laboratory	2007	S	4.5				Rotartica (Water/LiBr)
	211 Spain	Spain	Europe	Domolab	Miñao	Showroom	Other Services	2008	S	4.5				Rotartica (Water/LiBr)
	212 Spain	Spain	Europe	Private Company (Animals)	La Muela-Zaragoza	Private Company (Animals)	Office	2008	S	4.5				Rotartica (Water/LiBr)
	213 Spain	Spain	Europe	Private Company	Espinardo-Murcia	Private Company	Office	2008	S	4.5				Rotartica (Water/LiBr)
	214 Spain	Spain	Europe	Biodiesel Installation	Kaparroso-Navarra	Biodiesel Installation	Other Services	2008	S	9				Rotartica (Water/LiBr)
	215 Spain	Spain	Europe	Golf (shop and bar)	La Manga-Murcia	Golf (shop and bar)	Other Services	2008	S	4.5	1			Rotartica (Water/LiBr)
	216 Spain	Spain	Europe	Retirement home	Terrassa-Barcelona	Retirement home	Hospital	2008	S	9	1		l	Rotartica (Water/LiBr)
	217 Spain	Spain	Europe	Private House	Girona	Residential building	Residential	2008	S	18				Rotartica (Water/LiBr)
	218 Spain	Spain	Europe	Multi Family House	Laguna de Duero-Valladolid	Multi Family House	Residential	2008	S	4.5	1	1	l	Rotartica (Water/LiBr)
	219 Spain	Spain	Europe	Hotel	Lanzarote	Hotel	Hotel	2008	S	4.5				Rotartica (Water/LiBr)
	220 Spain	Spain	Europe	Public Building	Bullas-Murcia	Public Building	Other Services	2008	S	4.5				Rotartica (Water/LiBr)
	221 Spain	Spain	Europe	Public Building	San José de la Vega-Murcia	Public Building	Other Services	2008	S	4.5				Rotartica (Water/LiBr)
	222 Spain	Spain	Europe	Public Building	Alcantarilla-Murcia	Public Building	Other Services	2008	S	4.5				Rotartica (Water/LiBr)
	223 Spain	Spain	Europe	School	Portugalete	School	School/University/Education centre	2008	s	4.5				Rotartica (Water/LiBr)
	224 Spain	Spain	Europe	Private Company (Food)	Noreña-Asturias	Private Company (Food)	Office	2008	S	4.5				Rotartica (Water/LiBr)
	225 Spain	Spain	Europe	Private House	Brunete-Madrid	Residential building	Residential	2008	S	4.5				Rotartica (Water/LiBr)
	226 Spain	Spain	Europe	Experimental Installation	Arganda del Rey-Madrid	Experimental Installation	Laboratory	2008	S	4.5				Rotartica (Water/LiBr)
-	227 Spain	Spain	Europe	University	Jaén	University	School/University/Education centre	2008	S	4.5	-			Rotartica (Water/LiBr)
-	228 Spain	Spain	Europe	National Institute of Airospacial Techniques INTA	Huelva	Laboratory set up	Laboratory	2000	S	10	-			Rotanica (Water/EIDI)
-	229 Spain	Spain	Europe	University of Zaragoza	Zaragoza	University	School/University/Education centre		S	4.5	-			
	230 Spain	Spain	Europe	Office	Narón	Office	Office		S	20				
ES03	231 Spain	Spain	Europe	House	Bilbao	House	Residential		S	10				ClimateWell (Water/LiBr)
E303	231 Spain 232 Spain	Spain	Europe	House	Toledo	House	Residential		S	10				
	232 Spain 233 Spain	Spain	Europe	Office	Valencia	Office	Office		S	10				
	233 Spain 234 Spain	Spain		House	Valencia	House	Residential		S	10				
	235 Spain	Spain	Europe	Office	Madrid	Office	Office		S	10				
		Spain	Europe	Office	Madrid	Office	Office		S	40				
	236 Spain	Spain	Europe	Office	Almería	Office	Office			40				
	237 Spain		Europe						S					
	238 Spain	Spain	Europe	House	Granada	House	Residential		S	10				
	239 Spain	Spain	Europe	House/Office	Madrid	House/Office	Residential		S	10				
	240 Spain	Spain	Europe	Office	Barcelona	Office	Office		S	10				
	241 Spain	Spain	Europe	House	Ciudad Real	House	Residential		S	10	<u> </u>		<u> </u>	ll
$\vdash$	242 Spain	Spain	Europe	House	Torre Laguna	House	Residential		S	10				
$\vdash$	243 Spain	Spain	Europe	House	Chiclana	House	Residential		S	10	<u> </u>		<u> </u>	ll
	244 Spain	Spain	Europe	House	Guadalajara	House	Residential		S	10			<u> </u>	l
	245 Spain	Spain	Europe	House	Madrid	House	Residential		S	40			<u> </u>	
	246 Spain	Spain	Europe	Test station	Gijón	Test station	Laboratory		S	10	<u> </u>			l
	247 Spain	Spain	Europe	Office	Valladolid	Office	Office		S	10	<u> </u>			
	248 Spain	Spain	Europe	House	Ibiza	House	Residential		S	10			ļ	
	249 Spain	Spain	Europe	Office	Asturias	Office	Office		S	50				
	250 Spain	Spain	Europe	Office	Castellón	Office	Office		S			I		



QAiST No. N°	Country	Country label	Continent	Name of Owner Company/Project	City	Application type	Application label	Year of completion	Scale type	Abs [kW]	Ads [kW]	DECs [m³/h]	DECI [m³/h]	Manufacturer
251	Spain	Spain	Europe	House	Sitges	House	Residential		S					
252	Spain	Spain	Europe	Gym	Murcia	Gym	Other Services		S	10				
253	Spain	Spain	Europe	House	Granada	House	Residential		S	10				
254	Spain	Spain	Europe	Office	Sevilla	Office	Office		s	120				
255	Spain	Spain	Europe	Oficina	Asturias	Office	Industry		s	10				
256	Spain	Spain	Europe	House	Bilbao	House	Residential		s	10				
257	Spain	Spain	Europe	Residencia	Madrid	Residential building	Residential		S	20				
258	Spain	Spain	Europe	House	Algeciras	House	Residential		S	20				
259	Spain	Spain	Europe	House	Valencia	House	Residential		S	10				
260	Spain	Spain	Europe	Office	Madrid	Office	Office		S	10				
261	Spain	Spain	Europe	Hotel	Jerez de la Frontera	Hotel	Hotel		S	20				
262	Spain	Spain	Europe	Office	Soria	Office	Office		S					
263	Spain	Spain	Europe	House	Valencia	House	Residential		S	10				
264	Spain	Spain	Europe	House	Barcelona	House	Residential		S	20				
265	Spain	Spain	Europe	House	Barcelona	House	Residential		S	10				
266	Spain	Spain	Europe	Office	Leganes	Office	Office		S	10				
267	Spain	Spain	Europe	House	Manresa	House	Residential		S					
	Spain	Spain	Europe	House	Torrelodones	House	Residential		S	20				
	Spain	Spain	Europe	University of Zaragoza	Zaragoza	Gymnasium	School/University/Education centre	2006	S	new				
	Spain	Spain	Europe	Office	Leon	Office	Office		S					
	Spain	Spain	Europe	Social & Cultural Centre Clara Campoamor	Barakaldo	Auditorium	Other Services		Ľ	229				
	Spain	Spain	Europe	Education Department Regional Government	Toledo	Office	Office		L	252				
	Spain	Spain	Europe	Fabrica del Sol Building	Barcelona	Office	Office		L	105				
	Spain	Spain	Europe	Fundacion Metropoli Building	Madrid	Office	Office			105				
	Spain	Spain	Europe	Daoiz y Velarde Sport Centre	Madrid	Sport centre	Other Services		Ē	170				
ES10 276		Spain	Europe	Inditex head Offices	Arteixo	Office	Office		-	170				Carrier (Water/LiBr)
	Spain	Spain	Europe	Maison de retraite	Fustinana	Retired people house	Hospital		-	105				
	Spain	Spain	Europe	University Rovira i Virgili CREVER	Tarragone	Office	Office		L	35				
	Spain	Spain	Europe	Viessmann Head Offices	Madrid	Office	Office		L	105				
	Spain	Spain	Europe	Belroy palace Hotel	Benidorm	Hotel	Hotel		L	125	-			
	Spain	Spain	Europe	University of Sevilla	Seville	Laboratory	Laboratory		-	35	-			
	Spain	Spain	Europe	University of Carlos III	Madrid	Laboratory	Laboratory		-	35	-			
	Spain	Spain	Europe	Laia hotel	Derio	Hotel	Hotel			105				
	Spain	Spain	Europe	CARTIF I, Boecillo Technology Park	Valladolid	Office	Office	2002	-	35				Yazaki (Water/LiBr)
	Spain	Spain	Europe	Siemens Controlmatic	Cornelia del Vallès	Office	Office	2002	L	105				fazaki (Walei/LIDI)
	Spain	Spain	Europe	FONTEDOSOEI	Oso	Industry	Industry		L	105				
				Stella-Feuga		Office	Office		L	115				
	Spain	Spain	Europe		Santiago de Compostela			2002		115	-	40.000		0.1.01.01.01.01.01.01.01.01.01.01.01.01.
ES01 288		Spain	Europe	Pompeu i Fabra Library	Mataro	Library Office	School/University/Education centre	2002	L	25		12,000		Seibu Giken (Water/Silicagel)
	Spain	Spain	Europe	Gamesa Solar	Tarragone		Office		L	35				
	Spain	Spain	Europe	Cener Offices	Pamplona	Office	Office			350				
	Spain	Spain	Europe	TRASLUZ	Madrid	Office	Office			390				
	Spain	Spain	Europe	Isofoton Offices	Málaga	Office	Office			35			<u> </u>	
	Spain	Spain	Europe	Germany School	Barcelona	School	School/University/Education centre			20			<u> </u>	
	Spain	Spain	Europe	Peracamps-Public Health Agency	Barcelona	Laboratories	Laboratory		L	35				
	Spain	Spain	Europe	Agencia de la Salut Publica	Barcelona	Laboratory	Laboratory	2008	L	35				Yazaki (Water/LiBr)
ES05 296	Spain	Spain	Europe	Altamarena Hotel	Morro Jable - Fuerteventura	Hotel	Hotel		L	70	ļ			Thermax (Water/LiBr)
	Spain	Spain	Europe		Santa Lucia	Office	Office		L	35				Yazaki (Water/LiBr)
ES07 298	Spain	Spain	Europe	IFA Catarina Hotel	San Bartolome de Tirajana	Hotel	Hotel		L	70				Yazaki (Water/LiBr)
	Spain	Spain	Europe	IFA Continental Hotel	San Bartolome de Tirajana	Hotel	Hotel		L	176				Yazaki (Water/LiBr)
ES11 300	Spain	Spain	Europe	Casa campo en Arges	Arges	Residential	Residential		S	10				



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ES12	301	Spain	Spain	Europe	Fundacion Barredo	Mieres del Camino	Office	Office		L	75				
ES13	302	Spain	Spain	Europe		Madrid	Office	Office		L	60				
ES14	303	Spain	Spain	Europe	CEDER	Lubia-Soria	Office	Office		L	75				
ES15	304	Spain	Spain	Europe	Plataforma Solar de Almeria	Tabernes	Office	Office		L	60				
ES16	305	Spain	Spain	Europe		Getxo	Residential	Residential		S	10				
ES17 3	306	Spain	Spain	Europe	Simelec	San Andres del Rabanedo	Office	Office		S	10				
SW01	307	Sweden	Sweden	Europe	Ssolar		Commercial	Commercial							Munter (Water/Lithium chloride)
CH01 3	308	Switzerland	Other EU Countries	Europe	Weingut Schloss Salenegg	Mainfeld	Wine cellar	Other Services	2005	S	15				EAW (Water/LiBr)
	309	Switzerland	Other EU Countries	Europe	Bank Pictet & Cie	Gineve	Offices	Office		L	210				
	310	Syria	Syria	Asia	Private House	Damascus	Residential building	Residential	2008	S	9				Rotartica (Water/LiBr)
	311	Sudan	Sudan	Africa	Emergency	Khartoum	Hospital	Hospital	2006	L	1230				Ebara (Water/LiBr)
	312	Turkey	Other EU Countries	Europe	Metro Antaly	Antalya	Supermarket	Other Services		L	233				
	313	Turkey	Other EU Countries	Europe	Iberotel Sarigerme Park	Dalaman	Hotel	Hotel		L	140				
	314	United Arab Emirates	UAE	Asia	Private house	Ras Al Khaimah	Residential building	Residential	2008	S	4.5				Rotartica (Water/LiBr)
	315	United Kingdom	Other EU Countries	Europe	University	Cardif	University	School/University/Education centre	2007	S	4.5				Rotartica (Water/LiBr)
	316	USA	USA	North America	Private house	Cincinnati	Residential building	Residential	2007	S	4.5				Rotartica (Water/LiBr)
	317			North America	Bergquam Energy	Sacramento, CA	Home	Residential		S					
	318		USA	North America	Desert Outdoor Center	Phoenix (Arizona)	Laboratory	Laboratory		L	70				
	319	USA	USA	North America	SRP (Salt River Project)	Phoenix, Arizona	?	Other Services		L					
	320	USA	USA	North America	UNM (University of New Mexico)	Albuquerque, NM	Offices	Office		L	70				
	321			North America	Audubon Nature Center	Los Angeles, CA	Conference rooms	Other Services		L	35				
	322	USA	USA	North America	Bergquam Energy	Sacramento, CA	Commercial building	Other Services		L	70				
:	323	USA	USA	North America	IST	Ft. Huachuca, AZ	?	Other Services		L					
	324		USA	North America	NASA	Kennedy Space Center, FL	?	Other Services		L					
:	325	USA	USA	North America	Heliodynamics	Albuquerque, NM	Airport car rental centre	Other Services		L					
:	326	USA	USA	North America	Steinway	Long Island City, New York	Industry	Industry		L	Х				
	327	Vatican	Other EU Countries	Europe		Vatican	Canteen & Laboratory	Laboratory	BI	L	105				Yazaki (Water/LiBr)



## 2 References

[1] W. Sparber, A. Napolitano, P. Melograno: Overview on worldwide installed solar cooling systems. 2nd International Conference Solar Air Conditioning, Tarragona – Spain, October 2007

