



SOLAR HEATING & COOLING PROGRAMME  
INTERNATIONAL ENERGY AGENCY

# SOLAR ACADEMY

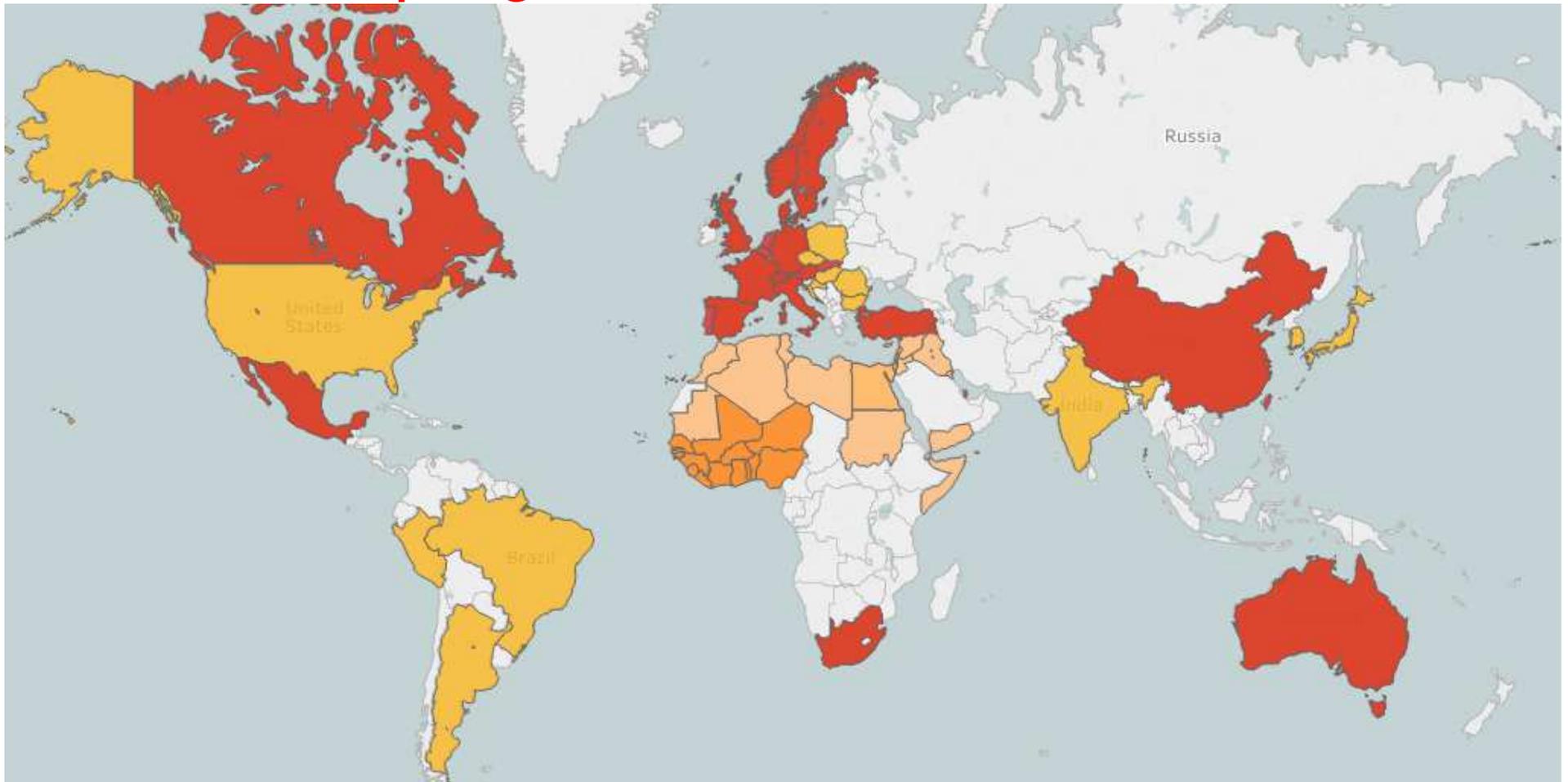
FOR HEATING & COOLING IN BUILDINGS & INDUSTRY

IEA SHC Webinar

September 19, 2018

Daniel Mugnier (TECSOL), SHC Chairman

# IEA SHC is a project focused international research programme



 20 Member Countries + EC  
+ 5 Sponsor Organizations

Sponsors – 47 additional Countries

 RCREEE

 ECREEE

 ISES

## Sharing what we've learned

- Why an academy?

To share our work and support R&D and implementation of solar heating and cooling projects worldwide.

### How can you participate?

- **Webinars** held quarterly hosted by ISES
- **Videos** highlighting our work and other ST issues
  - Interviews with 12 presenters at SHC 2017
  - Videos showcasing 11 presentations from Qatar's Green Expo 2016
- **National Days** are country specific events held in conjunction with IEA SHC meetings for the exchange of information between national experts and IEA SHC experts.
- **Onsite Training** provided by IEA SHC experts at the request of IEA SHC member countries.

# Where you can find more information

- Visit our website – [www.iea-shc.org](http://www.iea-shc.org)
- Follow us on social media



@IEASHC



IEA Solar Heating and Cooling Programme (group 4230381)



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# IEA SHC Task 53

## Short description

IEA SHC Webinar

September 19, 2018

Daniel Mugnier (TECSOL), SHC Task 53 OA

# IEA SHC Task 53 Goals

(1) to analyze the interest of new generation solar cooling & heating concepts systems for bulidings in all climates and select best solutions which lead to highly reliable, durable, efficient and robust solar cooling and heating (ambient + DHW) systems

(2) to contribute to market entry of the technology and identify most promising market areas in terms of cost competitiveness and value of electricity



## TASK 53

New generation solar cooling & heating systems  
(PV or solar thermally driven systems)



Task description and Work plan

November 2013

This text has been produced by

Daniel Mugnier (TECSOL, France)

With the support of  
Jean Christophe Hadorn (Bas Consultant, Switzerland)

# Scope of the Task

System : solar driven systems for cooling and heating

- \* Solar thermal driven innovative compact cooling+heating systems
- \* **Photovoltaic + air conditioning system** (Compression air conditioning / heat pump (if heating as well) ; **food conservation included**)

Applications : **Off grid & grid connected buildings**

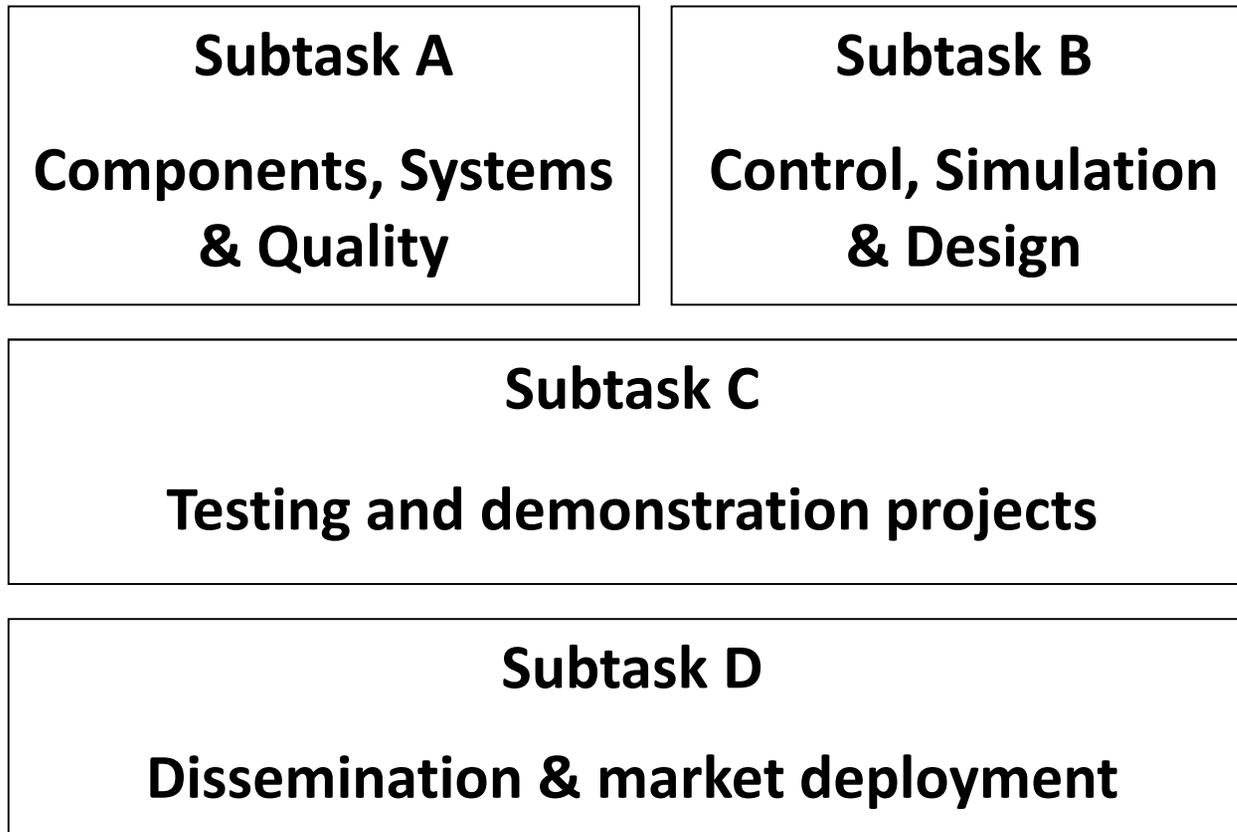
(houses, small multi-family buildings, offices, shops, commercial center, hotels)

Power range : **from 1 kW cooling to several tens kW cooling/heating**

Limit : Need to have **a possible direct coupling between solar and cold production machine**

Partial or total coupling

# Task 53 Structure



## 4 Subtasks & 15 activities

Time Schedule : 3,5 years

From March 2014 to June 2018

# Task 53 Participation

Country	National Participation Letter Received	Number of Research Institutes	Number of Universities	Number of Companies
Australia	1	1	0	-
Austria	3	3		
China	2		1	1
France	1			1
Germany	3	2	1	-
Italy	4	2	1	1
Spain	2	1	1	
Netherlands	1	-	-	1
Sweden	1		1	
Switzerland	4	1	1	2
<b>TOTAL</b>	<b>22</b>	<b>10</b>	<b>6</b>	<b>6</b>

**8 countries worldwide...**

Country	National Participation Letter	Number of Research Institutes	Number of Universities	Number of Companies	Number of person months
Australia	1	1	0	-	1.3
Austria	3	3			20.4
China	2		1	1	4.8
France	1			1	25.7
Germany	3	2	1	-	12
Italy	4	2	1	1	22.3
Spain	2	1	1		17.5
Netherlands	1	-	-	1	12
Sweden	1		1		12
Switzerland	4	1	1	2	7
<b>TOTAL</b>	<b>22</b>	<b>10</b>	<b>6</b>	<b>6</b>	<b>135</b>

**but mostly European centered....**

# Very good collaboration with “industry”

- ATISYS (France): consulting and solar cooling company
- SOLARINVENT (Italy): solar cooling manufacturer
- CLIMATEWELL (Sweden): sorption chiller manufacturer
- Sunoyster (Germany): solar cooling manufacturer
- TECNALIA (Spain): consulting & research company
- YAZAKI Solar (China): sorption chiller manufacturer
- Coolgaia (Australia): consulting company
- Polysun (Switzerland): software developer
- RTB De Beijer (Netherlands): sorption chiller developer
- Waldschütz gmbH (Germany) : energy consulting company
- Easy TNT (Germany) : energy consulting company

**... mainly SME's/Start-ups**

# Task meetings

9 meetings

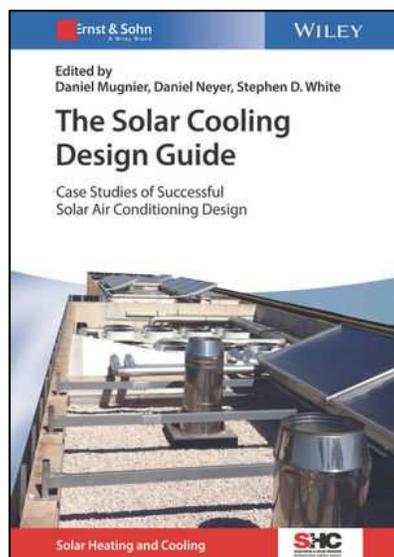
Nearly 20  
experts each  
time

8 side  
workshops

Meeting #	Date	Lieu	Nombre de participants
1	18-19/03/2014	Vienna (Austria)	20
2	27-28/09/2014	Mälardalen (Sweden)	14
3	25-26/03/2015	Shanghai (China)*	22
4	20-21/09/2015	Bolzano (Italy)	13
-	22/09/2015	Task 53 Workshop - 6 <sup>th</sup> SAC conference OTTI Roma (Italy)	40
-	24-25/09/2015	6 <sup>th</sup> SAC conference OTTI Roma (Italy)	100
-	02-04/12/2015	SHC 2015 conf. Istanbul (Turkey)	
5	12-13/04/2016	Madrid (Spain)*	30
-	11/04/2016	Task53 / PVPS Task1 Join Workshop	35
-	11/04/2016	IEA SHC Task 53 Industry Workshop	50
6	10-11/10/2016	Palma de Majorca (Spain)	23
-	12/10/2016	EUROSUN (Palma de Majorca (Spain)	50
7	19-20/04/2017	Messina,Sicilia (Italy)	23
-	29-20/04/2017	IEA SHC Task 53 Industry Workshop	50
8	29-30/10/2017	Masdar (Abu Dhabi)	25
9	10-11/04/2018	Dresden (Germany)	20
-	12/04/2018	Final Workshop in Dresden (Germany)	40

# Journal, magazines, articles

## 10 publications



Title.	Publication	Publication Date	Access (Public, Restricted)	Web or Print
The Solar Cooling Design Guide: Case Studies of Successful Solar Air Conditioning Design	Ernst & Sohn - Wiley ISBN: 978-3-433-60686-5	December 2017	RE	Web/Pri
Task 53: The Future of Solar Cooling	SHC Solar Update	May1 2016	PU	Web
Solar Air Conditioning	REN21 Global Status Report 2015	June 2015	PU	Web
Solar Air Conditioning	REN21 Global Status Report 2016	June 2016	PU	Web
Solar Air Conditioning	REN21 Global Status Report 2017	June 2017	PU	Web
Solar Air Conditioning	REN21 Global Status Report 2018	June 2018	PU	Web
IEA SHC Task 53 innovative solar cooling systems	<a href="http://www.solarthermalworld.org/content/iea-shc-task-53-innovative-solar-cooling-systems">http://www.solarthermalworld.org/content/iea-shc-task-53-innovative-solar-cooling-systems</a>	February 2017	PU	Web
IEA SHC: Most Effective Solar Cooling Storage Technologies	<a href="http://www.solarthermalworld.org/content/iea-shc-most-effective-solar-cooling-storage-technologies">http://www.solarthermalworld.org/content/iea-shc-most-effective-solar-cooling-storage-technologies</a>	September 2017	PU	Web
IEA SHC: SHC industry roadmap for Australia	<a href="http://www.solarthermalworld.org/content/shc-industry-roadmap-australia">http://www.solarthermalworld.org/content/shc-industry-roadmap-australia</a>	February 2018	PU	Web
IEA SHC: Solar cooling increases annual solar fraction	<a href="http://www.solarthermalworld.org/content/solar-cooling-increases-annual-solar-fraction">http://www.solarthermalworld.org/content/solar-cooling-increases-annual-solar-fraction</a>	February 2018	PU	Web

# Workshops and Conferences

Workshop/Conference /Seminar (include type: Task organized, keynote, presentation, poster, etc.)	Activity & Presenter (keynote, presentation, poster, etc.)	Date & Location	Number of Participants	If Hosted by Task # Industry, Government, Research, Countries
IEA PVPS Task 1 Workshop	presentation	Ben Gurion University Tel Aviv 24/04/2014	60	IEA PVPS program
IEA SHC Task 53 presentation and first results	presentation	September 16-19, 2014 Aix les Bains	80	EUROSUN conference (France)
IEA PVPS Task 1 & Task 14 Workshop	presentation	22/09/2014 Amsterdam	50	EU PVSEC conference 2014
IEA SHC Task 53 / SUNCOOL project common workshop	presentation	09/10/2014, Karlstad	70	EU SUNCOOL project (Sweden)
SHC 2014 conference – Keynote on solar cooling	keynote	15/10/2014 - Beijing	80	IEA SHC Programme
Solar cooling Chinese conference – Keynote and Task results presentations ( <a href="http://task48.iea-shc.org/solar-cooling-week--solar-cooling-Chinese-conference">http://task48.iea-shc.org/solar-cooling-week--solar-cooling-Chinese-conference</a> )	keynote	27/03/2015 - Shanghai	100	IEA SHC Programme
Workshop on Solar Energy for nZEB in Mediterranean Countries: Photovoltaic and Thermal	presentation	Juan les Pins – 10/09/2015	20	CLIMAMED 2015 conference
IEA PVPS Task 1 at 31st EU PVSEC Hamburg, Germany “Competitiveness, Soft Costs and New Business Cases for PV”	presentation	Hamburg - 14/09/2015	50	IEA PVPS Task 1
IEA SHC Task 49 final meeting	presentation	Montpellier – 16/09/2015	30	IEA SHC Programme
Workshop on The New Generation Solar Cooling & Heating Systems (PV or solar thermally driven systems) / IEA SHC Task 53	presentation	Roma, 23/09/2015	40	OTTI 6th SAC conference
6th OTTI SAC conference	keynote	Roma, 24/09/2015	80	OTTI 6th SAC conference
SHC 2015 conference – Keynote on solar cooling	keynote	02/12/2015 - Istanbul	100	IEA SHC Programme
SHC Task53 / PVPS Task1 Join Workshop	presentations	Madrid 11/04/2016	35	IEA SHC /PVPS Programme
IEA SHC Task 53 Industry Workshop	presentations	Madrid 11/04/2016	50	IEA SHC Programme
ARFREE Forum	presentation	Cairo, 01/06/2016	200	ARFREE Forum
CIEMAT Workshop	presentation	Madrid, 05/05/2016	50	CIEMAT Workshop
Side-Event GÜNDER: Turkey’s Sun	presentation	Munchen, 23/06/2016	50	INTERSOLAR 2016
IEA SHC Tasks sessions in EUROSUN	presentation	Palma de Mallorca, 12/10/2016	30	EUROSUN 2016 conference
PUSCH /IEA SHC Task 53 Expert workshop	Workshop/brainstorming	Palma de Mallorca, 11/10/2016	23	IEA SHC Task 53 6th expert meeting
GREEN EXPO FORUM	presentation	Doha, 07/11/2017	150	Green Expo Forum Doha 2016
IEA SHC Task 53 Industry Workshop	presentations	Messina 20/04/2017	50	IEA SHC Programme
IEA SHC Task 53 Workshop	presentation	Abu Dhabi 31/10/2017	100	SHC/SWC 2017 Conference
Sustainability Summit 2017	presentation	Doha, Qatar 26-27/11/2017	150	Sustainability Summit 2017
IEA SHC Task 53 - Solar Cooling Workshop	presentations	12/04/2018, Dresden	40	IEA SHC Programme
SI3E conference Lomé / IEA SHC Task 53	presentations	24/04/2018, Lomé, Togo	50	SI3E Conference

**24 events / ≈ 1750 attendees**

[www.iea-shc.org](http://www.iea-shc.org)



# Task 53 Website

The screenshot shows the website for SHC Task 53. At the top, there are navigation links for 'IEA SHC HOME', 'TASK HOME', and a 'MEMBER LOGIN' button. A search bar is located on the right. The main header features the SHC logo (Solar Heating & Cooling Programme, International Energy Agency) and a large banner image of solar panels on a building roof. Overlaid on the banner is a red box with the text 'SHC Task 53' and 'New Generation Solar Cooling & Heating'. On the left, a vertical sidebar contains links for 'About Project', 'Participants', 'Meetings / Events', 'News', 'Publications', 'Related Sites', 'Member Area', and 'Contact'. The main content area has a section titled 'New Generation Solar Cooling & Heating Systems (PV or solar thermally driven systems)' with an 'Overview' sub-section. The overview text describes the task's objective and scope. To the right of the main text are two boxes: 'Task Information' listing the operating agent (Dr. Daniel Mugnier, France) and contact details, and 'What's New' with tabs for 'NEWS', 'MEETINGS', and 'PUBLICATIONS', and a 'Check Back Soon' message.

<http://task53.iea-shc.org/>

[www.iea-shc.org](http://www.iea-shc.org)



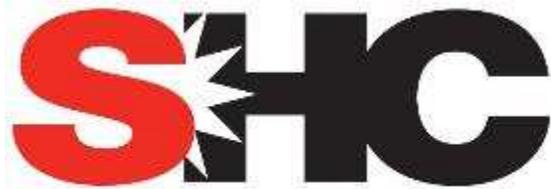
**Thanks for your attention !**

Contact : Daniel Mugnier

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Task 53 