Report on the National Workshops held in year 4

Deliverable 9.5 – Final – 15 December 2015

MacSheep - New Materials and Control for a next generation of compact combined Solar and heat pump systems with boosted energetic and exergetic performance

Dissemination Level: PU – public

Michel Y. Haller

The research leading to these results has received funding from the European Union’s Seventh Framework Programme FP7/2007-2011 under grant agreement nº 282825 – Acronym MacSheep.
Executive Summary

Within the fourth year of the MacSheep project, five national workshops were organized in five of the participating countries:

- September 18, Prague / Czech Republic
- October 13, Graz / Austria
- October 21, Nantes / France
- November 18, Rapperswil / Switzerland
- December 3, Stockholm / Sweden

At these Workshops, results of the MacSheep projects were presented. In total, 357 people from industry, research, and public bodies, and other sectors attended these workshops. The shares of the attendees from different sectors are shown in the Figure below. In Rapperswil, Switzerland, the PVT collector of CTU Prague was presented, and the Solar and Heat Pump system with unglazed flat plate collectors that was developed within the MacSheep project was demonstrated in full operating conditions.
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5 Workshop in Stockholm, Sweden .......................................................................5
1 Workshop in Prague, Czech Republic

The workshop in Prague took place on September 18 and was organized by CTU Prague in collaboration with Czechoslovak Solar Energy Society at trade fair FORARCH 2015. The program is given in Annex A. A total number of 18 people from different sectors attended the workshop (Figure 1). MacSheep project results were included in the presentations shown in Table 1. The share of people with origin from different sectors was not evaluated for this workshop.

![Figure 1: Michal Broum (Regulus) and Jan Sedlar (CTU) presenting results of the MacSheep project at the workshop in Prague.](image)

### Table 1: presentations on the MacSheep project given at the workshop in Prague.

<table>
<thead>
<tr>
<th>Nr.</th>
<th>presenter</th>
<th>partner</th>
<th>title</th>
<th>language</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Broum, M.</td>
<td>Regulus</td>
<td>Systém MacSheep, zapojení a regulace</td>
<td>CZ</td>
</tr>
<tr>
<td>2</td>
<td>Matuška, T.</td>
<td>CTU</td>
<td>Spolupráce hybridního FVT kolektoru a tepelného čerpadla</td>
<td>CZ</td>
</tr>
<tr>
<td>3</td>
<td>Sedlář, J.</td>
<td>CTU</td>
<td>Vícevýměniková tepelná čerpadla</td>
<td>CZ</td>
</tr>
</tbody>
</table>
2 Workshop in Graz, Austria

The workshop in Graz took place on October 13 and was organized by IWT, TU Graz. The program is given in Annex B. A total number of 71 people from different sectors attended the workshop (Figure 2, Figure 3). MacSheep project results were included in the presentations shown in Table 2.

![Share of origin of Workshop attendees in Graz, by different sectors](image1)

**Figure 2: Share of origin of Workshop attendees in Graz, by different sectors**

![Michel Haller (SPF HSR) presenting at the Workshop in Graz in front of a crowd including well-known heat pump expert Prof. Hermann Halozan.](image2)

**Figure 3: Michel Haller (SPF HSR) presenting at the Workshop in Graz in front of a crowd including well-known heat pump expert Prof. Hermann Halozan.**

<table>
<thead>
<tr>
<th>Nr.</th>
<th>presenter</th>
<th>partner</th>
<th>title</th>
<th>language</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Michel Haller</td>
<td>SPF HSR</td>
<td>Entwicklung eines Wärmpumpen Solar Systems - Vorgehen und Resultate im EU Projekt MacSheep</td>
<td>DE</td>
</tr>
<tr>
<td>2</td>
<td>Franz Hengel</td>
<td>IWT TUG</td>
<td>Wärmepumpenentwicklung für ein Wärmpumpen Solar System im EU Projekt MacSheep</td>
<td>DE</td>
</tr>
</tbody>
</table>

Table 2: presentations on the MacSheep project given at the workshop in Graz.
3 Workshop in Nantes, France

The workshop in Nantes took place on October 21 and was organized by CEA INES in collaboration with Enerplan (French solar professionals association). The program is given in Annex C. A total number of 36 people from different sectors attended the workshop (Figure 4, Figure 5). MacSheep project results were included in the presentations shown in Table 3.

![Share of origin of Workshop attendees in Nantes, by different sectors](image)

**Figure 4:** Share of origin of Workshop attendees in Nantes, by different sectors

![David Chèze presenting at the workshop in Nantes.](image)

**Figure 5:** David Chèze presenting at the workshop in Nantes.

<table>
<thead>
<tr>
<th>Nr.</th>
<th>presenter</th>
<th>partner</th>
<th>title</th>
<th>language</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Michel Haller</td>
<td>SPF HSR</td>
<td>Methods and Results of the EU Project MacSheep</td>
<td>EN</td>
</tr>
<tr>
<td>2</td>
<td>Michel Haller</td>
<td>SPF HSR</td>
<td>Unglazed flat plate solar collector and brine/water HP</td>
<td>EN</td>
</tr>
<tr>
<td>3</td>
<td>Chris Bales</td>
<td>SERC</td>
<td>Glazed flat plate solar collector and air/water split HP</td>
<td>EN</td>
</tr>
<tr>
<td>4</td>
<td>Chris Bales</td>
<td>SERC</td>
<td>PVT solar collector and brine/water HP</td>
<td>EN</td>
</tr>
<tr>
<td>5</td>
<td>David Chèze</td>
<td>CEA INES</td>
<td>Vacuum solar tubes and tank integrated condenser split air/water Heat Pump</td>
<td>FR</td>
</tr>
<tr>
<td>6</td>
<td>David Chèze</td>
<td>CEA INES</td>
<td>Solar and Heat pump system tests</td>
<td>FR</td>
</tr>
</tbody>
</table>
4 Workshop in Rapperswil, Switzerland

The workshop in Rapperswil took place on November 18 and was organized by SPF HSR. The program is given in Annex D. A total number of 197 people from different sectors attended the workshop (Figure 6, Figure 7). MacSheep project results were included in the presentations shown in Table 4. The PVT collector of CTU Prague was presented, and the Solar and Heat Pump system with unglazed flat plate collectors that was developed within the MacSheep project was demonstrated in full operating conditions.

![Figure 6: Share of origin of Workshop attendees in Rapperswil, by different sectors](image)

**Figure 6: Share of origin of Workshop attendees in Rapperswil, by different sectors**

![Figure 7: The audience at the final workshop in Rapperswil (left); Igor Mojic and Michel Haller presenting the MacSheep demonstrator to the interested crowd (right).](image)

**Figure 7: The audience at the final workshop in Rapperswil (left); Igor Mojic and Michel Haller presenting the MacSheep demonstrator to the interested crowd (right).**

<table>
<thead>
<tr>
<th>Nr.</th>
<th>presenter</th>
<th>partner</th>
<th>title</th>
<th>language</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Igor Mojic &amp; Robert Haberl</td>
<td>SPF HSR</td>
<td>Entwicklung eines Wärmepumpen Solar Systems - Vorgehen und Resultate EU Projekt MacSheep</td>
<td>DE</td>
</tr>
<tr>
<td>2</td>
<td>Andreas Heinz</td>
<td>IWT TUG</td>
<td>Hocheffiziente Wärme- pumpenkreisläufe - Wärmepumpen Entwicklung im EU Projekt MacSheep</td>
<td>DE</td>
</tr>
<tr>
<td>3</td>
<td>Tomas Matuska</td>
<td>CTU</td>
<td>Glazed solar PVT collector development - Results from the EU project MacSheep</td>
<td>EN</td>
</tr>
</tbody>
</table>
5 Workshop in Stockholm, Sweden

The workshop in Stockholm took place on December 3 and was organized by SERC in collaboration with KTH (Royal institute of technology). The program is given in Annex E. A total number of 35 people from different sectors attended the workshop (Figure 8, Figure 9). MacSheep project results were included in the presentations shown in Table 5.

![Figure 8: Share of origin of Workshop attendees in Stockholm, by different sectors](image)

![Figure 9: Pictures from the workshop in Stockholm.](image)

<table>
<thead>
<tr>
<th>Nr.</th>
<th>presenter</th>
<th>partner</th>
<th>title</th>
<th>language</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chris Bales</td>
<td>SERC</td>
<td>project MacSheep (solar thermal and heat pump) - General results and a new test method</td>
<td>EN</td>
</tr>
<tr>
<td>2</td>
<td>Chris Bales,</td>
<td>SERC</td>
<td>EU project MacSheep - Four different system concepts</td>
<td>EN</td>
</tr>
<tr>
<td></td>
<td>Stefano Poppi</td>
<td></td>
<td>- Air/water heat pump and economizer</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Borehole heat pump with PVT collector</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Air/water heat pump with condenser in store</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Solar only heat pump system (no borehole, no air heat exchanger)</td>
<td></td>
</tr>
</tbody>
</table>
Annex A  Programme of the Workshop in Prague, Czech Republic

Trendy v kombinaci solárních systémů a tepelných čerpadel

Trendy v kombinaci solárních systémů a tepelných čerpadel Seminář organizuje Československá společnost pro sluneční energii ve spolupráci s ČVUT v Praze.

Typ akce: Konference, semináře
Datum konání: Pátek, 18.09.2015 12:00 - 17:00
Místo konání: PVA EXPO PRAHA, Vstupní hala I, Konferenční sál 3
Pořádá: Československá společnost pro sluneční energii
Zbývající kapacita účastníků: 30

Šourek, B. (UCEEB ČVUT): Možnosti řešení kombinovaného systému
Gottas, A. (Thermosolar): Systém Duo a výsledky z provozu
Broum, M. (Regulus): Systém MacSheep, zapojení a regulace
Matuška, T. (FS ČVUT): Spolupráce hybridního FVT kolektoru a tepelného čerpadla
Sedlář, J. (UCEEB ČVUT): Vícevýměníková tepelná čerpadla
Annex B  Programme of the Workshop in Graz, Austria

Programm “Solarenergie & Wärmepumpen”
am 13.10.2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:15 – 14:30</td>
<td>Begrüßung und Einleitung</td>
<td>Dr. Andreas Heinz (IWT)</td>
</tr>
<tr>
<td>14:30 – 14:50</td>
<td>Entwicklung eines Wärmepumpen Solar Systems: Vorgehen und Resultate im EU Projekt MacSheep</td>
<td>Dr. Michel Haller (SPF)</td>
</tr>
<tr>
<td>14:50 – 15:10</td>
<td>Wärmepumpenentwicklung für ein Wärmepumpen Solar System im EU Projekt MacSheep</td>
<td>DI Franz Hengel (IWT)</td>
</tr>
<tr>
<td>15:10 – 15:30</td>
<td>Wärmepumpe &amp; Kombi-Wärmespeicher: Schichtungseffizienz ist wichtiger als Wärmeverluste</td>
<td>Dr. Michel Haller (SPF)</td>
</tr>
</tbody>
</table>

Pause mit Kaffee und Kuchen 15:30 bis 16:00

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:00 – 16:20</td>
<td>Entwicklung eines Speichersystems mit einem integrierten Wärmepumpen-Kondensator</td>
<td>Dr. Andreas Heinz (IWT)</td>
</tr>
<tr>
<td>16:40 – 17:00</td>
<td>Projekt HotIceWeiz: Wärmeversorgung für ein Mehrfamilien-Wohngebäude durch Solarthermie, Wärmepumpe &amp; Eisspeicher</td>
<td>Dr. Richard Heimrath (IWT)</td>
</tr>
<tr>
<td>17:00 – ca. 17:15</td>
<td>Diskussion &amp; Ende des Workshops</td>
<td></td>
</tr>
</tbody>
</table>

Anmeldung erforderlich – Teilnahme kostenlos!

This workshop received funding from the EU FP7 project 282325 – Acronym MacSheep / www.macsheep.spf.ch
## Annex C  Programme of the Workshop in Nantes, France

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Participant</th>
<th>Topic</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accueil, café</strong></td>
<td></td>
<td></td>
<td>9h30 - 9h50</td>
</tr>
<tr>
<td><strong>Bufet</strong></td>
<td></td>
<td></td>
<td>12h - 13h45</td>
</tr>
<tr>
<td><strong>Pause</strong></td>
<td></td>
<td></td>
<td>15h25 - 15h45</td>
</tr>
<tr>
<td>CEA INES</td>
<td>Joël Wyttenbach</td>
<td>Essais d'une installation collective associant solaire direct et pompe à chaleur pour le chauffage et l'ECS</td>
<td>13h45 - 14h05</td>
</tr>
<tr>
<td>Enerplan</td>
<td>Edwige Gautier</td>
<td>Introduction contexte français : SOCOL, commission innovation &amp; nouveaux procédés</td>
<td>14h05 - 14h25</td>
</tr>
<tr>
<td>HELIOPAC &amp; GIORDANO</td>
<td>Xavier Martinez &amp; Vincent Maley</td>
<td>Présentation des schémas techniques solaire thermique et PAC, atouts différenciants</td>
<td>14h35 - 14h55</td>
</tr>
<tr>
<td>BE Solar</td>
<td>Jean-Marie Nougaret</td>
<td>De la conception au suivi : une opération de A à Z</td>
<td>14h55 - 15h25</td>
</tr>
<tr>
<td>GIORDANO</td>
<td>Vincent Maley</td>
<td>Retour d'expérience d'une installation et perspectives d'innovation(s)</td>
<td>15h45 - 16h30</td>
</tr>
<tr>
<td>HELIOPAC</td>
<td>Romain Jost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEA INES</td>
<td>David Chèze</td>
<td>Questions diverses et conclusion</td>
<td>16h30 - 17h</td>
</tr>
<tr>
<td>EURAC (Bolzano, Italy)</td>
<td>Dr. Matteo D’Antoni, Sustainable Heating and Cooling Systems research group</td>
<td>Presentation of IAE SHC Task44 - HPP Annex 28 : international activities and publications on combined solar and heat pump technologies.</td>
<td>10h - 10h30</td>
</tr>
<tr>
<td>SPF (Rapperswil, Switzerland)</td>
<td>Dr. Michel Haller, Head of Research Energy Technology</td>
<td>Methods and Results of the EU Project MacSheep.</td>
<td>10h30 - 10h45</td>
</tr>
</tbody>
</table>
| SERC (Borlänge, Sweden)| Assoc. Prof. Chris Bales, Senior Lecturer and Researcher in Energy Technology | • Unglazed flat plate solar collector and brine/water HP  
• Glazed flat plate solar collector and air/water split HP | 10h45 - 11h45 |
<p>| CEA INES (Chambéry, France) | David Chèze, Research engineer in Thermal System Laboratory for Building | Solar and Heat pump system tests                                                                          | 11h45 - 12h |
| <strong>Café</strong>              |                                                 |                                                                                                            |             |</p>
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30</td>
<td>Kaffee und Gipfeli</td>
</tr>
<tr>
<td>09:00</td>
<td>Begrüßung</td>
</tr>
<tr>
<td></td>
<td>Prof. Dr. Hermann Mettler, Rektor der HSR</td>
</tr>
<tr>
<td></td>
<td>Prof. Matthias Rommel, Institutsleiter SPF</td>
</tr>
<tr>
<td>09:15</td>
<td>Präsentation IEA SHC Task 44 Handbook</td>
</tr>
<tr>
<td></td>
<td>Solar und Wärmepumpen Systeme</td>
</tr>
<tr>
<td></td>
<td>J.C. Hadorn, OA Task 44, BFE Programmleiter</td>
</tr>
<tr>
<td>09:30</td>
<td>Entwicklung eines Wärmepumpen Solar Systems</td>
</tr>
<tr>
<td></td>
<td>Vorgehen und Resultate EU Projekt MacSheep</td>
</tr>
<tr>
<td></td>
<td>Igor Mojc &amp; Robert Haberl, SPF</td>
</tr>
<tr>
<td>09:50</td>
<td>Hocheffiziente Wärmepumpenkreisläufe</td>
</tr>
<tr>
<td></td>
<td>Wärmepumpen Entwicklung im EU Projekt MacSheep</td>
</tr>
<tr>
<td></td>
<td>Dr. Andreas Heinz, Technische Universität Graz (A)</td>
</tr>
<tr>
<td></td>
<td><strong>Pause 10:10 bis 10:40</strong></td>
</tr>
<tr>
<td>10:40</td>
<td>PV – Eigenverbrauch optimieren</td>
</tr>
<tr>
<td></td>
<td>OPTEG – Regelstrategie Vorstellung</td>
</tr>
<tr>
<td></td>
<td>Prof. Dr. David Zogg, IA – FHNW</td>
</tr>
<tr>
<td>11:00</td>
<td>Sol2Heat</td>
</tr>
<tr>
<td></td>
<td>Strompreis-optimierter Betrieb einer Heizung</td>
</tr>
<tr>
<td></td>
<td>Dr.-Ing. Ulrich Leibfried, Consolar GmbH (D)</td>
</tr>
<tr>
<td>11:20</td>
<td>PV – Wärmepumpe vs. Solarwärme</td>
</tr>
<tr>
<td></td>
<td>Vergleich der WW-Bereitstellung im EFH</td>
</tr>
<tr>
<td></td>
<td>Michael Sattler, Okozentrum Langenbruck</td>
</tr>
<tr>
<td>11:40</td>
<td>Kombination Wärmepumpe und Solar</td>
</tr>
<tr>
<td></td>
<td>Stärken und Schwächen von PV und Solarwärme</td>
</tr>
<tr>
<td></td>
<td>Rita Kobler, Energie Schweiz BFE</td>
</tr>
<tr>
<td>12:00</td>
<td>Offene Diskussion</td>
</tr>
<tr>
<td></td>
<td>Moderation Jean-Christophe Hadorn</td>
</tr>
<tr>
<td>12:20</td>
<td>Besichtigung MacSheep System Entwicklung</td>
</tr>
<tr>
<td>13:00</td>
<td>Lunch Pause</td>
</tr>
<tr>
<td>13:50</td>
<td>Wärmepumpe &amp; Kombi-Wärmespeicher</td>
</tr>
<tr>
<td></td>
<td>Schichtungseffizienz ist wichtiger als Wärmeverluste</td>
</tr>
<tr>
<td></td>
<td>Dr. Michel Haller, Robert Haberl, SPF</td>
</tr>
<tr>
<td>14:10</td>
<td>Erdsonden in dichter Überbauung</td>
</tr>
<tr>
<td></td>
<td>Okonomie und Ökologie</td>
</tr>
<tr>
<td></td>
<td>Dr. Roland Wagner, AHB Zürich</td>
</tr>
<tr>
<td>14:30</td>
<td>Erdsonden Regeneration in der Praxis</td>
</tr>
<tr>
<td></td>
<td>Resultate und Ausblick aufgezeigt in P+D Projekten</td>
</tr>
<tr>
<td></td>
<td>Aleksis Baggenstos, SPF</td>
</tr>
<tr>
<td>14:50</td>
<td>Arealvernetzung zur Wärme- und Kälteversorgung</td>
</tr>
<tr>
<td></td>
<td>Niedrigtemperaturnetze mit Erdsonden und Wärmepumpen</td>
</tr>
<tr>
<td></td>
<td>Matthias Kolb, Amstein + Walther, Florian Ruesch, SPF</td>
</tr>
<tr>
<td>15:30</td>
<td>Glazed solar PVT collector development</td>
</tr>
<tr>
<td></td>
<td>Results from the EU project MacSheep</td>
</tr>
<tr>
<td></td>
<td>Dr. Tomas Matuska, CTU Prague (CZ) - English</td>
</tr>
<tr>
<td>15:50</td>
<td>Selektive unverglaste Absorber</td>
</tr>
<tr>
<td></td>
<td>Kombination mit Wärmepumpen</td>
</tr>
<tr>
<td></td>
<td>Bernard Thissen, Energie Solaire SA</td>
</tr>
<tr>
<td>16:10</td>
<td>Eisspeicher-Systeme</td>
</tr>
<tr>
<td></td>
<td>Energetisches und ökologisches Optimum</td>
</tr>
<tr>
<td></td>
<td>Daniel Philipp, SPF</td>
</tr>
<tr>
<td>16:30</td>
<td>Offene Diskussion</td>
</tr>
<tr>
<td></td>
<td>Moderation Matthias Rommel</td>
</tr>
<tr>
<td>17:00</td>
<td><strong>Ende Workshop</strong></td>
</tr>
</tbody>
</table>
Annex E  Programme of the Workshop in Stockholm, Sweden

Workshop om solvärme och värmepumpar
Många olika alternativ... men vilka är vettiga? Vad har man lart sig senaste åren?
Vilken värmepumpsforskning pågår på KTH?

KTH (Kollegiesalen, Brinellv. 8): torsdag 3:e december kl. 12:00 – 17:00


Man har samtidigt utvecklat ett antal intressanta systemkoncept här i Sverige och en del av dessa ska också presenteras vid workshopen. Vilka som presenteras är ännu inte bestämt – men om du är intresserad av att presentera eitt system så anmäl dit intresse till Chris Bailes, cba@du.se med en kort beskrivning (eller länk). Det finns deltagare från Tyskland och Spanien så du får välja om du vill presentera på engelska eller svenska!

Dessutom presenterar KTH sin omfattande FoU verksamhet kring värmepumpar.
Seminariet är på huvudsakligen på engelska och är gratis, inkl. lunch.

<table>
<thead>
<tr>
<th>Tid</th>
<th>Åmne</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200 – 1330</td>
<td>Annmålan och lunch</td>
</tr>
<tr>
<td>1330 – 1430</td>
<td>Effye projects at KTH</td>
</tr>
<tr>
<td>1430 – 1450</td>
<td>Coffee break</td>
</tr>
<tr>
<td>1450 – 1520</td>
<td>IEA-SHC Task 44 / HPP Annex 28</td>
</tr>
<tr>
<td></td>
<td>Handbook on solar thermal and heat pump systems and main results</td>
</tr>
<tr>
<td></td>
<td>Chris Bailes, SERC, Högskolan Dalarna</td>
</tr>
<tr>
<td>1520 – 1540</td>
<td>EU project MacSheep (solar thermal and heat pump)</td>
</tr>
<tr>
<td></td>
<td>General results and a new test method</td>
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<td>Chris Bailes, SERC, Högskolan Dalarna</td>
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<tr>
<td>1540 – 1620</td>
<td>EU project MacSheep</td>
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<tr>
<td></td>
<td>Four different system concepts</td>
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<tr>
<td></td>
<td>• Airwater heat pump and economizer</td>
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<td></td>
<td>• Borehole heat pump with PVT collector</td>
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<td></td>
<td>• Airwater heat pump with condenser in store</td>
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<tr>
<td></td>
<td>• Solar only heat pump system (no borehole, no air heat exchanger)</td>
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<tr>
<td></td>
<td>Stefano Poppi, Chris Bailes, SERC, Högskolan Dalarna</td>
</tr>
<tr>
<td>1620 – 1630</td>
<td>Concluding remarks and info on technical tour</td>
</tr>
<tr>
<td>1630 – 1720</td>
<td>Svensk solenergi och presentationer från företag (svenska/engelska)</td>
</tr>
<tr>
<td>1700 – 1900</td>
<td>Technical tour</td>
</tr>
</tbody>
</table>

Frågor och kontakt för att presentera eitt system till: Chris Bailes, cba@du.se, 070-3366 499.
Anmälaning till workshopen: Annette Lena, ale@du.se (ange om du har specifika matbehov). Sista anmälningsdag: 26:e november.
Karta till lokalen hittar du vid http://www.kth.se/places/room/KTH-huset/Kollegiesalen

MacSheep – Deliverable 9.5 10/10