



Meeting of the Management Committee & Working Groups of COST Action
 TU1205
 “Building Integration of Solar Thermal Systems (BISTS)”

12th and 13th December 2013
Limassol, Cyprus

Participants

Number	Name	Country	12/12/2013	13/12/2013
1	Almeida Manuella	Portugal	✓	✓
2	Bojic Milorad	Serbia	✓	✓
3	Borg Simon Paul	Malta	✓	✓
4	Braganca Luis	Portugal	✓	✓
5	Buhagarian Vincent	Malta	✓	✓
6	Chemisana Daniel	Spain	✓	✓
7	Chwieduk Dorota	Poland	✓	✓
8	Coronas Alberto	Spain	✓	✓
9	Cristofari Christian	France	✓	✓
10	Georgiev Aleksandar	Bulgaria	✓	✓
11	Goger Thierry	Belgium	✓	
12	Kalogirou Soteris	Cyprus	✓	✓
13	Kennedy David	Ireland	✓	✓
14	Krstic Furundzic Aleksandra	Serbia	✓	✓
15	Norvaisiene Rosita	Lithuania	✓	✓
16	Notton Gilles	France	✓	✓
17	Ochoa Carlos	Israel	✓	✓
18	Platzer Werner	Germany	✓	✓
19	Smyth Mervyn	UK	✓	✓
20	Tripanagnostopoulos Yiannis	Greece	✓	✓
21	Wansdronk Rene	Netherland	✓	✓
22	Aeleni Laura	Portugal	✓	✓
23	Cabeza Luis	Spain	✓	✓
24	Cappel Christoph	Germany	✓	✓
25	Christofi Constantinos	Cyprus	✓	✓
26	Deb Mondol Jayanta	UK	✓	✓

27	Florides Georgios	Cyprus	✓	✓
28	Ghosh Aritra	Ireland	✓	✓
29	Kosic Tatjana	Serbia	✓	✓
30	Lamnatou Chrysovalanto	Spain	✓	✓
31	Lopez Lorenzo Jose	Spain	✓	✓
32	Mateus Ricardo	Portugal	✓	✓
33	McCormack Sarah	Ireland	✓	✓
34	Miletic Ivan	Serbia	✓	✓
35	Monteiro Da Silva Sandra	Portugal	✓	✓
36	Nikolic Danijela	Serbia	✓	✓
37	Oleary Tim	Ireland	✓	✓
38	Popov Rumen	Bulgaria	✓	✓
39	Radulovic Jasna	Serbia	✓	✓
40	Ramke Stefan	Spain	✓	✓
41	Rusowicz Artur	Poland	✓	✓
42	Savvides Andreas	Cyprus	✓	✓
43	Tamasauskas Rokas	Lithuania	✓	✓
44	Tsioutis Charalambos	Cyprus	✓	✓
45	Zacharopoulos Aggelos	UK	✓	✓

Day 1: 12th December 2013

Management Committee meeting

(All invited but only MC Members have voting right)

9:00 to 10:00

1. Welcome to participants

Professor Kalogirou welcome the participants and introduce the Rector of the Cyprus University of Technology Prof. E. Keravnou who addressed the participants wishing success to the meeting.

2. The agenda of the meeting as circulated by email to all members was adopted.

3. Minutes of first meeting (Dublin, June 2013)

The minutes of the first meeting in Dublin June 2013 were approved without any modification.

4. News from the COST Office

The Cost Office representative Thierry Goger explained basic procedures of the COST programs and expressed his appreciation for seeing increasing number of participants wishing to offer their input to the program.

5. Critical managerial issues

Professor Kalogirou explained how the new release of e-COST regulations made procedures simpler for the Action. Referring to the Action status he mention that there are 20 COST countries participating with 28 MC members. Details can be found in [Ref. 1]. Concerning the budget status and the meeting's expenses Professor Kalogirou gave a detailed account [Ref. 1]. He then stressed that the main objective of the COST Actions is networking, i.e., to bring together scientists to form networks and not to fund research projects. On critical managerial issues he gave emphasis on payments and reimbursement procedures. He then asked permission to increase the budget for the bank chargers from the amount of 610 euro, quoted in the first Work Budget plan, to 1500 euro. This change was voted by the MC members unanimously. Concerning information about the available infrastructure and expertise of the members, Prof. Kalogirou asked the members to send information following an email that will be circulated to everybody in order to create a new document that will be published in the website of the Action. He then gave a list of required deliverables for the first year and the names of responsible persons for preparing them [Ref. 1]. Also he mentioned the rules for the Short Term Scientific Missions (STSM) and informed the members about the planning for this Action. The applications should be send to Notton Gilles, who is the STSM Manager, to compile all applications to ease the decision (by the MC) on the six persons that will participate for the first year.

Prof. Tripanagnostopoulos collected the proposed Action logos. These were shown to all participants, but the voting was postponed for the following day while it was decided that new proposals will be accepted till the voting time.

Subsequently, prof. Kalogirou presented the webpage that was created for the Action. The address is <http://www.tu1205-bists.eu/>.

Then he presented the Action leaders and referred to the agenda to be followed during the meeting.

Closing his presentation he showed the logo of the Cyprus Tourist Organisation and presented a short film promoting tourism in Cyprus.

Group Presentations - Posters **10:30 to 11:30**

New members presented their activities with a poster related to the COST Action.

Posters were presented by:

1. Aleksandar Georgiev and Rumen Popov - Technical University of Sofia
2. Rosita Norvaisiene - Kaunas University of Technology – Institute of Architecture and Construction
3. Andreas Athienitis – Concordia University Montreal (presented by S. Kalogirou)
4. Carlos Ochoa - Technion – Israel Institute of Technology
5. Dorota Chwieduk - Warsaw University of Technology – Institute of Heat Engineering
6. Manuella Almeida, Ricardo Mateus, Sandra Monteiro Da Silva - University of Minho (UMINHO)
7. Brian Norton and David Kennedy – Dublin Institute of Technology
8. Sarah McCormack, Trinity College Dublin – Dept of Civil, Structural and Environmental Engineering
9. Aleksandra Krstic Furundzic, Tatjana Kotic, Faculty of Architecture – University of Belgrade
10. Daniel Chemisana, Alberto Coronas, Stefan Ramke, Spanish BISTS Network (SBNet)
11. Yiannis Tripanagnostopoulos, Manolis Souliotis - University of Patras

Posters remained mounted until the end of the meeting so that participants had the opportunity to discuss with the other participants ways of collaboration.

Special Presentation (all) **11:30 to 12:00**

Prof. Kalogirou gave a presentation on the subject of "On-site performance of solar collectors" [Ref. 2] and concentrated on collector testing and international standards. He suggested the formation of a special committee to examine the standards and may suggest new one/s for BISTS.

Members of the BISTS standard committee are:

Soteris Kalogirou
Mervyn Smyth
Werner Platzer
Daniel Chemisana

Werner informed the meeting that his colleagues from the Fraunhofer Institute for Solar Energy Systems are experts on standards and it was agreed to ask Korbinian Kramer from Fraunhofer ISE to give a presentation in the next meeting.

Action Presentation and Working Groups Presentations (all) **12:00 to 13:00**

Mervyn then presented the template, created by the Steering Group that will be completed for each case of BISTS [Ref. 3]. The template will be used to describe all systems in use giving details of literature, manufacture, use,

characteristics, installation, climatic conditions, performance, economic viability, modeling and simulation tools etc. A number of members already completed some templates and Mervyn presented them to the meeting. The completed templates will be posted on the webpage.

Working Groups (1-4) Parallel Sessions

14:00 to 16:00

The participants divided in groups and followed the work of their group as follows:

Working Group 1 : Development and characterisation of new BISTS
WG1 leader Werner Platzer

Working Group 2: Modelling and Simulation of BISTS
WG2 leader Daniel Chemisana

Working Group 3: Investigation of new applications for innovative BISTS
WG3 leader Aggelos Zacharopoulos

Minutes of these meetings are presented at the end of this document.

Working Group 4: Dissemination (all)

16:30 to 18:00

In the final session of the day David Kennedy presented the work of Brian Norton, Tim O'Leary and David Kennedy outlining a matrix for the taxonomy of integrated solar energy systems with examples and identification of the BISTS. All members were requested to provide feedback and fill in the areas identified on the matrix for the next meeting as this can be used as a working model for exploring the areas of research [Ref. 4]. To assist with this process, all participants received a handout of the matrix. David also presented a flyer for the COST action and has asked for feedback on this including any additional comments. Also presented the Dublin University webpage advertising the work of the COST action. The webpage can be found at:

<http://www.dit.ie/researchandenterprise/homepagestories/cost/>

The last presenter was Thierry Goger who explained how the Action is working and who can use the STSM funding according to COST regulations. The minimum number of days are 5 and the maximum 3 months. Gilles will receive all applications and approve the persons to be given the grant with a maximum of 2500 euro. Eligible are preferably PhD students or PhD graduates with maximum of 8 years of experience but other persons holding a PhD can also participate.

Day 2: 13th December 2013

**Working Groups (1-3) Parallel Sessions
9:00– 10:00**

Planning of work to be done - Deliverables

Working Group 1 - Development and characterisation of new BISTS

Working Group 2: Modelling and Simulation of BISTS

Working Group 3: Investigation of new applications for innovative BISTS

Minutes of these meetings are presented at the end of this document.

Group Session (All WGs)

10:30 to 11:30

Group discussion on status of WG plan for deliverables and inter workgroup deliverables. Minutes of this meeting is also presented at the end of this document

Management Committee meeting

(All invited but only MC Members have voting right)

11:30 to 12:30

Professor Kalogirou asked for a voting on the logo of the Action. Nine suggestions were presented [Ref. 5]. The voting was performed in two stages. In the first stage the three dominant logos were chosen with the following results:

Logo number [Ref. 5]	Votes
1	1
2	0
3	2
4	6
5	25
6	1
7	8
8	22
9	22

Between logos 5,8 and 9 a second voting was performed with the following results:

Logo number [Ref. 5]	Votes
5	20
8	13
9	11

Therefore logo number 5 created by Yiannis Tripanagnostopoulos will be the official logo of the action.

Prof. Kalogirou informed the MC participants that:

- six STSM will be chosen for this year.
- A breakdown of the syllabus for the training school and a schedule must be prepared in the near future and discussed in the next meeting.
- The next meeting will take part in **Corsica** France between **27-28 March 2014**.
- Wished all partners Merry Christmas and a happy New Year.

14.00-16.00 In a visit to CUT Mechanical Engineering laboratories Prof. Kalogirou and Florides showed the solar heating and cooling system installed in the building and explained its operation.

16.00-17.30 Mini-Industry Workshop.

Prof. Kalogirou presented the Action to local industry members and discussed with them their ideas and concerns about BISTS.

Three members of the industry misunderstood the timing for the presentation and were not present. Present were only two persons: Mr. Tasos Franjis and Mrs. Lydia Franji who introduced their company.

Points raised in the discussion are :

- People are very reluctant to the introduction of new technologies.
- Customization will be needed for every application. Mass production of BISTS may not be applicable.
- A political decision will be needed to allow a product to be built. A government policy, strategy and coordination is needed.
- Maintenance cost high due to leakages etc.
- Type of materials to be used and their cost.
- It will be difficult to certify the system because of custom made components.
- Architectural aspects - blocking the sun etc.
- Type of energy output and reason for incorporating BISTS.
- It was explained that integrating the system will lower the initial cost and air systems will present less leakages problems.

18.00 Removal of posters

References

[Ref. 1] MC1- Presentation of Prof. S. Kalogirou

[Ref. 2] Presentation "On-site performance of solar collectors" by Prof. S. Kalogirou

[Ref. 3] Template for each case of BISTS

[Ref. 4] Matrix for the identification of BISTS Prof. Bryan Norton

[Ref. 5] MC2- Presentation of Prof. S. Kalogirou

Minutes of Working Groups

The Agenda for all WGs was:

Welcome to participants

Adoption of the agenda

Objectives and working program

Distribution of tasks

Promotion of gender balance and of Early Stage Researchers (ESR)

Time-table of work

Working Group-1

Participants

Luis Braganca (<i>DC Rapporteur</i>)	LB
Georgios Florides	GF
Jose Santos Lopez	JSL
Soteris Kalogirou	SK
Mervyn Smyth	MS
Yiannis Tripanagnostopoulos	YT
Alexander Georgiev	AG
Rumen Popor	RP
Laura Alenei	LA
Platzer Werner (<i>WG Leader</i>)	WP
Chrysovalantous Lamnatou	CL
Christian Cristofari	CC
Gilles Norton	GN
Manuela Almeida	MA
Dorota Chimeoluk	DC
Ivan Miletic	IM
Rosita Norvaisiere	RN
Vincent Buhagiar	VB
David Kennedy	DaK
Costantinos Vassiliades	CV
Andreas Savvides	AS
Aleksandra Krstic Furunzic	AKF

Apologies

None noted

1. Welcome to participants

WP welcomed participants to working group 1 (WG1)

2. Adoption of the agenda

WP presented the agenda as laid out by the COST office with adoption by all WG1 participants

3. Objectives and working programme

WP introduced the scope of work and objectives for the work group.

4. Distribution of tasks

WP outlined the tasks for WG1 again; review of the state of the art, development of new BISTS solutions and characterisation of BISTS and the expected deliverables.

D1.1

The group again discussed the structure of the review and the allocation of tasks to individuals. The discussion centered around the form of information (peer-reviewed papers, European projects/reports etc) to be reviewed and how to distribute it around the group. SK highlighted the importance of copyright issues and that perhaps the material should be put in the Action's member area. The group discussed this issue in detail and agreed that any material kept in the member's area would have a link on the main page (title, author, etc) which was password protected. GF suggested that only SK and WP should have uploading rights. WP said that some material (eg EU reports) can be open access and therefore have no legal restrictions.

The group moved on to the topic of how to extract information from the case studies. MS stated that the case studies should not exceed 3 pages. WP asked for volunteers to help in this task; GF, MS, LA, WP, DC, CV, AS put themselves forward. MS suggested the use of a matrix to help extract the information and agreed he would take the lead in compiling the initial spreadsheet. It was agreed that this would help extract the information and that the following session would be set aside to help develop the matrix structure.

WP opened the debate on 'standards' review and stated that 1 to 2 specialists are required to build upon the work presented by SK (primarily updating and keeping the scope within a European context). Perhaps a smaller steering committee should be created to help in this specific area. Assistance/expertise is also required in the area of building product certification. A discussion developed around the issue of solar components mirroring building components, legal aspects and technical guidance. YT suggested we draw upon the experiences of BIPV in this area. GF highlighted the difference in regulations and those responsible across Europe. DaK agreed and stated that a lot of regional standards are up for review. DC said we should accept this is an area that needs further investigation, perhaps a research project in its own right. VB

agreed and we should just state that there isn't a uniform certified standard. All to search for experts/information relating to 'certification of building products'.

WP summed up the requirements for the working group's review; content, structure, specification and definition, map of distribution, architectural integration classification (taxonomy), standards, installed projects/case studies and innovation and asked for volunteers; AKF would take responsibility for architecture, SK for standards, VB for innovation, Technical (HVAC, hot water, etc) by GF with support from MS and DC, product certification by Christoph (WG3) and WP for overview.

D1.2

The group had a brief discussion on the STSMs and WP asked the group to think about ideas. There was debate on the use of PhDs and the structure/regulations of the STSM. SK suggested WG participants should contact GN.

D1.3

Not discussed at this meeting due to time restrictions.

D1.4

Not discussed at this meeting due to time restrictions.

5. Promotion of gender balance and of Early Stage Researchers (ESR)

Not discussed at this meeting due to time restrictions.

6. Time-table of work

Time table of work and deadlines is ongoing.

7. AOB

Nothing noted

ACTIONS

Description	Date	Allocation
WG participants to start accumulating published material for review documents (including expertise centered around 'certification of building products'.	Jan 14	All
Initial matrix to be distributed to WP and SK and then to WG participants	Dec 13	MS
WG participants to provide case study examples	Jan 14	All
STSM Expression of Interest (EOI)	Jan 14	All

For the review document the responsible persons are:

Standards – Soteris Kalogirou

Architectural aspects - Aleksandra Krstic Furundzic

Installation - Mervyn Smyth. Maybe we also need some building component expertise (a Building Surveyor or Architect would be ideal)

Innovation - Vincent Buhagiar

Technical (Hydraulics, Systems Performance) - Dorota Chwieduk, Georgios Florides and Mervyn Smyth.

The review document will include specifications and definitions, a map with distribution of BISTS, architectural integration classification, case studies, classification of solar – thermal collectors and innovative ideas.

Working Group-2

List of participants present at meeting:

1. Milorad Bojic (Serbia)
2. Aritra Ghosh (Ireland)
3. Christoph Cappel (Germany)
4. Rokas Tamasauskas (Lithuania)
5. Jayanta Mondol (UK)
6. Ricardo Mateus (Portuga)
7. Danijela Nikolic (Serbia)
8. Kostas Christofi (Cyprus)
9. Alberto Coronas (Spain)
10. Daniel Chemisana (Spain)

Daniel, the Working Group leader, reminded the participants about the deliverables that have to be prepared by the end of Year#1. These are:

- D 2.1. Review of current STS modelling techniques. This review will also be submitted as a joint partner publication in a peer reviewed journal (Month 12)
- D.2.2. Annual STSM for PhD students and Early Stage Researchers on theoretical modelling and numerical simulation of thermal behaviour of BISTS.
- D.2.3. Annual Training School for dissemination of expertise to PhD students and Early Stage Researchers. This will include topics on theoretical modelling and numerical simulation of thermal behaviour of BISTS.

The structure of the Deliverable D.2.1 and the next steps for preparing the pre-final drafts were discussed.

It was agreed that during the first week of January to:

- Collect references additional to the draft review. The references to be framed with the Title, Authors, Year, City, Country, Conference, Date. (Daniel).
- Jayanta, Christoph and Daniel to organise the information and to sum up the context and the outcomes.
- Create a dynamic list in a dropbox folder. Daniel to create and invite.
- Contents of tables for deliverable 1.

Table structure for deliverable D.2.1

<i>Type of simulation/modelling</i>	<i>Year (From the present to the past)</i>	<i>Authors</i>	<i>Title</i>	<i>Context</i>	<i>Outcomes</i>	<i>Link (doi...)</i>
Thermal sym. & Mod	2013	Maurer C., Baumann T., Hermann M. et al.	Heating and cooling in high-rise buildings using facade-integrated transparent solar thermal collector systems	Real installation in Ljubljana. Transparent solar thermal collectors (TSTCs) Window systems (façade)	-Modeling challenges that arise when considering building facades and especially integrated TSTC systems. New transient systems simulation (TRNSYS) types were developed -New TRNSYS type.	http://dx.doi.org/10.1080/19401493.2013.766263
Energetic sim.						
Optical simu.						
Structural						

Regarding LCA analysis:

<i>Year</i>	<i>Authors</i>	<i>Title</i>	<i>Context</i>	<i>Outcomes</i>	<i>Link (doi...)</i>
Thermal systems					
PV systems					
PVT systems					
Building integrated systems					

Concerning Deliverable D.2.2:

Members to send proposals for STSMs by 20th of December.

-15th January, decision of STSM (Send to Gilles).

Concerning Deliverable D.2.3:

- Corsica Meeting: Training schools topics discussion.

-Suggested period: from 15th to 30th Sept.

-Mirolad, Ricardo and Alberto explained that they have specific courses on Energy+, Trnsys, OpenStudio, GenOpt, DesignBuildir and SimaPro.

-The link of the courses will be sent to all members.

Working Group-3

Aggelos informed the meeting about templates collection, delivery of sub-reviews and the compiled review of BISTS. It was estimated that there will be overlapping between the work of WG1 and WG3. Every effort will be made to direct the work of the two groups on different subjects. A time frame for the work was presented. The minutes of WG3 meeting are as follows:

List of participants present at meeting:

1. Sandra Monteiro Silva (SMS) - Portugal
2. Carlos Ochoa (CO) - Israel
3. Timothy O'Leary (TO) - Ireland
4. Sarah McCormack (SM) - Ireland
5. Jasna Radoulovic (JR) - Serbia
6. Tatyana Kotic (TK)- Serbia
7. Stefan Remke (SR) - Spain
8. Charalambos Tsioutis (CT) - Cyprus
9. Rafaela Agathokleous (RA)- Cyprus
10. Luisa Cabeza (LC) - Spain
11. Artur Rusowicz (AR) - Poland
12. Simon Borg (SB) - Malta
13. Rene Wansdronk (RW)- Netherland
14. Aggelos Zacharopoulos (AZ) – WG Leader, United Kingdom

1. Welcome

- The chair welcomed all the participants including 6 new members of the group: Sarah, Luisa, Artur, Tatyana, Rafaela and Rene
- Apologies from T Hyde (TH), M Souliotis (MS) and Inigo Ipparraguirre (II)
- K Christofi and C Cappel have moved to other WGs in the Action

2. Introductions

- Existing and new participants of WG3 introduced themselves and provided short information about their scientific/professional background relevant to the action.

3. Deliverable D3.1 - Review on BISTS

- Templates to collect information on BISTS have been distributed to all COST Action participants – Feedback is still low.
- Encourage all members to fill the templates even if some information is missing
- Agreement on considering "building integrated thermal storage" as a BISTS category
- Other reviews (e.g. IEA task ...) should be considered
- Existing schemes (Templates, Taxonomy of WG4) should be used for classification

4. Review sub-sections agreed:

- Water heating: AZ, RW, TK
- PV/T: SM, AZ, JR
- Energy Storage: SM, LC, RW
- Air heating: TO, CT
- Shading, Heating, Cooling: SB, SMS, AR, CO
- Combi-systems (DHW+heating): RW, SR
- Linked to other systems: SB

5. Agreed timeline for D3.1

Collection of Templates: **Start of January 2014**

Delivery of the sub-reviews: **Start of March 2014**

Compiled review of BISTS: **End of March 2014**

6. Deliverable D3.2 - STSMs

- Eligible to participate are:
 - Research PhD students
 - Early Stage Researchers (ESRs - researchers with no more than 8 years of experience after completion of their PhD study.
- WG3 will apply for 2-3 STSM with the following topics:
 - Preparing final review based on sub-reviews
 - Thermal energy storage
- Duration for each STSM will be 5 – 90 DAYS
- Maximum reimbursement 1.800 EUR/STSM
- STSM of the first year have to be **finished until end of April 2014**
- Contact WG3 leader, STSM manager and Action Chair for STSM application before end of January 2014.
- Universities that can provide candidates (PhD students or ECRs) for STSM measures
 - AZ (1 Person)
 - TO (1 Person)
 - LC (1 Person)
 - SB, SMS, Artur, JR, Carlos, SM (have to check for availability)

7. AOB

- WG3 participants shared information of developments on BISTS from their institutions/organisations

8. Agreed WG3 actions

Description	Allocated to	Date due
Submit completed template(s) on BISTS	All	15 January 2014
Apply for STSM	AZ, TO, LC	31 January 2014
Review on Water heating BISTS	AZ, RW, TK	5 March 2014
Review on PV/T BISTS	SM, AZ, JR	5 March 2014
Review on Energy storage for BISTS	SM, LC, RW	5 March 2014
Review on Air heating BISTS	TO, CT	5 March 2014
Review on Shading, Heating, Cooling BISTS	SB, SMS, AR, CO	5 March 2014
Review on Combi-systems (DHW+heating) BISTS	RW, SR	5 March 2014
Review on BISTS which are linked to other systems (e.g. heat pumps)	SB	5 March 2014
Collate sub-reviews into a single document	AZ, MS	31 March 2014

Working Group-4

David Kennedy presented the work of WG4, referring to dissemination of information and outcomes of the project. The group needs to start discussing the organization of training schools, STSMs, the action symposium, which will be held at the end of the second year and possible conferences.