IEA EBC ANNEX 71: minutes Webex-meeting October 2020

Attending:

Allinson David, Bacher Peder, Bauwens Geert, Blöchle Max, Bloem Hans, Bramkamp Uwe, Cipriano Jordi, Deb Chirag, Deltour Jade, Elwell Cliff, Erfani Arash, Erkoreka Aitor, Fernandez Hector Herrada, Fitton Richard, Ghiaus Christian, Gori Virginia, Gorse Chris, Gorzalka Philippe, Hanfstaengl Lucia, Hollick Frances, Humbert Myriam, Jack Richard, Jimenez Maria Jose, Kersken Matthias, Kull Tuule Mall, Laguna Gerard, Lazzari Florencia, Li Matthew, Masy Gabrielle, Metzger A. Susanne, Mor Martinez Gerard, Ottl Silvia, Pandraud Guillaume, Parzinger Michael, Rasmussen Christoffer, Reynders Glenn, Ritosa Katia, Roels Staf, Rovers Twan, Sodagar Behzad, Spiekman Marleen, Spindler Ulrich, Strachan Paul, Struck Christian, Uriarte Irati, Võsa Karl-Villem, Vandaele Luk, Wellisch Ulrich, Wittchen Kim B., Zhang Jason

Note: some participants maybe were not present at the time of counting

Agenda:

Monday 19th October

- 9:00 – 10:00: Plenary session with overview and status of different subtasks (Staf Roels)
- 10:00 – 13:00: Breakout session on ST3 (Geert Bauwens)
- 14:00 – 17:00: Break out session on ST2 (Glenn Reynders, Arash Erfani)

Tuesday 20th October

- 9:00 – 12:00: Joint break out session on ST1 and ST4 (Richard Fitton)
- 14:00 – 15:00: Break out session on BES-validation exercise (Matthias Kersken)
- 15:00 – 17:00: Core group meeting

Wednesday 21st October

- 9:00 – 10:00: Plenary wrap-up session and ST5 update

Main content: see included presentation

Main Discussion notes:

1. Update on status of subtasks

ST1-ST4:

- The meeting was hosted by Richard Fitton and 28 participants were present
- The meeting was focused on the review of the first draft of the joint ST1 and ST4 report, which was sent around earlier this month to all Annex 71 participants. The presented outline consists of: background to work on the performance gap, quality guarantee, stakeholder survey, state of the art survey, introduction of HTC, current methods of gathering HTC in situ, smart meters and on board controls, use cases for HTC and conclusions.
- During the discussion the following shortcomings were noted:
  - We are still missing additional sources to support that explore the performance gap Info on this from other countries is highly appreciated.
  - The data concerning smart meters is outdated, newer data from the recognized organization in the field is not available. Together with the lack of data on smart meters, there is a scarcity of information about on-board monitoring and predictions of installation.
  - It would be good to add a section on the number of co-heating tests done. Info will be collected.
  - The question whether the HTC should be normalized after calculation arose. It was decided not to push any normalisation method, but to collect different approaches with pro's and contra's.
- The subtasks will continue to work on the report finalization. The major structure is agreed upon, but we need to better link the chapters and some stylistic improvements need to be made. For the missing evidence individual tasks are to be sent out over email in the coming week.

ST2

- The meeting was hosted by Glenn Reynders and 36 participants were present
- At the meeting current work in progress was presented together with the plan for the report which is in the beginning phase. Papers already published on the ST2 (Gerard, Peder, Runne) will be used in the introduction of the report. It is still needed to check with authors if a paper can be used (Gerard Mor flagged up that one of his papers could not be used completely as it is not yet published).
- A template is being developed for each participants to fill in the descriptions of their models in it. Glenn will distribute this template in upcoming days.
- A final CE is planned as cross-exercise: applying models developed for CE2 (based on virtual data) on CE3 (based on real data), finalize the definition of criteria for start/detection of the fault, apply models developed for CE4 (MPC) to the CE3. It is yet to be decided how to show the quality of the models in a suitable illustrative way (ACF not best indicator here). In the end it will be compared the performance of the controller developed with different models by temperature profile and electricity consumption profile of the heat pump.
- Volunteers for writing the different chapters were selected. The planned chapters are the following: introduction, modelling techniques for building behaviour identification, test-cases, fault-detection and diagnostics, model predictive control and lessons learned. A first draft for the ST2 participant will be ready in December.

ST3

- The meeting was hosted by Geert Bauwens and 41 participants were present
- The first draft of the report was distributed among participants earlier this month. The first five chapters of the report which concern the building physical framework, statistical modelling approaches, determination

of input variables and description of case studies still have some gaps and lack consistency. Tasks for improving those chapters were assigned between the participants.

- The report still misses a structured way to present the exploration of inputs and quantify the impact of approaches. It was decided that the current chapter 6 should focus on the exploration of each of the modelling approaches: what is the impact of a certain modelling approach on the obtained HTC (even if the other modelling approaches are kept according to the basic approach)? Chapter 7, then, will show an optimal combination of approaches for each test case. This chapter should be an example for other people on how to tackle an HTC-determination starting from a certain set of input data. Hence, for each of the case studies optimal approaches will be decided upon based on the available input.
- Participants of ST3 agreed upon the introduction of new test cases from the BEIS TEST project. Six test cases for which: extended measurements, full survey of inhabitants, co-heating test (and QUB) and airtightness test are available will be released in the beginning of next year. The goal here will be to blind test the findings from the ST3 work and draw conclusions on the applicability of the previously formed guidelines. If feasible, this will be included in a final application chapter to the report by March 2021.
- One of the points in the discussion was the lack of appropriate model validation techniques (other than the confidence range of the result). Several ideas were introduced, but still nothing was decided.
- The tasks for the upcoming months were assigned and an on-line meeting to discuss the results before submitting the finalized draft is scheduled for December 9th.

ST5

- An update on the ongoing work in DYNASTEE is presented. DYNASTEE held five on-line trainings on Dynamic Calculation Methods for Building Energy Performance Assessment. Five webinars, replacing the weeklong physical Summer School, have taken place in September, every Wednesday 10:00-12:00. The webinars attracted 110 participants. Newsletter 16 has been published in May, and Newsletter 17 is due by November. Members of DYNASTEE are preparing the Summer school in Almeria in June 2021, also they will prepare a workshop for the in-person Annex 71 meeting in Salford, 2021.

BES Validation

- The meeting was hosted by Matthias Kersken and 28 participants were present
- Until now the BES validation was joined by 13 participants for the blind phase, and 9 participants for the open phase. The extended experiment was joined by 6 participants in both blind and open phase. The results were analysed and these are some of the findings:
  - Due to large number of combinations of modelling approaches it is impossible to conclude that one approach is better than another. Not possible to say that teams who included, for example, thermal bridges, got better results than those who didn't.
  - Datasets are comprehensive and valuable for model developers to test their programs through sensitivity studies, use of additional sensor information (heat flux, surface temperatures etc.)
  - Modelling for validation required many inputs of measured data this data would not normally be available, so modelers would use assumptions (e.g. albedo, flow rates). Some programs don't have the capability of using extensive time varying input data; it can also increase the likelihood of user error.
  - Some programs had significantly better predictions than others. When the observed stratification was significant, limitations of most commonly used programs were noticed.
- An additional sensitivity study is required. Therefore, contributions were called for the last meeting and they should prepare: sensitivity analysis performed by modelling teams, findings of their work, critical issues, research needed, lessons learned and in detail analysis of certain aspects.
- The report will be ready for internal review by the end of December.

2. Core group meeting

Participants: Staf Roels, Matthias Kersken, Chris Gorse, Glenn Reynders, Maria Jose Jimenez, Paul Strachan, Peder Bacher, Richard Fitton, Geert Bauwens, Katia Ritosa

- It was decided that 4 internal reviewers will be selected for each report. Also, the approximate length of the reports was decided.
- All reports need to be ready for internal review by the beginning of January. This way, it will be possible to have a discussion on the finished reports at the next meeting.
- It was decided that due to the current COVID-19 situation, which reflects in travelling restrictions and limited funding the next meeting will also be online. A Webex will be held on April 21st with the main purpose to present all finalized reports.
- The last in-person meeting is rescheduled for September 2021, still in Salford. At this meeting a workshop for the stakeholders is planned. The advantages of the postponing are: more stakeholders will be able to participate, other connected projects will be in a more advanced phase (SMETERS, BIES TEST project), and hopefully reports will be ready to distribute.
- Possible follow up projects were discussed at this session and also at the wrap-up session.
- A core group meeting is scheduled in November.

3. Wrap- up meeting - Next steps

- All subtasks internally agreed to detailed and tight timelines which will be followed until the end of the reporting phase.
- Participants volunteered for internal reviewing:
  - ST1-ST4: Jade Deltour, Maria Jose Jimenez, Cliff Elwell, Myriam Humbert
  - ST2: Matthias Kersken, Geert Bauwens, Urlich Spindler, Christoffer Rasmussen
  - ST3: David Allinson, Matthias Kersken, Peder Bacher, Aitor Erkoreka
  - BES Validation: Kim B. Wittchen, Kristian Skeie, Gabrielle Masy, Kevin Lomas
- All participants were invited to submit suggestions for a follow-up Annex via e-mail to staf.roels@kuleuven.be or katia.ritosa@kuleuven.be, so we can schedule a discussion on this on our next expert meeting
- Next expert meeting will be a one day Webex-meeting on April 21, 2021.