

Simplified method for Solar Thermal in the context of the space and waters heaters

8th April 2020
09.00-11.00
Webmeeting

Participants: Andreas Bohren (AB), Stephan Abrechth (SA), Letitia Brottier (LB), Stefan Mehnert (SM), Emmanuel Leger (EL), Stamatios Babalis (SB), Emmanuel Traynard (ET), Jean-Marc Suter (JMS), Maria del Val Varas Garcia (MVG), Ulrich Fritzsche (UF), Robert Pintér (RP), Janusz Staroscik (JS), Costas Travasaros (CT), Jonathan Vera Medina (JVM), Edwige Porcheyre (EP), Arim Schäfer (AS), Daniele Bernacchioni (DB), Thomas Althaus (TA), Jean-Baptiste Beysac (JBB), Uwe Trenkner (UT), Jorge Facão (JF), Charlotte Braums (CB), Werner Weiss (WW), Maria João Carvalho (MJC), Jean-Christophe Hadorn (JCH).

Secretariat: Pedro Dias (PD), Leopoldo Micò (LM).

Abbreviations: **EL** – Energy Labelling; **MBM** – Multi Bin Method; **SBM** – Single Bin Method; **WH** – Water Heating; **SH** – Space Heating, **SK** – Solar Keymark; **SHE** – Solar Heat Europe.

AGENDA			
Item	Time	Agenda	Description
1	09.00	Introduction to meeting & competition rules	Disclaimers, agenda for the meeting and introduction of participants
2	09.10	Overview of the Simplified method	Brief introduction of the method
3	09.15	Experts approach: Andreas Bohren's method	Explanation of the method used by the expert
4	09.30	Experts approach: Stephan Abrecht's method	Explanation of the method used by the expert
5	09.45	Questions & Answers	
6	11.00	Final Remarks and end of the meeting	



Minutes	
Item	Comments & Agreements
1	PD welcomed the participants and pointed out the requirements related to competition rules applicable to the meeting. Participants acknowledged and agreed.
2	<p>PD introduced the work done so far. Due to the complexity of the package label, during the revision of Lot 1 and Lot 2 SHE decided to develop an easier and better method to obtain a fair evaluation of ST in EL and simplify the installer's tasks.</p> <p>One of the major innovations of the new method is the "Solar Device Efficiency" for Water and Space heating that also allows a simpler calculation process for the installers.</p> <p>The experts developed two type of approaches:</p> <ul style="list-style-type: none">- Multi Bin Method- Single Bin with polynomials Method <p>Both methods are based on ScenoCalc and they both use the gross thermal yield and the solar device efficiency. The output is a table to be provided by ST manufacturers for each collector that will allow a calculation of the package efficiency and class.</p>
3	<p>AB presented the Multi Bin Method to the participants.</p> <p>The main idea behind the method is to use the gross thermal yield to know how much energy is provided at certain temperature and in certain climates by month. The method is developed via Scenocalc and considers 4 different load bins (25, 35, 40 and 55 degrees).</p> <p>The installers will have a simple table to select the correct number of collectors for the needed load profile.</p>
4	<p>SA presented the Single Bin with polynomials Method.</p> <p>The approach is similar to the previous method but considers simulation results for 25 and 50 degrees using average values and including the heat losses of a typical C class tank.</p> <p>The method might be perceived as more complicated though it uses less assumptions.</p> <p>-</p>
5	<p>Adding to the previous presentations, PD pointed out other additional topics not directly related to the two methods.</p> <ul style="list-style-type: none">- Space heating demand: the tables are based on Pdesign (from EN15502-1)- Storage: It is important to address the storage but to not complicate the calculation it can be included in the manufacturer table as an indicative reference or as an additional step including a factor reflecting the storage tank efficiency



- **Additional load profiles (WH):** in the current proposal is possible to include the 3XL and 4XL load profile
- **Fractional Energy Saving:** it is possible to include it in the current method to have the solar contribution to the package

A Q&A period was opened, with questions from different participants. A summary of the Q&A is provided hereunder:

- 1) *Are the heat losses of solar loop integrated in MBM and SBM?*
 - a. In the MBM the losses are integrated following the current regulation even if the impact is very small.
 - b. In the SBM they are not integrated because addressing many different systems it does not play a significant role to calculate the label class.
- 2) *Why are the distribution losses always taken into account when they are not considered in the calculation of the energy efficiency of other competing technologies?*
 - a. If the number is irrelevant, we will not consider it in future updates. The inclusion in the first place was done to have a more complete calculation.
- 3) *The dimensioning "collector & tank" is considered as a correct prerequisite in the proposed approach but is a security provided? For example a simple boundary condition like a value of the "Volume/Area" ratio?*
 - a. In the SBM the reference volume for the calculation is 0.1l*KWH of gross thermal yield that is a reasonable figure reflected in the dimensioning of tanks. Typically, manufacturer refer to m² but generally we should refer to the energy. The value it is not included in any of the 2 methods.
- 4) *Where does the value eta_sol 50°C comes from? Is it a value, calculated by the manufacturer?*
 - a. It is given by the polynomial - parameter is GTY at 50 degrees and is the same as the output found in SK datasheet. SK and ErP do not have the same reference locations but parameters are quite close between them. It might be needed in the following updates.
- 5) *What are the next steps in this process? Who is deciding, which method will be proposed for Erp? Is there a timetable?*
 - a. There are a couple of weeks to take a final decision for one of the methods. This will take into account comments from experts and final decision to be taken by SHE Board.
- 6) *Do both methods (SBM and MBM) lead to the same labelling for all systems? In other words: Are the methods equivalent for the market?*
 - a. The results from the 2 methods is quite close then it can be considered equivalent.



	<p>7) <i>Should one procedure substitute all existing ones also for solar water heater (Solcal, Solics) or do you focus only on package? I think that for thermo siphon system (e.g. close coupled) there still has to be a physical test method.</i></p> <p>a. It is possible to use method for thermosyphons. With SBM one idea is to use EN12976 to derive output for a similar module. Relevant in particular for those appliances.</p> <p>8) <i>Which method is easier for the installer or the manufacturer to perform?</i></p> <p>a. Both methods are fit for purpose because they use same parameters and provide same output. The methods will be available so that manufacturers can calculate their tables.</p> <p>9) <i>MBM is based on monthly values calculated in Scenocalc and SBM in yearly values of Scenocalc?</i></p> <p>a. Yes for MBM, regarding SBM more details are in the presentation.</p> <p>10) <i>Is it planned to included air solar technology (direct air preheating)?</i></p> <p>a. It is not easy to include it because there would be problems regarding the calculation with Scenocalc.</p> <p>11) <i>Why the remark volume/m² is not accurate for PVT?</i></p> <p>a. It is part of a broader discussion because we should first clarify how to consider PVT.</p> <p>12) <i>Do we know now how to calculate the Gross Yield calculation in method A1 (SPF link not working) from SK's coefficients?</i></p> <p>a. The correct link is the following: Link</p> <p>13) <i>Are both methods also applicable to systems with a heat exchanger at the output of the tank?</i></p> <p>a. Yes, it is possible. Not a design tool but rather for a simplified calculation of the ST contribution.</p> <p>More information, including the recording of the meeting, will be available on SHE website.</p>
6	<p>PD thanked the participants and highlighted that the updates will be shared to have more feedback and continue the work on the Simplified Method.</p>

Annex: [PPT Presentation](#)