

Vacuum Insulation Panel Association - Technical Working Group Meeting
Monday 15 May 2017, 11:00 to 17:00 CET
FIW Building Physics and Building Parts, 4 Lochhamer Schlag
82166 Graefelfing, Germany

Participants:

Yoash Carmi, Avery Dennison Hanita, Technical WG Chair
Roland Caps, va-Q-Tec
Markus Arntzen, va-Q-Tec
Christoph Sprengard, FIW
Susanne Regauer, FIW
Miaotian Sun, Qingdao Kerui New Environmental Materials
Hans-Frieder Eberhardt, Porextherm
Marko Meglič, Knauf Insulation
Frank Bailly, BSH Group
Raquel Ponte Costa, VIPA International

Via conference call:

Pascal Rousset, Rexor
Justin Davies, Kingspan
Estelle Perin, Rexor

Apologies:

Jörg Stelzer, BSH Group
Matthias Geisler, Evonik Industries

Agenda

1. Welcome

1.1 VIPA antitrust compliance statement

Raquel Ponte Costa opened the meeting and welcomed all the participants, especially Frank Bailly representing the latest associate member of VIPA, the BSH Group. Raquel reminded participants of the antitrust compliance statement principles which need to be respected during the meeting.

1.2 Approval of the agenda

The agenda was approved with no additions.

1.3 Approval minutes previous conference call 6 February 2017 and review of action items

Participants in the call approved the minutes as a correct statement of the actions and decisions agreed on 6 February. Raquel went through the action items and reported that they were all completed apart from these ones:

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| <ul style="list-style-type: none">• Christoph to get in touch with STRIP'S about the internal pressure measurement study and the prototype sensor device developed by the company.• Christoph to share with the Technical WG the original report of Fraunhofer once it's published.• Christoph to double-check the publishing rights of the original study to make sure FIW and VIPA can indeed use it and translate it |
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About the co-operation with a university, Christoph mentioned he is still waiting from feedback about the ideas sent in February to the University of Munich. He has not yet found a student to work on the getters research project. Susanne Regauer mentioned that the Technical University of Munich has an online platform where you can submit topics for studies which the students can afterwards choose. Susanne suggested VIPA to use this platform.

Action:

VIPA secretariat to submit topics for research in the online platform of the Technical University of Munich.

About the study of the German government on the future of buildings, Christoph reported that it was not published yet.

2. Draft and final reports of studies:

2.1 Hanita study on the development of an advanced technique for measuring the effect of moisture content on the thermal conductivity of fumed silica VIPs

Yoash went through the final report and explained the technique Hanita worked on to measure the effect of moisture content on the thermal conductivity of VIP panels. ZAE also did a study about this a few years ago but the measurement was done in a vacuum chamber and not in the panel as such. The technique studied by Hanita is therefore much more relevant and appropriate for the VIP industry. Conclusions point to very different behaviour depending on the type of fumed silica used and also very different from the old ZAE results. Another interesting conclusion is the impact of the two temperatures of the plates of then λ machine. One interesting outcome of the study is that on winter time the moisture inside the panels moves to the cold of the panel and sometimes it even freezes. As a result the core material gets dry and the thermal conductivity drops down. Yoash suggested specifying in the procedure of the EN standard that the temperature of the two plates when measuring the thermal conductivity should be specified to be between 2°C and 18°C.

Members welcomed the study conclusions which are very helpful for the industry. They agreed that the project should be extended in order to better understand the relation between the microscopic characteristics (porous size, surface area, core material used, etc) of the fumed silica powder and its response to the absorbed moisture. The report also included an important study done on the equilibrium pressure of the moisture vapor of CaO desiccants as function of the percent of absorbed water.

Decision:

Participants in the meeting approved the final report presented by Yoash Carmi.

Action:

Members suggested Avery Dennison Hanita and FIW to submit a proposal for an extension of the project to further investigate the phenomena discovered during the tests.

2.2 Hanita and FIW project: calibration of the lift-off technique for measuring the internal pressure of fumed silica VIPs and determination of boundary conditions for the lift-off measurements and processing of measurement raw data – draft report

Susanne Regauer explained the main points of the report and the conclusions of the study. One of the main conclusions is the need to specify clear boundary conditions otherwise the results may vary a lot.

Christoph pinpointed that adapting this method to other core materials would be very difficult but perhaps the sensors developed by the company STRIPs could help in the process. Christoph will get in touch with the Slovenian company on it.

Members thanked FIW for the very useful report. The boundary conditions and test measurement procedures should be added to the CEN standard. One member asked if the lift-off technique is now approved as a technique to measure accurately the pressure. Christoph explained that it depends on different variables: type of foil, envelope, core material, etc. The results can be very different. Other members highlighted that the pressure measurements are important for quality and production control. Christoph specified that the accuracy of the measurement is plus minus about 20% but it is difficult to estimate if it's due to the pressure or other factors. One participants said that the results of this study teach us that the existing declared accuracy of the lift-off technology is very overestimated. As a result, without extracalibration work it shouldn't be used for accurate determination of the internal pressure.

Decision:

Participants in the meeting approved the draft report presented by Susanne Regauer and Christoph Sprengard.

Talking about next steps, members suggested extending this study and including an accurate testing of the delta λ values, rather than trying to find an equivalent method for fiberglass core VIPs.

Members asked Raquel about the VIPA budget. She explained that probably there is no room for an additional study this year but it's a matter of negotiation. The study can be commissioned in 2017 and only be paid in 2018 for instance. She encouraged FIW to submit a new proposal to the Technical WG before the date of the next conference call.

Actions:

- FIW and Avery Dennison Hanita to prepare a proposal for the extension of the two studies to include the following:
 - Liftoff project - accurate measurement of delta λ values
 - Water content - analysis of the effect of different parameters (surface area, porous size, core material used, etc) on the response to the absorbed moisture + extra work on CaO desiccants
- FIW to contact the company STRIPs to understand better their products.

3. 2017 activities

3.1 Status standardisation activities in Europe, China and at ISO level:

Yoash Carmi explained that the first meeting of the ISO VIP Group took place in April in Canada. The next meeting will be in September in Japan. Following the kick-off meeting, Phalguni submitted a draft document which is a modified old version of the CEN standard. Yoash explained that all members of the VIP group within ISO are now being asked to vote on this document as basis for the new ISO standard. All European members are expected to vote against since the document is an old version of the CEN standard which is now under approval process.

Miaotian Sun mentioned that there is no news about the standardisation process in China. The Nanjing Fiberglass Institute which is the convener of the group has not scheduled any new meetings yet.

Christoph reported that the CEN TC 88 WG 11 had a conference call last week. The approval process of the standard was extended until October. The WG 11 will have a meeting in October.

Raquel explained that VIPA will organise a meeting in Paris, during IVIS, with all standardisation groups (ISO, CEN and the Chinese standardisation group) to understand what is going on in other parts of the world. Christoph Sprengard suggested inviting Benjamin Wiene who is the secretary of both the CEN TC 88 and of the DIN.

Regarding the GSH VIP label and the review of the GZ 960 document (assessment criteria for the label) Hans-Frieder Eberhardt explained that the GSH VIP Group had a meeting in Poland during the General Assembly of the GSH and agreed to discuss and vote on the document at a face-to-face meeting to be held at the Frankfurt airport in July. This means that in July the revision of the quality assessment rules will be finalised and will be submitted to the RAL for final approval. If all goes well, the new rules will enter into force in 2018. With this revision, the GSH VIP label will be extended to water tanks, cold shipping and hot water applications, appliances and temperature controlled boxes, similar to the DIBT tests procedure for building applications. Raquel invited the new member BSH to consider joining the GSH (which is free thanks to VIPA membership) so they take part in these discussions.

The co-operation with the GSH has been a success. A lot of VIPA members have joined the GSH:

- **Members (manufacturers with voting right):**
 - Creek - Qingdao Kerui Group Co., LTD (CHN)
 - Knauf Insulation (SVN)
 - MICROTHERM N.V. (B) Sint-Niklaas
 - Morgan Advanced Materials Porextherm Dämmstoffe GmbH (D) Kempten
 - Turvac d.o.o. (SVN) Šoštanj
 - va-Q-tec AG (A) Würzburg
- **Guests (suppliers with no voting right):**
 - Hanita Coatings RCA Ltd. (ISR)

Hans-Frieder Eberhardt asked if the VIPA studies can be mentioned in the GSH website (just a short summary and no results) with a link to the VIPA website. Raquel said this would be fine and promised to send all information to Corth Siegfried so he can use it on the GSH website.

Action:

Raquel to inform Corth Siegfried about the page on VIPA website where the summaries of all research studies are available.

Regarding the Annex 65 project, Christoph reported that the results will be presented at IVIS in September and the final report (4 big reports about each project task) will be published in November. Related to IVIS, Raquel mentioned that the Board decided to host IVIS 2019 and will inform the IVIS Advisory Board about it very shortly.

- **Guidance document (about the CEN standard, GSH GZ 960, etc) sent to Chinese standardisation group**

Raquel mentioned she sent the document to the Nanjing Fiberglass Institute early May. Ms. Zhang Jianhong Director of the Thermal Insulation department thanked VIPA for the document and for the invitation to join the joint standardisation meeting in Paris, during IVIS. She will let us know shortly if she will be able to make it. For the moment there are no further actions related to this.

3.2 Re-discussion about the following proposals:

- **FIW proposal: Extension of the internal pressure measurement study to fiber core VIPs, (10,000 EUR)**

Members felt that it would be more relevant to research about other parameters rather than extending the study to fiber core VIPs – see discussion on page 3, agenda item 2

- **Creek Qingdao Kerui proposal: An integrated study on the integration of VIPs in ultra-low energy consumption concrete prefabricated buildings (10,000 EUR)**

Raquel clarified that the Board welcomed Creek's proposal but asked it to be revised with the following:

- Change the scope of the proposal and focus on the application as such
- Exclude automated production line
- Include a review of the state of the art literature on the topic
- Analyse the final performance of VIPs in concrete prefabricated buildings
- Develop an appropriate testing method to evaluate the thermal performance of the final product (u-value and thermal conductivity)

In the Board's opinion, the proposal needs to focus on research, instead of business development. The association cannot sponsor any proposals that relate to new products. For this reason Creek was asked to revise the proposal and exclude all that relates to the creation of an automated production line which is of no interest to the association. Some Board members were of the impression that there is already some research on the topic. Hence it was decided that Creek should also do a review of state of the art literature on this topic. Regarding procedure, Raquel explained that Creek needs to submit a new proposal which will be reviewed by the Technical WG. The Board will then endorse or reject the recommendation of the Technical WG.

Miaotian Sun suggested creating some guidelines about proposals to smoothen the process in the future. Members suggested creating something rather brief like scope, timetable, funding, duration, work plan, copyrights, distribution, etc.

Miaotian Sun promised to circulate a new proposal before the next conference call of the Technical Working Group.

Actions:

- Raquel to circulate the latest Creek's proposal to all members.
- Raquel to prepare guidelines about proposals to be discussed at the next meeting.
- Miaotian Sun to submit a revised proposal taking into account the feedback received during the Board meeting.

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4. AoB

Christoph Sprengard asked members for new topics that the association should focus on in the future. He inquired about new fields of applications, technical bottlenecks or marketing issues.

Members could not agree on a specific topic that VIPA should look into but shared some ideas about transport and end-of-life matters. One member mentioned regulations on transport. Trucks will need better insulation to meet the requirements. Another member mentioned recycling and reuse of materials. In theory VIPs could be dismantled and recycled but the cost of silica for instance is very low so it is not attractive at all to recycle the panels. Despite that, from a regulatory point of view, design for recycling is a requirement for all Horizon 2020 funded project so perhaps this should not be totally disregarded.

4.1 Date of the next conference call

Members asked Raquel to prepare a doodle with dates for end July, beginning of August and early September.

No other business was discussed. The meeting finished at 17:00.
