

**Vacuum Insulation Panel Association
Technical Working Group Conference Call
Thursday 30 June 2016, 10:00 to 11:00 CET**

Participants:

Yoash Carmi, Hanita Coatings, Technical WG Chair
Roland Caps, va-Q-Tec
Justin Davies, Kingspan
Christoph Sprengard, FIW
Gerald Coy, FIW
Raquel Ponte Costa, VIPA International
Francesco Gattiglio, VIPA International

Apologies:

Liat Suari, Hanita Coatings
Hans-Frieder Eberhardt, Porextherm
Matthias Geisler, Evonik Industries
Pascal Rousset, Rexor
Estelle Perrin, Rexor
Phalguni Mukhopadhyaya, University of Victoria
Yi He, Qingdao Kerui New Environmental Materials
Quiang Liu, Fujian Supertech
Miki Mi, Jiangsu Sanyou Dior Energy-saving New Materials
Marko Meglič, Knauf Insulation

Agenda

1. Welcome

1.1 Governance rules

Francesco Gattiglio opened the call and welcomed all the participants. He reminded them 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 changes.

1.3 Approval minutes previous conference call 28 April 2016 and review of action items

The minutes were approved with no changes. With regards to the actions of the previous conference call, FIW reported they have not yet been able to find a student to work on the getters research exercise. Related to getters, one participant mentioned that it would be useful to create a getters association and to start standardisation and the CE marking process of getters. Members agreed that this would be useful and welcomed by the VIP industry. The following actions will remain active:

Actions:

- Technical WG members to come-up with suggestions for a topic to be researched by a student (master or PhD thesis).
- Christoph Sprengard to keep VIPA informed in case he knows of any student interested in working on a short term research project on developing a technique to measure the capacity and performance of getters.

The actions related to FIW's study on compressive strength measurement were completed.

2. FIW Interim report: study on compressive strength measurement

Gerald Coy went through the interim report and highlighted the main conclusions as well as some points that needed clarification. The tests done so far do not indicate any linear range and there are a lot of variations especially for thin panels. Gerald presented the results of the possible improvements for the measurement method. A first and easy to implement idea is to increase the pre-load on the panel before the start of the measurement. The long initial range of the stress-deformation curves can be shortened, but the deviation of the results is still large and the reproducibility of the measurement is low. The second idea, the use of gypsum as contact material between the testing machine and the surface of the VIP, is more promising. The initial range of the graphs almost disappears and the measurement results finally show the property of the material. Even variations between different producers can be measured reliably. The group agreed that coating the VIPs with gypsum is a reasonable measure to propose for the determination of the measurement method and the boundary conditions for the product standard. FIW's proposal to go on with the testing of the fiber-core VIPs with gypsum coating was accepted.

In the draft version of the product standard for VIP, an indirect measurement method for compressive strength/stress is mentioned. Therefore the core material density and its correlation to the compressive stress is needed. So far it was not part of the test program to investigate this possible correlation. From the existing data it was also not possible to make such a correlation between the density of the VIP and the compression strength of the panel. Therefore the VIPs that were already tested will be unwrapped and the core material weight will be measured. The density of the core material will be derived using the size of the evacuated panel and the weight of the core material (the compression of the core during evacuation is considered). Members agreed with this suggestion and highlighted that indeed there is a lot of confusion in the industry about what is needed: density of the finished panel vs density of the core.

Following discussion it was agreed to proceed with the following:

- Additional exemplary testing to check if the higher pre-load does work for fiber-based panels or if the assumption is right that it will be very much like the fumed silica panels.
- Invest more time and effort into additional testing of fiber core panels to prove the gypsum method works well with fiber-based VIP
- Determine the core density from size of the panels after evacuation to avoid having foil, tape or other materials influencing the result (using core weight and VIP size to determine core density).
- Try to use the lower limit of 50kPa and the upper limit of 100kPa to determine a quasi-linear range and examine the variation of values on the percentage of the compression. Try to use the inclination to determine a calculated compressive stress at 10% deformation and compare that to the measured value.

Members asked more questions about the gypsum coating used because not all companies have this in-house. Gerald clarified that the gypsum coating used takes 10 minutes to solidify and is very easy to use.

Action:

- Christoph Sprengard to share with the members the technical data sheet of the gypsum coating used in the tests.
- FIW to proceed with the following:
 - Additional exemplary testing to check if the higher pre-load does work for fiber-based panels or if the assumption is right that it will be very much like the fumed silica panels.
 - Invest more time and effort into additional testing of fiber core panels to prove the gypsum method works well with fiber-based VIP
 - Determine the core density from size of the panels after evacuation to avoid having foil, tape or other materials influencing the result (using core weight and VIP size to determine core density).
 - Try to use the lower limit of 50kPa and the upper limit of 100kPa to determine a quasi-linear range and examine the variation of values on the percentage of the compression. Try to use the inclination to determine a calculated compressive stress at 10% deformation and compare that to the measured value.

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3. Other VIPA Studies

- 3.1** Status Hanita study on the development of an advanced technique for measuring the effect of moisture content on the thermal conductivity of VIPs
- 3.2** Status 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

Due to lack of time these agenda items were not discussed. Raquel mentioned that these studies started recently so by the next conference call more information should be available.

4. AoB & date of the next conference call

Raquel mentioned that next Monday some members will get together in Germany to review the GSH quality assessment rules. This meeting is just for experts and it was decided to limit the number of participants so that progress can be made a bit faster. All that is discussed on 4 July will be distributed to the members of the Technical Working Group afterwards. Raquel added that the co-operation agreement with the GSH should be signed in autumn.

Other than that, Raquel mentioned that VIPA will organise a General Assembly and Strategic Planning Session on 11-12 October. All members are invited to join. If needed, the Technical WG can organise a face-to-face meeting there.

The conference call finished at 11:20.
