

FISSAC Living Lab #4, 2017-06-13 - Summary

The fourth Living Lab meeting on the 13th of June was conducted in the plasterboards manufacturing company, Gyproc, in Bålsta. It was a continuation of the journey through the value chain of gypsum plasterboards, that was already started in the Living Lab #3. The aim of the visit was to get more detailed overview of the production of gypsum plasterboards, including the logistics of the raw material to the plant and finished boards out from the industry.

It was a small group of people taking part in the Living Lab #4, but nevertheless the day was very interesting, educative and the participants got a good overview of the production of gypsum plasterboards.

Participants of the Living Lab meeting #4

In total 9 participants: **Thomas Karlsson**, Stena Recycling; **Tommy Haglund**, business developer at Gyproc, **Merit Kaal**, sustainability consultant at Hifab; **Pernilla Löfås**, NCC; **Lars Lundberg**, VD Gyproc; **Peter Örn**, Saint-Gobain Sweden; **Linnea Lindkvist**, sustainability consultant at Hifab; **Julia Jonasson**, project leader at RISE; **Kersti Karltorp**, project leader at RISE.

Agenda

- Introduction by Linnea Lindkvist (Hifab), see attached pdf
 - Due to train delays, the meeting started later than planned and only the main issue was presented; what opportunities are there for increased inflow of recycled raw material?
- Presentation by Tommy Haglund and Lars Lundberg (Gyproc), see attached pdf.
- Guided tour in the factory
- Lunch
- Group discussion

Highlights of the study visit

During the day, the participants had a guided tour in the Gyproc's facility, being able to follow the whole production line, beginning with the raw material input and ending with the finished plasterboards.

The primary raw material (PRM) is transported to the facility by boat and is stored as rocks (figure 1) in the outdoor storage. Then, the raw material is crushed and moved under the roof in order to keep it dry. The secondary raw material (SRM), recycled gypsum partly from Gyproc's own production and partly from construction and



demolition sites, is crushed and screened into fine powder. The recycled gypsum must be kept dry in order for the crush to work.

Separated carton from plasterboards have previously been used as soil improver, but now they are making attempts to use this material in the production of new carton.

Processed SRM is stored under roof (Figure 2).



Figure 1. Gypsum, virgin raw material



Figure 2. Intermediate storage of different fractions of crushed gypsum. On the left hand side of the picture, SRM is shown and PRM to the right.

The powdered gypsum (both, virgin and recycled, in the ratio of about 75/25) is mixed with water and additives and the prepared slurry is then sprayed onto the cardboard (figure 3). The plasterboard material then goes on a 300 m long conveyor belt, where it gradually becomes harder (drainage occurs during the retention time on the conveyor belt) (Figure 4). Thereafter, the material is passing through a dryer to obtain the right moisture content. Finally, the boards are cut into the right size and prepared for the transport.

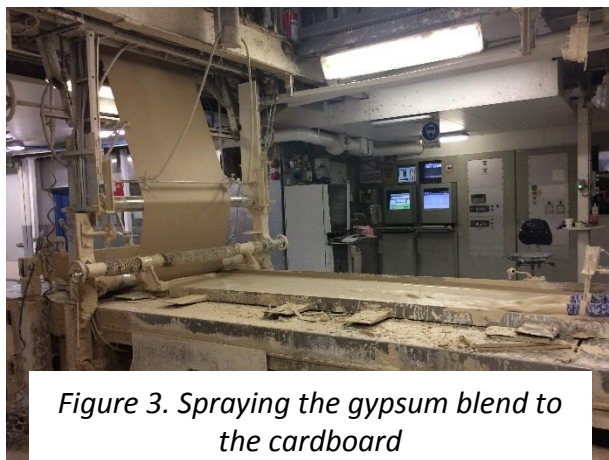


Figure 3. Spraying the gypsum blend to the cardboard



Figure 4. Gypsum plasterboards on the conveyor belt

Group discussion

After being invited for lunch at Gyproc's canteen, the group discussion session was conducted. We began to reconnect with previous meetings with the Living Lab-group, partly from the first meeting when the design questions were formulated and partly with the lessons learned during Living Lab #3 - the first stop in the material journey.

Summary of reflections and thoughts of participants – Lessons learnt:

- Logistics and roles: There are too few places to leave recycled gypsum and plasterboards, which drives costs and makes landfill a more attractive option. Perhaps the intervention of an operator specialized in logistics is needed in order to increase the recovery. Or would it be possible for an existing actor in the value chain to take on an expanded role and responsibility?
- Suboptimisation: This becomes a barrier between different actors, but also within an organization. At the Living Lab #3 it was discussed that using customized material would reduce the amounts of waste from construction sites. During Living Lab #4 we saw the material manufacturer's view, where the sales organization is pro customization, but the production organization is not as positive, as standardized products more easily provide for an efficient production.
- Tools: Legislation and standards (e.g environmental certification) must be developed in order to achieve higher rates of recycling. It should also be more expensive to leave recyclable waste to landfill instead of recycling it.
- Documentation: The documentation systems must be further developed and become less time consuming to use, compared to the current situation. Google has developed a material documentation system that, according to one of the participants, has great potential. Google is specialized in managing large amounts of data. Could this be an example of a missing feature today?
- Requirements: Could the requirements for recycled raw materials be simplified? The requirements are set both for technical reasons (wet recycled material clogs the crusher) and for competitive reasons (accepting only your own brand). How do we overcome these barriers?

Upcoming FISSAC Living Labs meeting

Planning for Living Lab #5 has already started and the date is decided to be on September 28th. During this meeting, we plan to end the material journey and conclude upon the findings and lessons learnt from the two previous meetings in our case study "The Road of Gypsum/Plaster- Through the Construction Process". Most likely, we meet in Gothenburg to further discuss barriers and opportunities to increase recycling of building materials. Hopefully, we can find answers to at least part of all the questions that have arisen so far during the journey. Keep a look out for the invitation for this interesting day in your email!

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