

GREENER CONCRETE ELEMENTS WITH NEW CEMENT TECHNOLOGY

Ambercon and Spæncom, who implemented FUTURECEM in the production of concrete elements at the beginning of 2021, talk about the preliminary experiences with the new and more sustainable cement from Aalborg Portland.

By Birgitte T. Henriksen

A promising initiative in the cement technology of the future. This is how it sounds unanimously about FUTURECEM from the two concrete element manufacturers, Spæncom and Ambercon. And with a contribution of up to 30% CO₂ reduction in the cement manufacturing process, the new FUTURECEM is an important element in the Sustainable Concrete initiative's goal of halving CO₂ emissions from concrete over the next 10 years.

EXTENSIVE TESTING

In the autumn of 2020, Ambercon collaborated with Aalborg Portland and the Danish Technological Institute on several experiments using FUTURECEM in concrete element production. The trials turned out positively and Ambercon was ready to produce on a large scale in early 2021.

- Our first test with FUTURECEM showed that the cement behaved



Concrete element walls that in the future can be cast with optimized cement. Photo Ricky John Molloy



Apichat Bonde
CEO, Ambercon

FUTURECEM most suitable for walls, because the requirement for the demolding strength is only 15 MPa, says Magnus Ström.

BROWN CONCRETE SYMBOL OF QUALITY

According to both companies, there is no difference between the new and the old concrete after the recipe has been adapted. Besides to the color, that is.

- The new concrete is light brown rather than greyish. And when we negotiate with, for example, builders, we experience that they see the color as a seal of quality. It is a very visible way to show that you build more sustainably when the concrete has turned brown, says Apichat Bonde and adds that in addition to the brown color itself helping to market the new concrete, they are on their way with a brand name so that customers can also use it in their material.

Overall, both Ambercon and Spæncom find that both builders and contractors are very interested.

- And when we can offer both the new and the conventional concrete, the interest from the customers is a good

differently than the traditional cement from Aalborg Portland, says Apichat Bonde, CEO of Ambercon.

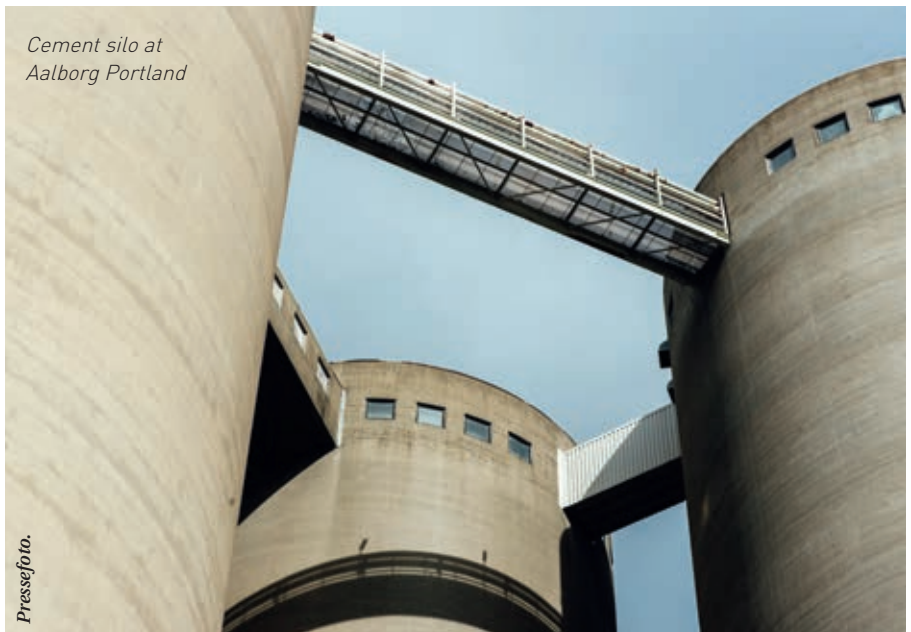
- The challenge was consistency. The setting period took longer, so we had to adjust the mixture several times to maintain a full daily production. We have found the right recipe now so that we can work with FUTURECEM in the same way as with the conventional cement type, but we are still testing so we can work towards refining the product and minimizing the cement content. The current restriction is that we have tested in passive and moderate environmental class but need to test the others so that they can be implemented. We will achieve this before the end of 2021, he emphasizes.

Spæncom is also well under way with the implementation of FUTURECEM. This is happening just like at Ambercon after extensive development work, which continues to run and has offered some of the same challenges. The company is in the process of implementing several products, but is not finished yet, says CEO Magnus Ström.

- Our experience is based solely on our own tests, as the product is still so new that we have not produced finished

elements with FUTURECEM yet. The cement is primarily developed for ready-mixed concrete and concrete products. It is not much different to work with than basis and rapid cement, but the curing time is longer, which we are working to change.

The longer curing time makes



Cement silo at
Aalborg Portland

NEWS FROM THE FACTORIES CONCRETE UNION

litmus test of how sustainable people think, says Apichat Bonde.

TOTAL PRICE IS THE SAME

The cost price of implementing the product itself is so far higher compared to the conventional cement, but at Ambercon the plan is to offer more services such as impregnation, so the product is more finished when it comes from the factory.

- In this way, the total price of construction will be the same. That is our thesis. We want to do a lot of the implementation work so that it is as finished as possible from the factory, and you can thereby logistically save many hours on the construction site, points out Apichat Bonde.

Ambercon expects that all their concrete elements will be FUTURECEM-based by the end of 2021, when this happens, the company expects to be able to save 2,500 tonnes of CO₂ per year. The new concrete elements also mean that buildings will be easier to get certified within, for example, DGNB.

Magnus Ström
CEO, Spæncom



Press photo.

OPTIMIZATION FOR SEVERAL APPLICATIONS

A new development project called CALLISTE, which is led by the Danish Technological Institute with participation from Aalborg Portland, CRH Concrete, Dansk Beton and several others in the concrete industry, is in the process of building on the FUTURECEM technology. The goal is to optimize the usability in concrete elements and paving products, so that the requirements from all areas of application within concrete are covered even better and achieve an overall greater CO₂ reduction.

According to Brian Dürr, sales director at Aalborg Portland, it has been known from the beginning that the early strengths of FUTURECEM are lower than RAPID cement, and that customers in other segments demand and need a higher early strength.

In the CALLISTE project, we are working on the development of a new cement, where the goal is to combine the green gains with a higher early strength, so we get a cement in the range that better suits the needs of i.e., concrete element production. Although there is not much experience from the actual use of FUTURECEM yet, we have knowledge from the development phase, which we take with us in the process of optimizing the properties of the CALLISTE project.

With an investment of DKK 21.6 million. from the Innovation Fund, CALLISTE is taking a major step towards the development of the next generations of the green cements of the future. Read more about CALLISTE at baeredygtigbeton.dk under research projects.