

Solidian and CALOSTAT® at Ulmer Betontage – sustainable structures as part of C³ project

February 29, 2016

The interdisciplinary C³ project (Carbon Concrete Composite) is developing a new composite material based on carbon fiber and high-performance concrete in a consortium consisting of 130 partners from research, industry and industrial associations. It is currently the largest construction research project in Germany. Evonik's Thermal Insulation growth business in the Resource Efficiency Segment, and solidian GmbH, the leading manufacturer of textile reinforcement materials, are also involved in sub-project 4 of the C³ project. In connection with this, the first demonstrator of an ultraslim, textile-reinforced concrete sandwich element has been developed. It offers high thermal and structural efficiency, and will be presented by both companies at solidian's tradeshow booth (Booth 18) at Ulmer Betontage, Europe's largest precast congress, from February 23 to 25, 2016.

Contact person specialized press

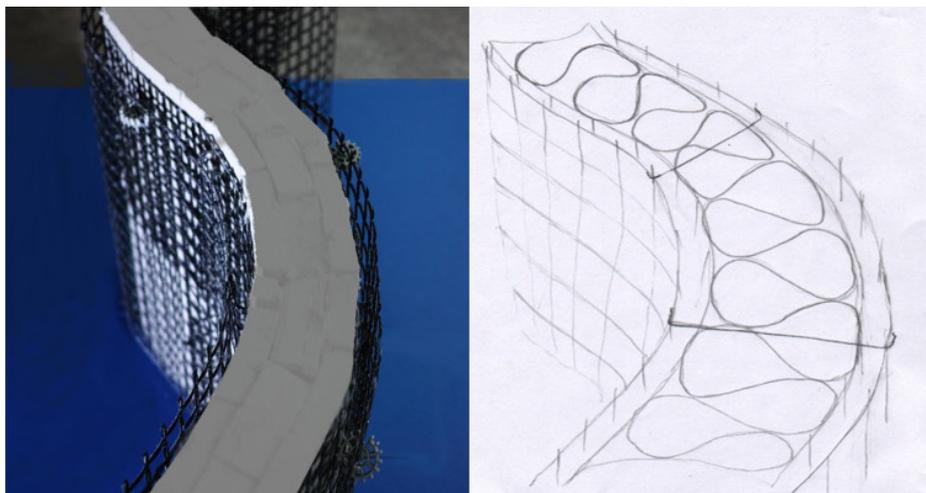
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Caption:

Figure: The prototype of the reinforcement cage prefabricated as a sandwich element with CALOSTAT® insulation and solidian GRID textile cover skin, which can be directly precast at the precast plant, achieves a U-value of < 0.29 W/(m²K) at a thickness of 130 mm. A comparable element using conventional insulation would be 180mm thick.

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In the innovative C³ sub-project 4 that focuses on composites and is concerned with multifunctional structural elements made from carbon concrete, both companies are working on the development of highly insulated carbon concrete sandwich elements and their functional activation. The project receives funding from the German Federal Ministry of Education and Research (BMBF) under the “Zwanzig20” (Twenty20) Partnership for Innovation.

The special economic efficiency of this construction method is down to textile reinforcement, since it allows the concrete cover layer to be substantially reduced compared to conventional steel reinforcement. “This makes it possible to produce sandwich panels with cover layers of only 30mm. Compared with conventional construction methods, between 70 and 80% less concrete can be used. These savings are already being realized,” reports Dr. Christian Kulas, head of the Textile Concrete department at solidian GmbH. With the slim, 100% mineral-based, non-combustible insulation material CALOSTAT[®], this makes for a construction element with high thermal efficiency that meets the most stringent requirements in terms of heat insulation. With its high density of 165 kg/m³, CALOSTAT[®] also makes a positive contribution to improved sound insulation and to heat insulation both in summer and winter. With CALOSTAT[®] insulation material and by developing insulation pellets, we are actively participating in the thermal optimization of shell structures that incorporate carbon-reinforced concrete,” says Dr. Bettina Gerharz-Kalte, Vice President of Thermal Insulation in the Resource Efficiency Segment and head of the Construction Industry Team at Evonik.

In recognition of its special services, the C³ consortium received the German Sustainability Award in November 2015 in the research category. In addition, in early December the project received the German Resource Efficiency Award in the research institution category. This prize was conferred by the German Federal Ministry for Economic Affairs and Energy and the Deutsche Rohstoffagentur (DERA) to four companies and one research

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institution for their intelligent use of materials. In addition, the C³ consortium received the GreenTec Award back in 2014, one of Europe’s major awards for green technologies, initiatives and enterprises.

“Research into and establishment of the new C³ construction material, and the development of a new construction method, offer a promising approach for ushering in a paradigm shift in the construction industry and thus in urban development. The C³ (Carbon Concrete Composite) project makes a key contribution to driving crucial innovation processes and promoting sustainable urban development,” the jury said in its rationale for the award of the German Sustainability Award in 2015, referring to the joint involvement of research institutions and private sector companies.



„Die Erforschung und Etablierung des neuen Baustoffes C³ und die Entwicklung einer neuen Bauweise bietet einen vielversprechenden Ansatz, um einen Paradigmenwechsel im Bauwesen und somit der Stadtentwicklung einzuläuten. Das Projekt C³ – Carbon Concrete

Composite – leistet einen wichtigen Beitrag, um einen einschneidenden Innovationsschub hervorzurufen und zu einer nachhaltigen Stadtentwicklung beizutragen“, heißt es in Begründung der Jury zur Verleihung des Deutschen Nachhaltigkeitspreises 2015 über die das gemeinsame Engagement von Forschungseinrichtungen und Wirtschaftsunternehmen.

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About Resource Efficiency

The Resource Efficiency segment is led by Evonik Resource Efficiency GmbH and supplies high performance materials for environmentally

friendly as well as energy-efficient systems to the automotive, paints & coatings, adhesives, construction, and many other industries. This segment employed about 7,800 employees, and generated sales of around €4 billion in 2014.

About Evonik

Evonik, the creative industrial group from Germany, is one of the world leaders in specialty chemicals, operating in the Nutrition & Care, Resource Efficiency and Performance Materials segments. The company benefits from its innovative prowess and integrated technology platforms. In 2014 more than 33,000 employees generated sales of around €12.9 billion and an operating profit (adjusted EBITDA) of about €1.9 billion.

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