

milestone

Construction industry: Carbon concrete composite project rewarded



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The President of Germany awarded the German Future Prize to carbon concrete composite researchers on November 30, 2016.

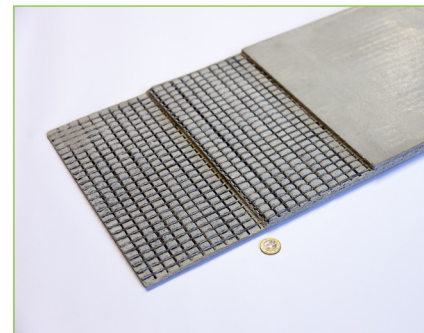
Toho Tenax warmly congratulated the carbon concrete composite researchers Prof. Manfred Curbach, Prof. Chokri Cherif and Prof. Peter Offermann from TU Dresden for their research into carbon concrete composites on the awarding of the President of Germany's German Future Prize. The Federal President's Award for Technology and Innovation is one of the most important scientific prizes in Germany and was handed over by Germany's president Joachim Gauck.

Zero maintenance

Carbon concrete composites will revolutionise the construction industry and enable resource-friendly, slender construction in the future. The first projects have

already been conducted successfully with Tenax® carbon fibres. Toho Tenax is one of the world's market leaders for carbon fibres and the leading provider for construction in Germany. The company looks forward to a future in which safe, slender and intelligent construction go hand in hand. It is proud to be able to contribute to this revolutionary technology with its high-performance carbon fibre.

Carbon concrete composites are an economical and resource-friendly alternative to standard reinforced concrete: as carbon does not rust, carbon concrete composite structures have a much longer life expectancy. The maintenance required during its lifetime is practically zero. What's more, walls made from carbon concrete composites can be much thinner, i.e. a slimmer construction is possible. Up to 80% of the concrete volume could be saved this way in the future.



Several layers of carbon concrete composite (Photo: Ulrich van Stipriaan)

The future of construction

In the C³ (Carbon Concrete Composite) project under the leadership of TU Dresden, over 150 companies and research institutions are already working together to take carbon concrete composites into the future.

Carbon concrete is a new composite material made of carbon and high-performance concrete. Research and development in this field will trigger an immense thrust of innovation in the construction industry, make construction viable and lead a paradigm shift in the building industry.

Concrete forms the world in which we live. Built almost 2000 years ago, the Pantheon in Rome was already built with concrete-like materials. At the end of the 19th century, concrete and iron (later



(from left to right) Prof. Chokri Cherif, Prof. Manfred Curbach, President of Germany Joachim Gauck, Prof. Peter Offermann
(Source: Bildschön/Deutscher Zukunftspreis)

steel) were used for load-bearing structures in construction. The steel installed in the concrete ensures the stability of the material. However, reinforced concrete is resource-intensive, environmentally damaging and, above all, corrosive. We are confronted daily with the consequences of corrosion damage in the form of ailing bridges or roads.

40% of the total energy consumption in the world is needed for the use of build-

ings. A further 10% is required for their construction and dismantling. Apart from this, the construction industry consumes about 50% of all resources worldwide. And yet, buildings have a limited lifespan of 40 to 80 years.

In addition to many other buildings, for example, more and more bridges are becoming a safety risk. Many of the approximately 120,000 bridges in Germany are just 40

to 50 years old. The economic damage caused by bypasses and traffic jams due to bridge crossing restrictions is currently estimated at 2 billion euros per year in Germany. Such short lives and associated costs are unacceptable and cannot be tolerated in the long term.

It is imperative in the future to replace these steel reinforcements in many areas with a reinforcement that does not have such a tendency to corrosion.

A fundamental innovation boom in construction must succeed. A milestone on this path is the exploration of carbon concrete. □

More information:
www.tohotenax.com
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Demonstrator, comparison of a steel rod, a carbon composite rod and textile-reinforced concrete (© filmaton)