



Evolution
 Since the initial usage of simple mixtures made of hydrated lime, water, sand and brick dust, concrete as such started its trailblazing triumph in the 19th century, when for the first time iron reinforcement was added to construction. Suddenly a vast new variety of building tasks and architectures became feasible. Being continuously enhanced by the building technology, it became today's exceedingly complex and universally adaptive high-tech product. Due to its transformation ability, concrete promises not only to remain 'the building material of the 20th century', but also to fulfil the requirements of future architecture.

Innovation
 Recently another paradigm shift has been announced within the industry. By using corrosion resistant, laminated fabrics made of carbon or alkali resistant glass fibres instead of conventional steel reinforcement, building components can be made significantly thinner. Nonetheless they have equal or even higher performance characteristics. Besides ecological advantages, referring to resource-saving material efficiency and the resulting increase of profitability, this innovative composite material paves the way for a great range of new applications and design possibilities.

Conception
 The aim of this project is to seize the opportunity of pioneering in the present developments and lifting concrete to a whole new level. We would like to do so by creating a sun blind system for a building facade. The building's south facade faces the head of a large-scale square, due to which a further aim was to generate a sculptural expression, especially if it is viewed from a distance.

The result is a modular system completely reduced to one material, which creates a lively play between light and shadow, spatial depth and a closed surface. Due to the possibility of controlling the sails, referring to the individual needs of the user, the facade is constantly transforming. Thereby it expressively projects inside activities onto the outside world, either allowing or refusing insights. In contrast to the common image of massive and heavy concrete, this experimental piece of architecture shows a particularly light and elegant material aesthetics of raw concrete through the interaction of form and function.

Construction
 For demonstration purposes a 1:1 scale prototype was manufactured in own contribution and mounted to the facade of the future faculty building. The fibre appearance of the identical, precast sails derives from the use of carbon reinforcement in combination with a carbon fibre concrete composite. The sails amount a material thickness of only 2,5cm at a total height of 3,25m. The diameter of the floor plate and the ceiling plate only amounts 30cm at an overall dimension of 2,00m x 2,00m.

One requirement of the task was that no additional static loads, except for wind pressure, should be derived over the existing construction. So the sun blinds were designed to be an independent modular system on the principle of a scaffold. Here the steel pipes serve to derive the static loads via the foundations into the ground and, at the same time, to suspend the sails. The bracing and the attachment to the existing facade is being performed by a steel frame within the floor respectively within the ceiling. To highlight the pure aesthetics of the concrete nearby at the primary construction is concealed by it.



SUN SAILS
 textile reinforced concrete

