THE NEW PARTNER FOR CONCRETE
solidian was launched in the market as a subsidiary company of the Albstadt-based specialists for textile technology, Groz-Beckert, in the autumn of 2013. This was preceded by years of intensive research and development, as well as the discovery of the market-changing potential offered by the use of non-metallic reinforcements. In close collaboration with research institutes and universities, we have broken new ground many times in achieving the marketability of our technologies – which we have implemented at an early stage at the practical level.

Our expertise in the development and manufacturing of carbon and glass fiber reinforcements is second to none in the market. Together with our team, we ensure that our range of products and services is developed on a close-to-market and sustainable basis. We have realized numerous projects with our continuously growing customer base, particularly in the area of prefabricated concrete elements.

Since 2014, we have expanded our manufacturing with a location in Karlovac, Croatia, and supplemented it with the product segment of flexible reinforcements with SRB impregnation. solidian therefore covers the full range of carbon and glass fiber reinforcements for structural engineering, civil engineering, and renovation projects, and draws on the necessary production capacity for a solid development in our continuously expanding market. In this way, we are consistently tracking the entire process of constructions made using textile-reinforced concrete, and we are actively shaping the future in this highly dynamic environment.

Today, 5 years later, we see ourselves as being a new partner for concrete that offers all of the attributes which account for a successful partnership – and that means a partnership that won’t rust away. solidian would like to thank all of its business and development partners, customers and employees who have supported us along our eventful journey. We are looking forward to more successful years in which we will discover, enable and support plenty of new potential during the course of construction projects with textile-reinforced concrete.
HIGH PERFORMANCE CAST IN CONCRETE

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solidian is the leading manufacturer of non-metallic reinforcements made from carbon and glass fiber for innovative concrete constructions. In this respect, solidian combines technical services and advice with product solutions for the concrete industry. The reinforcements are used in constructions with textile-reinforced concrete in architecture, engineering and furniture, and convince due to their corrosion resistance, lightweight and sustainability. From the development and manufacturing of the reinforcements, to the application-based consulting, to the component calculations, solidian offers design engineers, prefabricated parts facilities and construction firms everything from one single source. From its locations in Albstadt, Germany, and Karlovac, Croatia, solidian oversees and supplies its products to the construction sector worldwide.
The "Klinik Gut" in Fläsch, Switzerland, is a three-story building which is situated in a rural location in the Swiss Alps. The task of the architects was to ensure that the new building blended in well with its rural setting. It was therefore important for the façade to have the weathered wood character which is typical of Alpine buildings. With a simultaneous requirement for a high durability, long lifespan of the façade and a resource-saving use of materials, the decision was taken to use carbon-reinforced concrete as a construction material: SLIM, LIGHT, ELEGANT and UNIQUE in terms of the structure of its SURFACE and COLOR.

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KNOWING IS NOT ENOUGH, WE MUST APPLY.
WILLING IS NOT ENOUGH, WE MUST DO.

Johann Wolfgang von Goethe
The "Neuer Gehren" old people's home in Erlenbach, Switzerland, is a new building that offers approximately 5,500 m² of useful space for independent and assisted living. It consists of a contemporary, sustainable and energy-optimized building for both residents and visitors. The architectural highlight is the balustrade elements of the balconies, which were made from elegant exposed concrete at the prefabricated parts facility Sulser AG, and which characterize the entire building. Due to their elegance and the minimal dimensions of the concrete grating, solidian GRID carbon reinforcement was used. Due to the maximum dimensions of approx. 2.3 m x 3.4 m, the high-performance reinforcement also ensures the load-bearing capacity of the concrete elements.

ELEGANT AND HIGH QUALITY

NEUER GEHREN OLD PEOPLE’S HOME IN ERLENBACH – CH

Building contractor: Municipality of Erlenbach, ZH
Architects: Graber Pulver Architects AG, CH
Completion: 2017
Components from solidian
Balustrade elements from architectural concrete
Dimensions of elements: 2.30 m x 3.40 m
Quantity: approx. 170
Prefabricated parts facility: Sulser AG, CH
Reinforcement: solidian GRID Q85/85-CCE-21
One of the key topics in modern urban development is the increasingly built-up nature of inner city areas. With this situation in mind, the construction of a new 6-story inner city perimeter block-style building at Hohlstrasse 100 in Zürich was the ideal solution for the pilot application of new technologies, systems and materials. The balconies are protected against the light and noise by curved, large format concrete elements. To minimize the levels of weight and use of resources, a curved carbon reinforcement was used which in turn reduced durability and light weight nature of the concrete elements.

To maximize the levels of weight and use of resources, the concrete elements feature uniquely curved, natural stone visuals.
The public hospital in Solothurn, Switzerland, is a new building which is due for completion in the year 2020. Balcony-like horizontal and vertical elements which are fitted before every window have a major impact on the configuration of the entire building. The relationship between the space and the external light conditions was a key point during the design of the façade. The architects attributed considerable importance to providing the patient’s accommodation with as much natural light as possible, while keeping out bright sunlight. This is the task of the curtain elements of the façade, which function simultaneously as a filter between the private sphere and the public area. The elements are only accessible to the cleaning staff.

Building contractor
Solothurn Canton, Construction Department
Architects
Silvia Gmür Reto Gmür Architects
Completion
2020
Special attributes
Walk-accessible sight and sunlight protection
Components from solidian
Projecting curtain façade elements
Dimensions of elements
2.30 m x 3.40 m
Quantity
approx. 700
Prefabricated parts facility
Sulser AG, CH
Reinforcement
solidian GRID Q142/142-CCE-38, Q95/95-CCE-38

The horizontal and vertical elements, whose purpose isn’t to look elegant but to have a solid visual impact, would not have been possible with reinforced concrete. It would only have been possible to anchor the weight of the elements to the supporting walls at great cost. The architects therefore decided on a hollow cross-section with a shell that was only 30 mm thick. This was possible with the solidian GRID carbon reinforcement, which fulfilled all of the designers’ requirements. At the prefabricated parts facility of Sulser AG, more than 700 elements were manufactured and initially fitted as a model. solidian accompanied the project as a supplier of carbon reinforcements and technical consultant for the experimental research to verify the load-bearing capacity of the elements.
A small-format, back-ventilated curtain façade was realized for the health and education center (Gesundheits- und Bildungszentrum / GEBIZ) of Groz-Beckert KG in Albstadt, which, among others, is home to a kindergarten and an elementary school. A solidian AR glass fiber reinforcement was used. For the cladding of the entire façade, approximately 315 m² of fabric was cut into 1,660 individual sections of mesh. The result is an exceptionally thin-walled design of a façade in high-quality architectural concrete with a thickness of just 20 mm, which simultaneously has a very high level of resistance to pressure and bending as well as tensile strength. The low weight of the façade allowed for a lighter weight substructure to be chosen.

CHILD’S PLAY – TEXTILE-REINFORCED CONCRETE FOR KINDERGARTEN AND ELEMENTARY SCHOOL

GEBIZ, ALBSTADT

A small-format, back-ventilated curtain façade was realized for the health and education center (Gesundheits- und Bildungszentrum / GEBIZ) of Groz-Beckert KG in Albstadt, which, among others, is home to a kindergarten and an elementary school. A solidian AR glass fiber reinforcement was used. For the cladding of the entire façade, approximately 315 m² of fabric was cut into 1,660 individual sections of mesh. The result is an exceptionally thin-walled design of a façade in high-quality architectural concrete with a thickness of just 20 mm, which simultaneously has a very high level of resistance to pressure and bending as well as tensile strength. The low weight of the façade allowed for a lighter weight substructure to be chosen.
In 2015, at the "Eastsite" business district in Mannheim, Germany, an entire office building was constructed using the innovative solidian sandwich system for the first time. In contrast to the neighboring buildings, the outer shell of the "Eastsite VIII" is just 30 mm thick—making it around 70 mm thinner than conventional outer shells that are made from reinforced concrete. Due to the minimum shell thickness, the use of materials for the façade is substantially reduced: in comparison with conventional systems, some 170 tons less concrete was necessary, with a weight that was 70 % lower. Not only did the building contractor benefit from the resource-conserving construction, they also achieved an increase in useful space of approx. 30 m². Since May 2017, the solidian sandwich system has been subject to general building inspectorate approval, i.e. no more approvals are necessary in individual cases. The approval can be used by every prefabricated parts facility.
The construction of a new company building for the long-established company and precast concrete component plant Alfred Trepka GmbH of Ober-Grafendorf in Austria was necessary for the purpose of moving the old archives out and creating space for the presentation of differing construction materials and construction methods as well as wall mountings.
The primary goal was the construction of a building that was completely free from insulation materials based on crude oil. In addition to this was the aim of gaining experience with textile-reinforced concrete during the manufacturing of precast concrete components and their handling in the prefabricated parts facility.

Two walls on the side of the building were made using 50 cm thick monolithic lightweight concrete. For the two exterior walls, Trepka decided to use a sandwich façade system from solidian. The 20 cm thick bearing layer is conventionally reinforced with steel. The thermal insulation is made from 12 cm thick mineral wool and/or mineral foam. The 3 cm thick facing shell with the solidian GRID glass fibre reinforcement consists of high-strength concrete, the surface of which is structured, and which gives the 100 m² building its characteristically purist appearance.

The façade elements have differing dimensions of 4.74 m x 3.75 m and 8.40 m x 1.20 m respectively, which means they have an element area of approx. 18 m² with a thickness of just 3 cm! Georg Wieder of Trepka describes the problem-free application of the reinforcements: “The solidian products have allowed us to find new areas of use for the material of concrete, combined with the high-performance capability of the concrete products.” The crack-free surface achieves its effect due to the particular character of the concrete. The building was completed in the autumn of 2017 and constitutes a very successful application of the innovative sandwich façade system, and is a source of inspiration for bringing concrete façades to the fore in the world of building construction.
At 320 m, the pillars of the giant sized bridge over the river Bosporus in Istanbul are the highest in the world. The Turkish Yavuz Sultan Selim Bridge over the Bosporus, which connects Asia with Europe, was opened in Istanbul in August 2016. For the construction of the pylons, curtain façades with reinforcements from the Albstadt-based specialists for textile-reinforced concrete, solidian were used, which were realised for the Turkish company Fibrobeton. The gigantic Turkish project, which bristles with superlatives from both an architectural and structural point of view, was as it made for the use of textile-reinforced concrete. Because without the innovative material, the façade-configuration of the pylons would not have been possible from a technical perspective.

In addition to the sophisticated design of the combined suspension and cable-stayed bridge due to its height and weight, above all else, it was the extremely high wind load of up to 300 kg/m² that made the structure into a challenge in terms of both the statics and the assembly. For the slabs of the façade that were used, and which protect the structure, on the basis of the substructure and to facilitate the handling at considerable height, a maximum slab weight of 110 kg/m² was necessary, which cannot be achieved with conventional reinforced concrete. The solidian engineers started by calculating the statics on the basis of the guidelines, and developed the optimum geometry of the slabs, which were given a maximum dimension of 3.0 x 4.5 m, with a thickness of just 30 mm. It ultimately proved possible to achieve the required parameters with an optimum hybrid reinforcement from sections of glass and carbon mesh.
Solidian also played a supportive and consultative on-site role during the production of the slabs with the use of solidian GRID at the Turkish prefabricated parts facility Fibrobeton, allowing the assembly work to be completed on schedule. The non-corrosion product solution that was realized fulfills the required sustainability of 125 years and provides emphatic confirmation of the potential of textile-reinforced concrete as the material of the future.
IF YOU DO IT RIGHT IT WILL LAST FOREVER

Massimo Vignelli
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Image of public hospital: Sulser

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