

Case study

Eye-catching precast concrete plant

Architecturally appealing façade construction with a natural stone look thanks to Schöck Isolink

Distinctive design married to energy-efficient construction: The client, Marcus Riedelsheimer GmbH, had demanding expectations for their company's new precast concrete plant. The company found a solution for creating a visually appealing façade in Isolink for concrete façades from Schöck Bauteile GmbH. The façade anchor is made of the Combar fiberglass composite material, which was specially developed and produced by Schöck. Thanks to its low thermal conductivity, thermal bridges are able to be kept to a minimum. In addition, the material is very tensile and therefore has a high load capacity.

The main business areas of Marcus Riedelsheimer GmbH are classic shell construction and serving private builders of single and multi-family homes as well as industrial and commercial construction, which represent a key sector for the company. The company has built up its expertise in structural precast elements as an additional service area, and it now specializes in high-quality precast concrete elements for industrial and residential construction, including balconies, parapets, stairs, wall and façade elements, individual street furniture made of concrete, and components for garden architecture. The specially prefabricated parts, which had been temporarily manufactured under a tent structure, are now being produced in the new factory building on the plant premises.

High-quality concrete façade with a natural stone look

The new building with an area of around 905 square meters consists of a production hall (36 x 18 meters) and a separate building for the in-house joinery and formwork construction. This includes a wing for offices as well as bathrooms and meeting rooms. The client had clearly defined requirements for the new building: The building needed to take its architectural cues from the existing company headquarters, which is a flat, elongated structure supported by stone columns, as well as adopt its architectural language. Textured formliners were used for the exposed concrete surfaces. However, to provide a visual contrast with the existing building, the concrete was not tinted. Marcus Riedelsheimer, Managing Director of the company that bears his family name, explained: “Our quality standards for the architecture of the new building are very high. The new building is a showpiece project that we want to use to show and communicate what we are capable of producing ourselves.” The construction was therefore performed entirely in-house, from the design, planning, and manufacture of the concrete elements and bricks for the separate building to the execution. The building product experts at Schöck expressed immediate enthusiasm about the project: Alexander Hettler, Isolink Key Account Manager at Schöck, noted: “The natural stone look alone shows how relatively easy it is to design a factory building with façade elements and textured formliners that is both visually appealing and unique.”

Reliable thermal insulation

The client decided on concrete sandwich elements for the construction of the building envelope. The façade panels, which are approximately 7 x 2.80 meters in dimension, are built up in three layers: a supporting shell, insulation layer, and façade or outer shell. The load-bearing layer consists of 15 centimeters of concrete and 12 centimeters of expanded polystyrene (EPS) insulation. The façade shell panel, on which the formliner was structured, is 8 centimeters thick.

In addition to supporting varying surface design options, this type of construction possessed the necessary physical properties that were the decisive factor in favor of choosing it: Architect Daniel Krafczyk explained:

“Ensuring proper thermal insulation and avoiding the formation of thermal bridges were major considerations, because the hall is heated. In addition, the massive load-bearing shell panel offers good heat storage potential. This makes it possible to reheat the space quickly, especially after the large gates are opened.”

The client found a solution in Schöck Isolink, since it made it possible to connect the façade shell panel to the inner load-bearing shell panel: Isolink for concrete façades with a diameter of 12 millimeters is suitable for sandwich and element walls with supported or freely suspended outer shell panels and can be used not only in industrial and warehouse buildings, but also in office or residential buildings. In contrast to conventional connection systems made of stainless steel, it is made of Combar corrosion-free glass fiber composite material, which is characterized by an extremely low thermal conductivity of 0.7 W/mK among other properties. For comparison: The insulation properties of Isolink are around 15 times better than that of stainless steel ($\lambda_{eq} = 15 \text{ W/mK}$). As a "certified passive house component," Isolink allows for thermal insulation in core-insulated concrete façades and thus construction that can be mathematically shown to be free of thermal bridges.

Simple installation

Schöck Isolink type C-SH and Isolink type C-SD with depth limiter were used to manufacture the sandwich wall. The number, length, and arrangement of the anchors were calculated in advance by Schöck. One to two anchors per square meter were installed in the new production hall in Großaitingen, and they were delivered ready-made. The thermal insulation panels, which are pre-drilled based on the installation plan drawn up by Schöck, were first installed on the formliner and the freshly concreted outer shell panel. Then the reinforcement was installed on top of that. The anchors were then installed at a depth of at least 6 cm. The non-displaceable depth limiter made of plastic secured the bond depth so that the anchor did not touch or pierce the formliner. Schöck Isolink type C-SD for freely suspended outer shell panels is set in the insulation at a 45-degree angle. The load-bearing shell panel was concreted after all anchors had been set. Patrick Kreisel, Production Manager at Marcus

Riedelsheimer GmbH, reported: "This was the first time that we used Schöck Isolink, and Schöck's experts advised and supported us from the planning to the installation of the first façade panels. The feedback from our employees was very positive: The installation process went much easier and faster than would have been the case with alternative façade anchors."

The precast plant is the company's new showpiece

Finished parts have been produced inside the plant since the beginning of 2021. On the outside, the building itself acts as the company's new visually distinctive showpiece project. The sophisticated façade was able to be completed using Schöck Isolink. Thanks to its exceptional material properties, the façade anchor also makes an important contribution to ensuring the building's energy efficiency.

Construction site

Client: Marcus Riedelsheimer

Architect: Daniel Krafczyk

Production manager: Patrick Kreisel

Construction period: 2019 – 2021

Product: Schöck Isolink type C-SH, Schöck Isolink type C-SD

Image captions

[Schoeck Factory Building Großaitingen 1]



An eye-catching precast concrete plant: The new factory building of Marcus Riedelsheimer GmbH
Photo: Schöck Bauteile GmbH

[Schoeck Factory Building Großaitingen 2]



The high-quality concrete facade featuring the natural stone look of the new precast plant was made possible thanks to the use of Schöck Isolink.
Photo: Schöck Bauteile GmbH

[Schoeck Factory Building Großaitingen 3]



Façade elements with a load-bearing shell panel made of concrete (15 cm), insulation made of expanded polystyrene (12 cm), and an outer shell panel (8 cm).

Photo: Schöck Bauteile GmbH

[Schoeck Factory Building Großaitingen 4]



Installing the reinforcement elements on the outer shell panel.

Photo: Schöck Bauteile GmbH

[Schoeck Factory Building Großaitingen 5]



*Concreting the outer shell panel.
Photo: Schöck Bauteile GmbH*

[Schoeck Factory Building Großaitingen 6]



*The insulation layer made of expanded polystyrene (ESP) comes after the
outer shell panel with the concrete.
Photo: Schöck Bauteile GmbH*

[Schoeck Factory Building Großaitingen 7]



*The Schöck Isolink Type C-SH for the attached outer shell panel is set into the insulation at a depth of at least 6 cm.
Photo: Schöck Bauteile GmbH*

[Schoeck Factory Building Großaitingen 8]



*The Schöck Isolink Type C-SD for freely suspended outer shell panels is set into the insulation at a 45-degree angle.
Photo: Schöck Bauteile GmbH*

[Schoeck Factory Building Großaitingen 9]



The plastic depth limiter is installed on the Schöck Isolink to secure the insertion depth.

Photo: Schöck Bauteile GmbH

[Schoeck Factory Building Großaitingen 10]



The load-bearing shell panel is concreted as the last layer.

Photo: Schöck Bauteile GmbH

About Schöck:

Schöck Bauteile GmbH is a subsidiary of the multinational Schöck Group with 14 international sales offices and approximately 1,100 employees. The company's success story started in 1962 in Baden-Baden at the edge of the Black Forest. The company's founder Eberhard Schöck applied his knowledge and construction site experience to develop products that streamlined construction and solved complex problems in building engineering. This mission has formed the foundation of the company's philosophy to this day. It has made Schöck into one of the leading providers of reliable and innovative solutions to reduce thermal bridges and impact sounds and to create thermally insulating and secure facade fasteners and reinforcement technology. Schöck products make smart construction methods possible and ensure consistent construction quality. Addressing building engineering and energy efficiency needs are the company's top priorities. To meet the construction needs of tomorrow, Schöck is driving the adoption of digital technologies in all areas, from workflows and planning to the construction site.