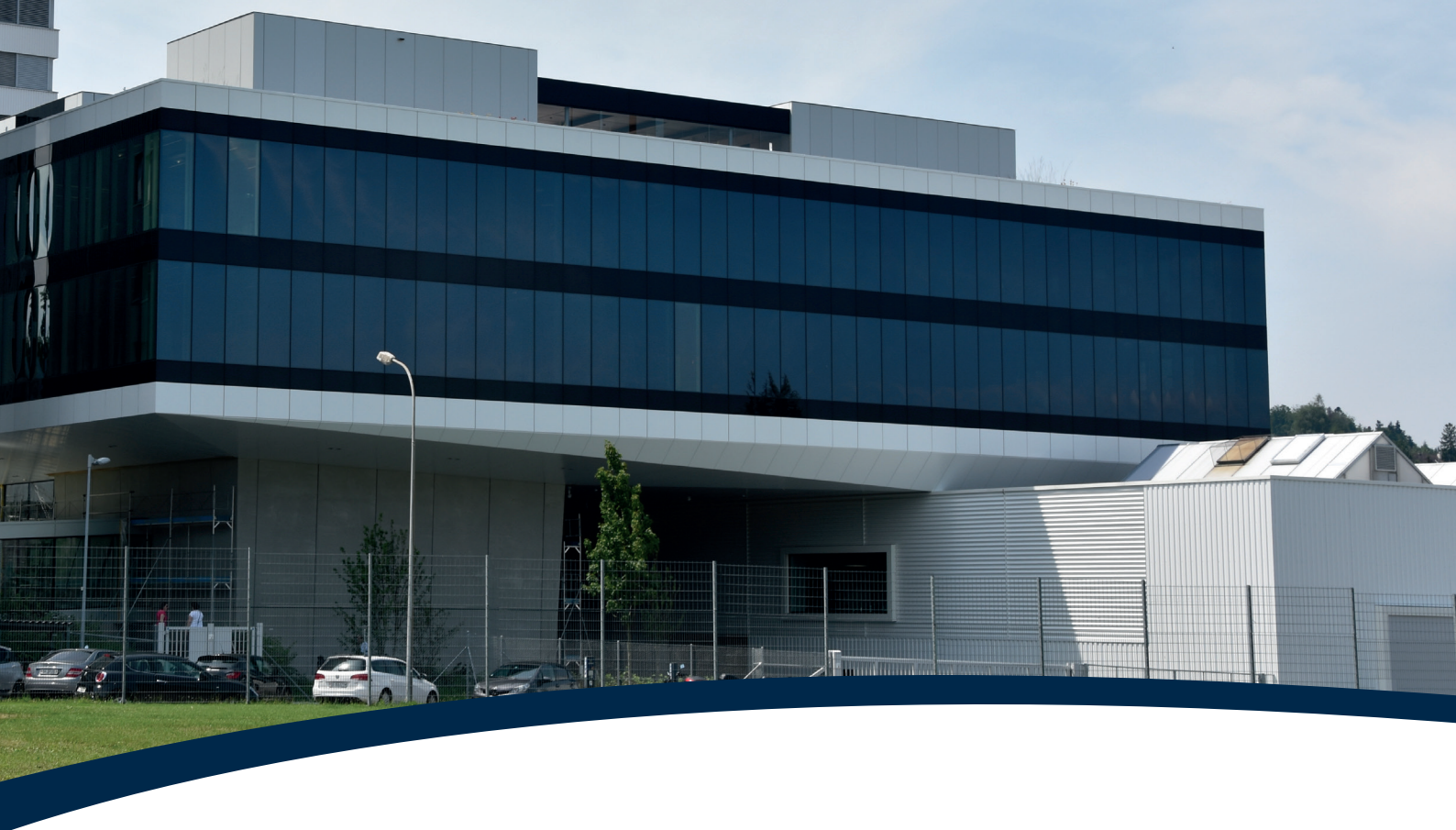




A Tata Steel Enterprise



Case Study

"CUBIC" Innovation Campus in Uzwil, Switzerland

Product:

3'000 m² SWISS PANEL SP 111/930 A
1'100 m² SUPERHOLORIB SHR 51/600

Building owner:

Bühler-Immo Betriebs AG, Uzwil, Switzerland

Architect / Overall management:

Carlos Martinez Architektur AG, Berneck, Switzerland

Interior architecture:

UZE AG, UzeArchitecture, Uzwil, Switzerland

Construction management:

Caretta+Weidmann Baumanagement AG,
Zurich, Switzerland

Realisation:

2017 – 2019

Energy planning:

Lemon Consult AG, Zurich, Switzerland

Civil engineers:

Gruner Wepf AG, Teufen, Switzerland

HVAC planning:

ahochn AG, Dübendorf, Switzerland

Suppliers:

XtegraSol GmbH, Gais, Switzerland

Photos:

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Innovative – from floor to ceiling

Bühler AG equips new Innovation Campus with individual floor system from Montana specially developed by the planning team.



“Innovation for a better world” is the motto of Bühler AG (Uzwil). The renowned company has been providing technology solutions for the food industry and mobility for over 150 years. Sustainability is thereby at the centre of every development by the traditional company. In order to cope with the current trend towards digitisation and inter-company cooperation, and to exploit the opportunities that this presents for research into seminal technologies, Bühler AG is now building an Innovation Campus at its headquarters in Uzwil, where the company will invite its partners to take part in close cooperations in the future. At the heart of the project is the so-called “Cubic” – a cubic glass construction in the centre of the campus. Entirely in keeping with the future purpose of the building, the latest building material technologies have already been incorporated into its realisation. In cooperation between the planning team (overall management: Carlos Martinez Architekten AG) and Montana Building Systems Ltd. (Villmergen) an individual floor system was created which will in future control the climate in the Cubic in addition to serving its actual purpose as a support structure.

Bühler AG is investing 50 million Swiss francs in the construction of its new innovation centre at its headquarters in Uzwil. The goal is to accelerate the opportunities for digitisation in development and customer benefits. However, the company also wants the investment to be understood as a commitment to Switzerland as a location. The aim is to strengthen innovative capability and technological know-how in the country and region. A project situated between the traditional and modern – and one that perfectly suits a company that has been producing since 1860 in Uzwil, where

it has constantly developed and introduced new technologies to the world from its headquarters. Customers, start-ups, scientists, trainees and suppliers will come together in the future in this place. The aim is to combine knowledge and experience from each area in order to fuel common progress.

Creating space for development

Chefs say, “You eat with your eyes first”. A similar thing could well be said of research: a great spirit needs space to unfold.

The modern “Cubic” in Uzwil is intended to offer this (free) space in future. As the centrepiece of the Bühler Innovation Campus, the modern glass cube – with an area of 50 by 50 metres – sits atop the company’s modernised test halls. The second supporting element is a newly built access core, which creates a connection to surrounding buildings such as the Customer Centre via bridges.

A high priority in the planning of the Cubic was that the building should be as flexible in use as possible. The supporting elements are therefore concentrated on just three concrete cores. These also contain the necessary systems such as stairs, lifts and building services. Hence, three patios and three two-storey halls were built that form the centre of the building. However, such large spaces with only three supporting cores and an exterior wall made completely of glass can only be realised with a high-performance, supporting intermediate floor. The problem: the right product for the ambitious plans had not existed on the market up to that point. The Bühler Innovation Campus therefore demanded its first development even before its completion.

Research for the Innovation Campus

"We were immediately ready to invest our time and know-how together with the planning team into the development of a perfectly tailored new floor system for this unusual project", explains David Helfenberger,

the responsible project manager at Montana Building Systems Ltd. His company has many years of experience in the manufacture and installation of particularly cost-effective composite steel floors. Montana was thus precisely the right partner for the implementation. However, the intermediate floor not only had to make possible the necessary load-bearing capacity, excellent room acoustics and the demanded fire protection but also the thermal regulation of the rooms had to be taken into considerations via this structural element. For that reason, XtegraSol (Gais), a specialist in thermoactive components as well as heating and cooling systems, was brought onboard at an early stage. In inter-company cooperation, an individual floor system was developed that was perfectly tailored to the given requirements. Complex computational simulations and laboratory tests ultimately ensured the efficiency and behaviour of the system. The official testing and manufacture of the new system only took place after that. "It was particularly difficult here to produce the support plates of the floor in a material

thickness of 1,50 mm within a very tight tolerance", Helfenberger explains. "For reasons of time the complete assembly of the floor then had to be done on site by means of prefabrication."

The geographical proximity of the Montana project team to the building site in Uzwil was a further big advantage. "This enabled us to help straight away with problems on site and to offer solutions", says Helfenberger. The entire preassembly had to be done – independent of the weather – in a specially constructed hall at the building site. First of all, the required number of trapezoidal profiles for the respective floor fields were connected together in a specified frame construction. Particular attention had to be paid here to the tight tolerances for the overall width. This created an area of up to 30 square metres to which flat aluminium sheets were subsequently attached. These formed the basis for the defined heating and cooling pipes.



The on-site prefabrication took place over a period of several weeks. After that, the bulky modules were transported with a special jig to a location close to the crane and from there lifted into the steel structure of the Cubic. Following the fastening, sealing and connection of the individual floor fields to form a complete floor system, the last step for the integration of the individually developed and manufactured intermediate floors took place with the concreting over of the modules.

Innovative home for innovative plans

Following the planned completion of the Bühler Innovation Campus, the intermediate floor will be responsible for the heating or cooling respectively of the two storeys. The spans achieved in the extensive steel frame

structure also allow open room landscapes, which are arranged in a ring on the two floors. Flexibly usable workplaces and lounge-like furniture are intended to further support the casual atmosphere. The unclad steel construction creates an industrial ambience on a total area of around 7,200 square metres. The trapezoidal sheets implemented as an exposed ceiling contribute to this. With the acoustic perforation they also fulfil a room acoustics function, which is intended to ensure a pleasant working atmosphere. Meanwhile, the smart building automation controls the right use of the built-in heating and cooling system in the background. Several levels thus offer space for the highly concentrated work of the project team consisting of employees and start-ups as well as students and teachers, who come together to do what was shown

so impressively by the companies involved prior to the construction: a cross-industry and cross-sector cooperation whose goal is the further development of innovative ideas and sustainable solutions.



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