

Objektbericht *Project Report*

Max Felchlin Customer Centre, Switzerland

Alpine momentum with Japanese influences

The roof on the new company building, with its expressive form, impressive carpenter's construction and sober, clear titanium-zinc cladding, clearly demonstrates that it is part of modern architecture. In its execution, however, it is also a commitment to the values of regional and artisanal tradition.

The new headquarters of the chocolate manufacturer Max Felchlin, with its fascinating curved roof construction, is a landmark that cannot be overlooked in the extensive valley basin around the capital of the canton of Schwyz. The three peaks rising above the impressive roof area of around 22 x 100 m inspire a wide variety of associations, both close and distant: The obvious one is the consonance with the peaks of the surrounding mountains, but memories of Hamburg's Elbphilharmonie also come to mind, or – even further away – of Japanese temple architecture.

The latter is confirmed by the architects Meili, Peter & Partner Architekten AG from Zurich, but above all they emphasise the regional and craftsmanship aspect of their work: "When it comes to the roof construction, we summon up all of the arsenal of local carpentry skills and shape the pyramidal folding structures ... into an imposing roof truss that elegantly and simply weaves the cantilevers into a bar construction. The shadows cast by the fine horizontal lines and the sinusoidally curved silhouette impart a Japanese quality to the ensemble, its poetics in which rigour and lightness are interdependent."

The roofscape is architecturally summarised by an approximately 2400 m² RHEINZINK-prePATINA blue-grey titanium zinc covering in a double standing seam system. "Titanium zinc is a soft-forming material that can follow the radii of curves well," Lukas Eschmann from Meili, Peter & Partner explains the decision. "Its processing, as with the roof truss, follows the idea of promoting regional craftsmanship. At the same time, it stands for the quality and longevity that we and the client strive for. The building and its roof can age gracefully."

Condorama with visible bar supporting structure

Max Felchlin AG, whose chocolate is mainly sold to confectioners or specialised chocolatiers and is therefore not necessarily well-known in the retail trade, has concentrated its previously scattered locations in Ibach near Schwyz with the company headquarters, which will be completed in 2019. At right angles and at a deliberate distance from the existing production buildings, the new administration building was built up to the third floor as a reinforced concrete skeleton structure with a wooden element façade made of dark spruce or fir wood.

The fourth storey above is a wooden construction that connects the production and administration areas like a large cloud arch and clearly overhangs the building lines. Beneath the three distinctive roof peaks are the catering room for the employees and two training

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rooms of the so-called Condirama, where the company offers its customers seminars on the production and processing of chocolate.

Each of the three domes is formed by a visible truss that creates large, column-free spaces. Standing and lying trusses for the cantilevered areas are connected to the sides. Pirmin Jung Ingenieure AG's timber engineers from Rain combined the traditional art of handmade node connections with the high-precision machine production of modern carpentry technology in the supporting structure. The timber connections are optimally matched to the flow of forces and form an impressively clearly structured beam structure without irritating gusset plates.

Wherever possible, the timber construction was carried out with prefabricated elements, for example in the canopy structures, the façades or the flat roof elements, which are insulated timber frames with a total height of 30 cm. Above this is the sub-roof with at least 10 cm of rear ventilation at every point, counter battens welded into the sub-roof membrane and the final formwork of profiled boards, which formed the laying base for the titanium zinc covering.

Elegance of the curved ridge lines

The tinsmith and roofing work was carried out by a consortium of three companies from the region. The companies Annen+Schibig AG from Ibach, Bless AG from Erstfeld and Paul Gisler AG from Cham worked together on this project due to the size and complexity of the project. Furthermore, a specialist tinsmith planner, Benno Lees from Altikon, was also engaged.

The tinsmiths installed RHEINZINK-prePATINA blue-grey panels with a system width of 530 mm using the double standing seam technique on a self-adhesive formwork membrane, which serves as a construction seal, and the AIR-Z structural mat. The panels are therefore the same width everywhere, but due to the special bonnet geometry and the curves in the roof, they are very different in length on the total of around 20 partial surfaces.

"The longest section measures 22.33 m, so we had to use long-sliding clamps and placed the fixed points more in the middle," explains tinsmith Benno Lees. At the lower end, the panels, which are laid with rebate sealing tape, taper to a slope of only 5 % and drain into a concealed box channel with an impressive 750 mm width, so that there is sufficient space for expansion.

It is the same at the top end, where the panels run under visually very striking ridge caps. Galvanised and painted steel sheets serve as the substructure for the ridge elements, which, thanks to their special shape, do not have any surface contact with the titanium zinc and ensure optimum ventilation.

Cutting to size and edging the shares

A special logistical challenge was the cutting and edging of the panels. Due to their partly considerable length, the transport route from cutting to size to the respective installation site had to be as uncomplicated and short as possible. The companies of the joint venture for the tinsmith and roofing work therefore transferred the process to the roof at short notice. Or to be more exact: on a specially erected wooden platform that protected the roof structure and compensated for the roof pitch. A container with the roller profiling machine was placed on it

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so that the technology could remain permanently on the construction site, protected from the weather and also kept locked at night.

The container was connected to a 20-metre long roller table on which the panels, cut to length and folded from 600 mm belts, ran. From here, the elements could be distributed on the roof with comparatively short distances, for which, however, up to eight colleagues were needed at once, depending on the length of the panels.

In view of the large roof area and the very long fold lines, the sheet metal workers relied on machine installation of the panels wherever possible: magazine screwdrivers were used to set the fasteners, and a fold closing machine was used for the longitudinal seams. Folding was only done by hand with great precision for the small-scale adjustment work on the ridges and eaves.

Besides their technical functionality, the ridges on the roof of the Condirama are also an important part of the architectural concept. This is because they emphasise the lines that run with elegant curvatures towards the tips of the three bonnets and, together with the curved main roof surfaces, evoke memories of Japanese temple roofs.

Lots of water with a plenty of momentum

From a purely technical perspective, the greatest challenge for Benno Lees proved to be an element that is no longer visible at all today: "The roof drainage required very careful and complex planning for this building. Besides the completely circumferential outer gutter, we also have two inner gutters through the three humps. Given the overall length of the roof, large amounts of water come together here with a great deal of momentum. We have welded in a plastic foil gutter, laid a drainage system on top of it and inserted a protective plate with a centre rib in order to be able to control this water safely. The special design of these gutters makes it possible to repair the gutter without having to open up the roof. This is essential since we know from experience that the gutter is the weak point of any sheet metal roof. In our case, however, I assume that no one will need to use the prepared repair option for decades to come."

This detail is another example of the basic philosophy of the client and his architects, who not only wanted to stage architecture as a landmark in the valley basin of Schwyz, but also wanted to express a basic attitude marked by quality, tradition of craftsmanship and regionality – whereby a small pinch of Far Eastern charm doesn't hurt.

Construction panel

Project: New company headquarters Max Felchlin AG, Ibach/Canton Schwyz.

Completion date: 2019

Architect: Meili, Peter & Partner Architekten AG, Zurich

Timber construction: Pirmin Jung Ingenieure AG, Rain

Specialist planning for plumbing work: Lees AG, Altikon

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Tinsmith and roofing work: ARGE Annen+Schibig AG, Ibach, Bless AG, Erstfeld, Paul Gisler AG, Cham

Roof: approx. 2,400 m² RHEINZINK-prePATINA blue-grey, double standing seam system

Façade and roof drainage: RHEINZINK-prePATINA graphite-grey

Captions



The new company headquarters of Max Felchlin with its extraordinary roof constitutes a landmark in the extensive valley basin around Schwyz. Photo: RHEINZINK



The curved silhouette lends the roof a touch of Japanese temple architecture, but also has an unmistakable parallel to the surrounding mountain panorama. Photo:RHEINZINK



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In the primary structure of the strikingly curved roof surfaces, the ridges, double standing seams and snow cornices form a fine secondary pattern of lines. The large rooms beneath the three roof peaks are supplied with daylight via the windows built into each.

Photo: RHEINZINK



The unconventional perspective reveals a clear roof division despite the total of around 20 partial areas. There are internal gutters between the roof peaks, and particular importance was attached to their long-term safety.

Photo: RHEINZINK



The roof was clad without transverse joints, which resulted in maximum section lengths of over 22 m. Carefully planned long-sliding clamps and the generous clearance to the gutters make it possible to change the length without problems under the influence of temperature.

Photo: Lukas Eschmann

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Suspension strips of galvanised and painted steel sheets form the substructure for the striking ridge bonnets.

Photo: Lukas Eschmann



Two internal gutters and the circumferential external gutter shown here drain the roof with a floor area of around 2200 m².

Photo: Bless AG

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The ridges run with an elegant curve towards the roof peaks and their design is reminiscent of Japanese temple roofs.

Photo: Bless AG



The panels were prepared on this working platform with the over 20 m long roller table and the container-protected roller profiling machine in the background. Photo: Eschmann

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Small details such as the connections to the ridge and eaves were adjusted and folded by hand.

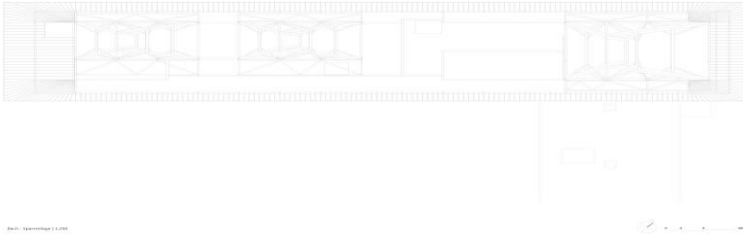
Photo: Lukas Eschmann



Particular diligence in planning and execution was required for the interior gutters, whose special design allows for possible later repair without having to open up the roof.

Photo: Bless AG

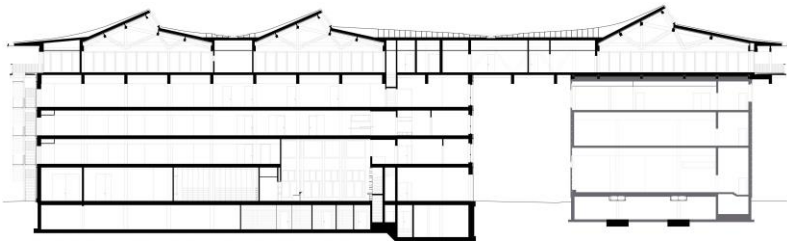
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((File 2-1-07 Rafter position, here greatly reduced))

The rafter position of the roof shows the interaction of the trusses for the three roof binnets as well as the adjoining standing and lying trusses.

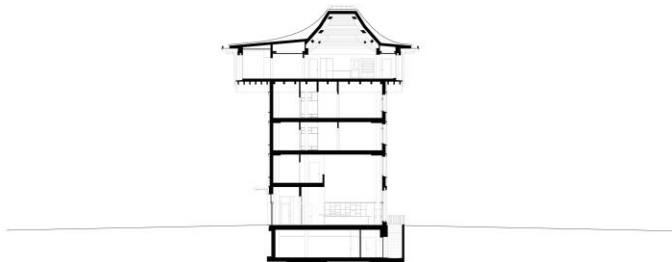
Drawing: Meili, Peter & Partner Architekten AG



((File 2-2-01 longitudinal section))

Longitudinal section through the existing production building (right), the new administration building (left) and the connecting upper floor of the Condorama.

Drawing: Meili, Peter & Partner Architekten AG



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((File 2-2-02 cross-section))

The cross-section illustrates the strong projection of the upper storey, which was built in timber construction.

Drawing: Meili, Peter & Partner Architekten AG