

Stainless Steel for Roofing



Euro Inox

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- National stainless steel development associations
- Development associations of the alloying element industries.

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Editorial

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Editor

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Contents

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Museums and Galleries	2
Education and Research Establishments	5
Churches	12
Residential Buildings	14
Sports Facilities	18
Events and Catering Facilities	22
Administration and Commercial Buildings	27
Industrial Structures	28

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Museums and Galleries

Museum, Henley-on-Thames, England

Client:
River and Rowing Foundation,
Henley-on-Thames
Architects:
David Chipperfield Architects, London

The oak cladding and the tin-plated stainless steel roofing sheet will take on a patina that harmonises and contrasts well with the surrounding landscape.

The design for this museum of rowing, local history and the River Thames, adopts and reinterprets elements from local architectural traditions seen in barns and boathouses. The extensive use of concrete, wood, glass and stainless steel underlines the clear,

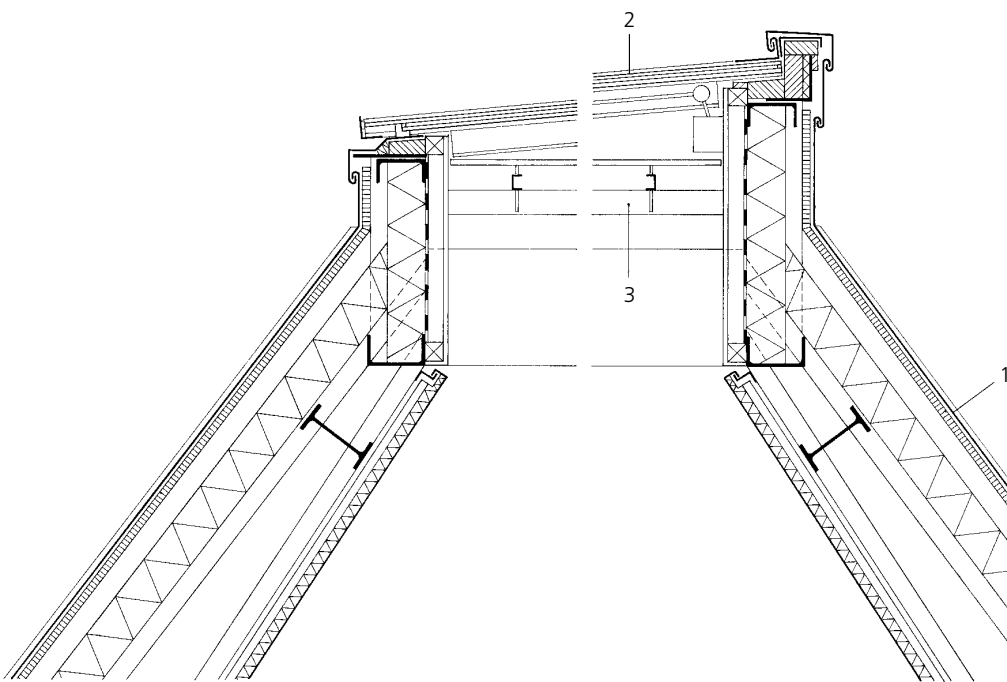


The forms and materials of this museum by the River Thames are inspired by the local architectural heritage.



simple forms of the museum buildings – two volumes, one set back slightly from the other, linked by a long connecting bridge. The generously glazed area on the ground floor houses the reception and public spaces while the exhibits are contained in the closed, introverted parts of the buildings. The steeply pitched roofs finished in tin-plated stainless steel butt flush with the gable ends. At the eaves, too, the roof surface seems to flow seamlessly into the timber-clad façade, thanks to the concealed guttering.

Photos: Richard Bryant / Arcaid, London



The roof-lights along the ridge bring natural daylight into the inward-focused exhibition rooms.

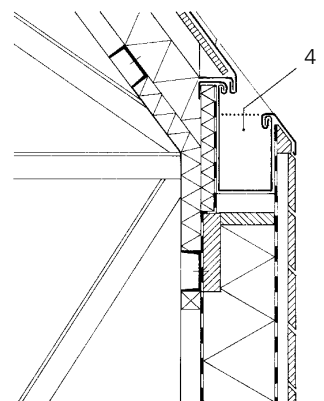
Section through ridge with roof-light and verge scale 1:20

1 roof construction:

- 0.4 mm tin-plated stainless steel sheet
- 18 mm plywood
- structural lining tray with 100 mm thermal insulation and 45 mm ventilation space
- steel truss, channel-section upper and lower chords
- angle struts
- ceiling panel, insulated

2 roof-light:

- 6 mm toughened safety glass
- 12 mm cavity
- 6.4 mm low-E coated glass
- 3 adjustable aluminium louvres
- 4 stainless steel guttering, tin-plated



Arts Centre, Salford, England

Client:

The Lowry Trust, Salford

Architects:

Michael Wilford and Partners, London

This centre for the visual and performing arts is located in a prominent position at the end of a pier in the rapidly developing area of Salford Quays. The complex of buildings, which itself looks like a giant sculpture of stainless steel and glass, contains two theatres, galleries, bars, cafés and a restaurant.

The light reflections on the differing stainless steel surfaces – from polished to matt – make the building itself a centre of attention.

As diverse as the geometry of the buildings themselves is the range of stainless steel alloys, surfaces and fixing techniques used on the façades and roofs. Matt-rolled steel (grade: EN 1.4401) was used for the standing-seam pitched roofs, while self-supporting panels of high-strength grade Duplex EN 1.4362 were used for the flat surfaces.

Photos: Richard Bryant / Arcaid, London



Education and Research Establishments

School Canteen, Oyonnax, France

Client:

Commune d'Oyonnax

Architect:

Philippe Rebourg, Oyonnax

The new extension to the school contains four dining halls plus kitchen and school medical facilities. A large arched roof with a radius of 21 m spans about two-thirds of the almost 19-m wide building. It is a ventilated roof with a substructure of glued-laminated purlins and rafters. An opening on the upper part of the long side illuminates the central hallway. Solar-shading louvres are fitted to this opening.

The cantilevered roof is fitted with 0.5 mm matt-grey stainless steel sheet. The guttering, also in stainless steel, lies concealed behind



Photos: Eric Avenel, Paris

The guttering is hidden behind the rounded roof verges clad with stainless steel.

the rounded eaves. By cladding the verge and eaves, and also the underside of the roof overhang with plain or perforated stainless steel sheet, the thickness of the roof construction can be clearly seen.



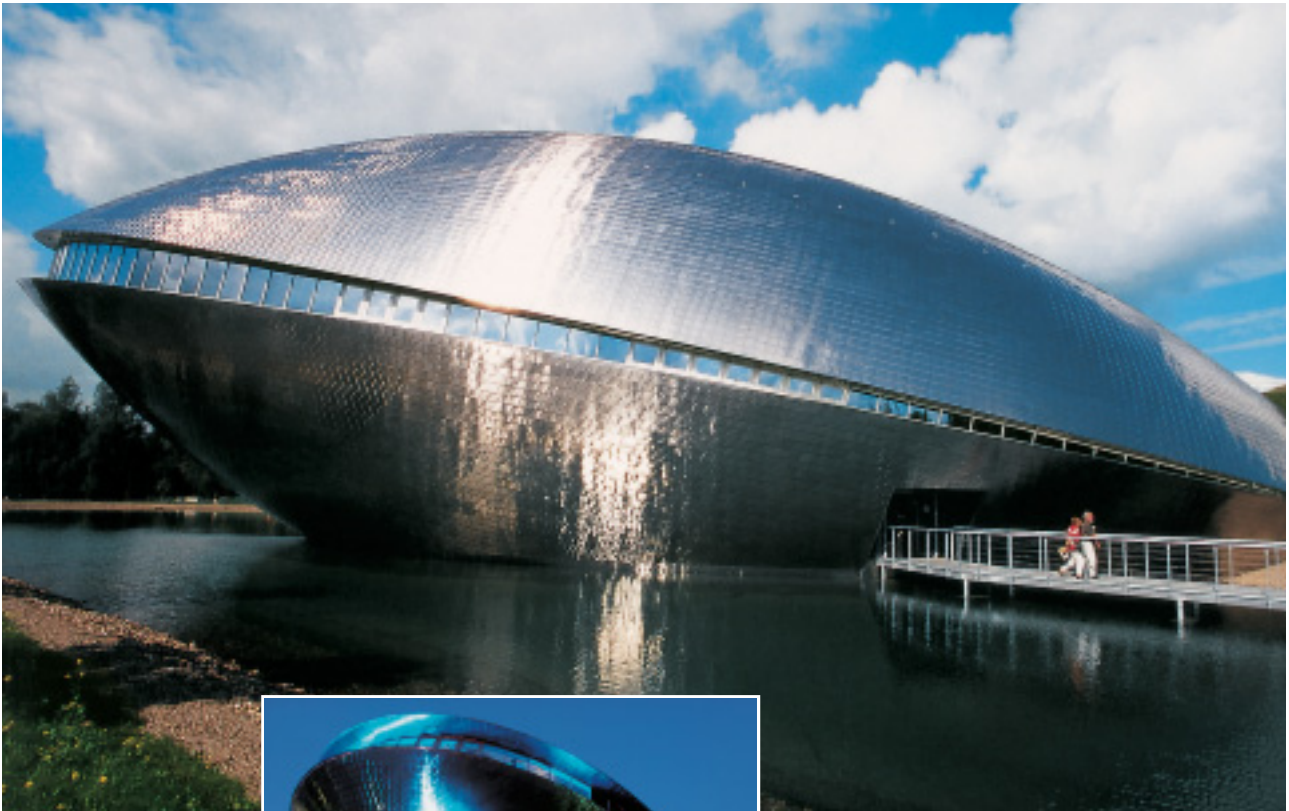
The distinctive arched roof of stainless steel curves over the four dining halls.

**Universum® Science Centre, Bremen,
Germany**

Client:
Stiftung Universum GmbH, Bremen
Architect:
Thomas Klumpp, Bremen

*Like the mouth of a fish,
the strip of windows
divides the totally en-
closed structure into two
halves.*

Rising out of the water like a giant fish is the curved shape of the new Universum® Science Centre of the University of Bremen, used for science presentations and exhibitions. Located at the entrance to the university campus as part of a conference complex, the centre's distinctive, expressive form marks it out as a building for special purposes.



Photos: Universum® Science Center, Bremen

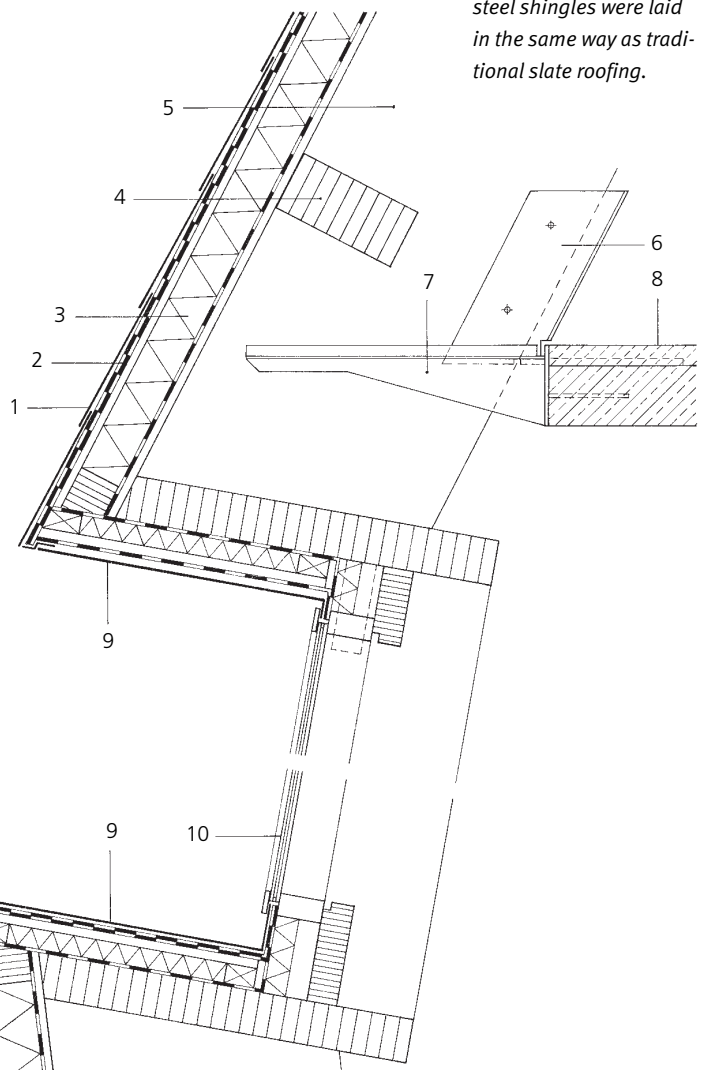
*Behind the gleaming
fish-scale skin of this
impressive building is a
reinforced concrete
frame housing exhibition
space.*

The scale-like skin of the building, gleaming in silvery stainless steel, enhances the association with a fish. Some 35,000 stainless steel shingles make up the roofing, laid on a substructure of glued-laminated timber, sandwich elements and waterproof membrane. Each shingle, a rhomboid measuring 40 x 40 cm, is bent to shape on two sides and screwed at four points. Stainless steel stays give added security. The stainless steel 'scales' were made in left-hand and right-hand versions, to fit the two sides of the 'fish'. This was necessary to maintain even colour effects along each side, as the fine satin finish reflected differently when the shingles were turned around. Above a pitch of 17° – not visible from the ground – the shingle covering is replaced by stainless steel standing-seam roofing. Rainwater is fed into the lake around the building, via the lower lip of the fish's mouth.



Photo: Willy Hesse GmbH, Arnberg

Most of the stainless steel shingles were laid in the same way as traditional slate roofing.



Section through roof and window strip scale 1:20

- 1 0.8 mm stainless steel shingles, 400/400 mm, EN 1.4404, satin-finished
- 2 bituminous waterproof membrane
- 3 sandwich element:
20 mm three-layer sandwich plate
120 mm insulation with
60/120 mm glued-laminated timber ribs
vapour retarder
20 mm three-layer sandwich plate
- 4 glued-laminated timber purlin, 160/340-560 mm
- 5 roof frame, 200/750 mm glued-laminated timber
- 6 steel shoe
- 7 steel bracket
- 8 160 mm reinforced concrete floor with
50 mm smooth-finished composite screed
- 9 0.4 mm stainless steel, satin-finished
- 10 fixed glazing



The roofs and the high parapet zones in the façade were clad with the same material – matt-grey stainless steel.

Photos: Eric Avenel, Paris



Geometric shapes give a distinctive character to this single-storey complex.

Centre for the Handicapped, Montbard, France

Client:

Mutualité de la Côte d'Or, Dijon

Architect:

François Brandon, Dijon

The shape and design of this centre is oriented towards the needs of its users – handicapped children. A truncated cone-shaped structure containing the reception area and offices marks the centre of the complex. Light enters here through the roof-light in the angled 'cut surface' of the cone. Generously glazed corridors and ancillary zones curve out from this central zone in a semi-circle, facing outwards or onto the garden patio inside.

The inward- and outward-tilting shed roofs, the parapet zone and the entrance cone are all finished with standing-seam roofing or cladding in matt-grey stainless steel.

**Library of the Faculty of Law,
Cambridge University, England**

Client:
University of Cambridge, Cambridge
Architects:
Foster and Partners, London

The new library building for the university's Faculty of Law was built in the midst of lawns and mature trees on the Sidgwick Campus. The rectangular plan is cut on the diagonal, in response to the natural setting and the pedestrian routes across the site. To minimise the building's size in relation to neighbouring buildings, the large lecture theatres were built below ground level. Above them are four terraced floors, containing common rooms, seminar rooms and a three-floor



The triangular grid of the steel frame continues through the glass façade and roof.

Photos: John Edward Linden, London (above)
Alois Baumann GmbH, Mannheim (below)

library. The steel-framed roof spans 35 m across the building. The glazed north-facing façade continues in an unbroken curve into the highly insulated, seam-welded stainless steel roof.

The fully glazed north façade gives library users an uninterrupted view of the campus gardens.



Secondary School, Mössingen, Germany

Client:
Mössingen local authority
Architects:
Denzer + Jaschke, Fellbach

The new two-floor extension to Mössingen grammar school, which was built in the 1970s, contains 23 classrooms, a music room and an assembly hall. The triangular geometry of the new structure blends well with the existing buildings, yet retains its own distinctive identity.

The flat roof, supported by steel girders and a combination of steel and wooden purlins, cantilevers out far beyond the tips of the triangle. The upper surface of this non-ventilated flat roof is finished with seam-welded stainless steel.

Perfectly waterproof, this layer is an ideal base for the extensive roof greening which holds back much of the water when it rains. Planting the stainless steel roof also has the advantage that no special stays or additional



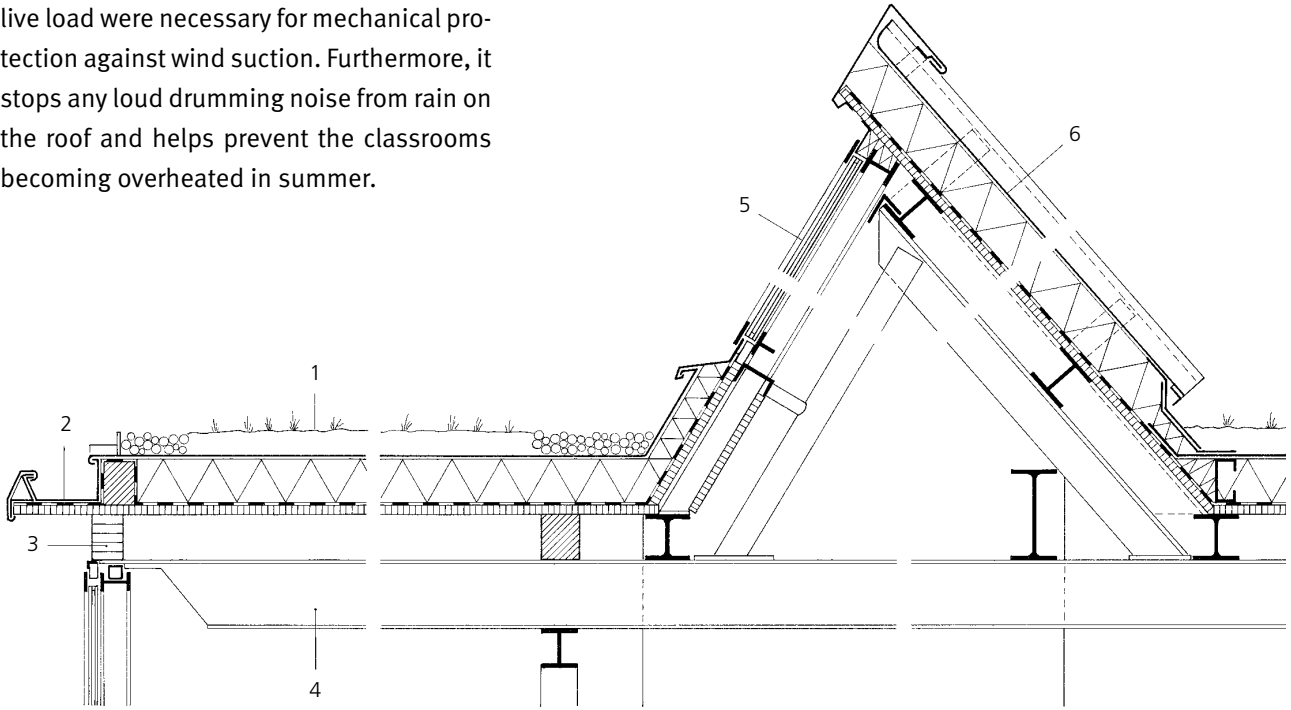
The stainless steel coils are cut to size on site.

Photos: Denzer + Jaschke, Fellbach



The seam-welded stainless steel roofing before planting (right) and afterwards (far right).

live load were necessary for mechanical protection against wind suction. Furthermore, it stops any loud drumming noise from rain on the roof and helps prevent the classrooms becoming overheated in summer.



Section through roof and shed roof scale 1:20

1 roof construction:

- 80 mm extensive greening
- seam-welded stainless steel roofing
- 120 mm mineral fibre insulation
- vapour barrier
- 22 mm plywood

- 2 aluminium gutter with aluminium cover sheet
- 3 edge girder, 80/120 mm glued-laminated timber
- 4 steel girder IPE 180
- 5 fixed glazing

- 6 shed roof construction:
 - profiled aluminium sheet
 - 140 mm insulation
 - vapour barrier
 - 22 mm plywood



Churches

Lutheran Church, Holzkirchen, Germany

Client:

Evang.-Luth. Kirchengemeinde, Holzkirchen

Architects:

Lichtblau + Bauer + Lichtblau, Munich

This twelve-sided wooden structure is the new focal point of the parish centre. The friendly, inviting atmosphere of the church comes from the exploitation of natural daylight, a high degree of transparency and, not least, from the choice of materials. Wood and glass predominate in the central main hall and in the ancillary rooms encircling it. Tin-plated stainless steel was used on the roof, as it both reduces the depth of the roof construction and lends a touch of lightness to the building when combined as it is here with continuous-strip windows below the variously sloping roofs. The 0.5 mm stainless steel roofing sheet is used as parallel or tapering strips joined with a double-lock standing seam.



Initially slightly reflective, the tin-plated stainless steel sheet will soon turn to matt grey through the effect of oxidation.



Photos: Spenglerei Soyter, Bad Reichenhall

Roman Catholic Church, Vienna, Austria

Client:

Archdiocese of Vienna

Architect:

Heinz Tesar, Vienna

This church is situated in the midst of high-rises on the edge of the new 'Donaucity' urban district of Vienna. Square in plan, with notched corners, the building hints at the shape of a cross, the geometry being emphasised further by the flat expanses of cladding on roof and façades. Black, electrolytically coloured stainless steel was chosen for the cladding.

The panels, polished drill holes and glass panes all reflect the light differently, lending movement to the building envelope.

Interestingly the roof is designed to be a kind of 'fifth façade' when viewed from the many high-rise buildings which overlook it. It is built up of 4 mm stainless steel panels, 1338 x 660 mm in size, separated by coated spacers and laid on 100 mm concrete slabs set in a bed of gravel. Rainwater runs through the open joints between the panels into the gravel, where it is directed into a centrally located downpipe.



The slightly off-centre roof-light symbolises the wound over Jesus' heart.

Photos:
Herbert Schwingenschlögl, Vienna

Residential Buildings

House, Reinach, Switzerland

Client:
Thomas Nichele, Reinach
Architect:
Markus Lussmann, Dornach

The gentle diagonal of the roof gives rise to interesting, segment-like angles on the façade.



This unusually-shaped house is built on a steep slope that was once part of a vineyard. In constructing the house, use was made of an old floor slab on the site that had belonged to an older house now swept away by a landslide.

The new building is timber-framed, and follows the line of a high retaining wall on the upper side of the plot. A barrel-vaulted roof spans the linear volume, the line of the eaves tracing the diagonal of the ground plan. This curve not only creates interesting internal spaces, but also an unusual roof shape. The cladding for the 150-m² roof is 0.5 mm, matt-rolled standing-seam stainless steel sheet.

Photos: Markus Lussmann, Dornach (left), Battisti GmbH, Sulz (above)

High on a hill overlooking the town lie these two houses, turned very slightly towards each other. Together, yet separate, they are distinctive for their clear, modern form and their use of the contrasting materials of wood, glass and stainless steel.

The wooden cubes are oriented towards the south-west, on which façade they are extensively glazed. Above the cubes, and slightly raised on the valley side, are the roofs. On each house, the roof and back wall form a single unit, like a shield protecting against the slope. Only a few small windows pierce the rear façade, which, like the roof, is clad with standing-seam stainless steel sheet in a matt finish.

Twin Houses, Bildstein, Austria

Client:

Christian Lässer, Lustenau

Architects:

fab-o2 klas & lässer, Lustenau

Photos: J. Ignacio Martinez, Hard (centre), Battisti GmbH, Sulz (bottom)



The timber cladding and matt, slightly reflective surface of the roofs and back walls harmonise well with the buildings' surroundings.

Ekonologia House, Malmö, Sweden

Client:
Midroc Construction AB, Helsingborg
Architects:
SWECO FFNS Arkitekter, Helsingborg

This house, the Swedish contribution to the European Village north of Malmö, had to meet strict requirements: all systems and materials had to have a life span greater than 50 years, maintenance should be minimal, recyclable materials were to be used, but no adhesives, sealing compounds or surface coatings, and it had to be energy-efficient. The resulting structure is a modern, three-storey house in lightweight construction, providing 180 m² of generously glazed accommodation space, terraces and balconies.

Stainless steel was chosen for the roofing for two reasons: maintenance is trouble-free in the aggressive, maritime environment and the material can be recycled.



A modern house built in tough environmental conditions: Stainless steel roofing plays its part in meeting these demands.

Photos:
SWECO FFNS Arkitekter,
Helsingborg

Apartment Blocks, Bad Reichenhall, Germany

Client:

Bayerische Ärzteversorgung, Munich

Planning/Roof renovation:

Rudolf Schmid GmbH, Grosskarolinenfeld

The roofs of these two apartment blocks, built in the late 1960s, were clad with stainless steel as part of a general refurbishment programme.

An extra layer of fibrous material and insulation were placed on the old bitumen roof and then the 640 mm wide strips of 0.5 mm bright-rolled stainless steel sheet (grade: EN 1.4436) were laid on top. This saved the expense of removing and disposing of the



Photos: Rudolf Schmid GmbH, Großkarolinenfeld

old roofing. The seam-welded stainless steel sheeting is guaranteed waterproof and has high durability. Gravel and additional stones as live load were added, to protect the new roof against mechanical stress.



Seam-welded stainless steel roofs are a reliable, economic solution in flat-roof renovations.

Sports Facilities

Cycling Stadium and Swimming Baths, Berlin, Germany

Client:

OSB Sportstättenbau, Berlin

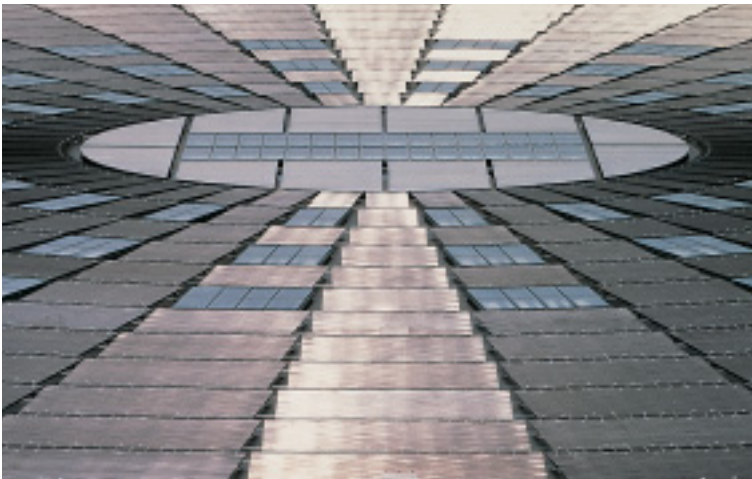
Architects:

Dominique Perrault, Paris

Reichert, Pranschke, Maluche, Munich

Schmidt-Schicketanz & Partner, Munich

Thanks to a newly developed stainless steel mesh, the roofs of these two sports halls look like shimmering lakes, set in an urban park landscaped with 450 apple trees. The buildings are sunk 17 metres into the ground, and rise only about one metre above it. A belt of stairs, ramps and corridors surrounds the perimeter of each hall.



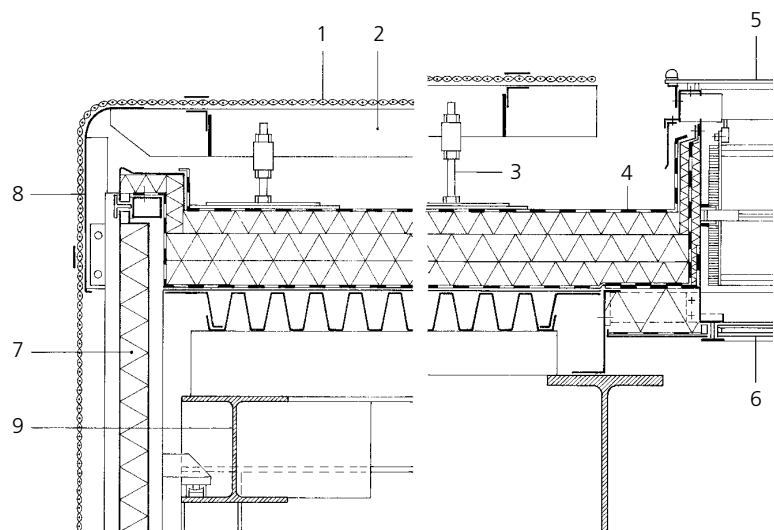
The steel mesh on the roof gives different light reflections according to time of day or year.

Photos: Werner Huthmacher, Berlin
E.J. Ouwerkerk, Berlin (above right)



In line with their functions, one hall is a circular structure, the other a rectangle. The column-free interior of each hall is spanned by a giant steel roof frame with girders up to 4.50 metres deep. The entire roof structure, and the façade area, which corresponds to the roof depth, is clad with stainless steel mesh. The mesh mats rest on a substructure of height-adjustable metal frame elements. No additional fastening to the roof frame was necessary, due to the relatively high bearing weight of the panels. The rods of the mesh itself and the junctions between the panels can support foot traffic for maintenance purposes.

The individual panels are joined by means of steel springs which can be removed for cleaning and maintenance operations.



The roof-lights and steel mesh panels are on a single plane, so that from a distance the whole roof surface looks like one continuous unit.



Section through roof/roof-light/façade connection scale 1:20

- 1 stainless steel rod mesh, double-chain
- 2 130/8 mm steel flat bearers
- 3 metal support, adjustable in height
- 4 roof construction:
moisture-proof membrane
insulation, triple-layer
vapour barrier
steel sheet
trapezoidal-section sheet
- 5 8 mm single glazing, heat-strengthened glass
- 6 insulating glass, lower pane 8 mm laminated safety glass
- 7 façade panel
- 8 2 mm stainless steel edge sheet
- 9 trussed girder, upper chord HEA 280 / lower chord HEA 240

Sports Centre and Swimming Baths, Ilanz, Switzerland

Client:
Town of Ilanz
Architect:
Curschellas & Gasser, Ilanz

An extensive refurbishment programme for a sports centre with swimming pool dating from 1968 involved constructing one new

building, modernising the pools and installing a new, ecologically compatible heating system. The answer to meeting the energy needs was a thermal solar system with collectors made of stainless steel which were fitted to the roof of the building housing the changing rooms and technical installations. Thanks to a special, selective coating the collector sheets need no cover glass, and achieve over 80% efficiency. The absorber modules, covering 453 m², supply 95% of the centre's energy needs for heating and warm water. This design thus combines the advantages of a weather-resistant, low-maintenance stainless steel roof, with those of a high-quality solar collector.



The wave-like shape of the roof points to its dual function.

Solar collectors of black-coloured stainless steel meet most of the centre's energy requirements while also protecting against the rain.



Photos:
Energie Solaire SA, Siere

Water Sports Centre, Gérardmer, France

Client:

Town of Gérardmer

Architect:

François Lausecker, Gérardmer

The two-storey central section of the water sports centre noses towards the lake shore like the prow of a ship. At street level are the offices and a large common room, and at lake level, changing rooms, sanitary installations and storage areas. The sports equipment belonging to the diving, sailing and kayak clubs are kept in the side wings, where there is also space to carry out repair and maintenance work.

With its timber frame and façades the building blends well with the wooded slopes around the lake. The roof surfaces, set at different heights, curve alternately towards



Photos: François Lausecker, Gérardmer

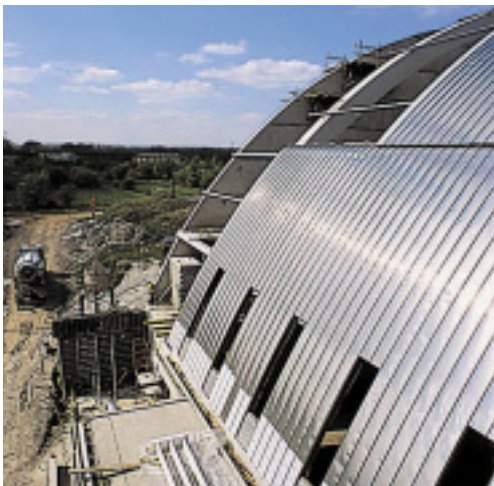
The roofs take up the silvery sheen of the lake, creating a soft transition between land and water.

the lake and away from it, injecting movement into the structure, and echoing the local topography. In order to keep the appearance of the roof surfaces as homogeneous as possible, matt-rolled stainless steel was chosen for the roofing sheet.



The matt-grey stainless steel surfaces set up a lively contrast with the wood.

Events and Catering Facilities



The standing-seam stainless steel roof is arranged in horizontal sections for ease of handling of the steel strips and to give adequate air-circulation in the ventilated roof.

Twenty-two reinforced concrete arches, spanning 63 m and reaching 21 m at the apex, make up the support frame for this hall. Each arch is made up of five prefabricated components, assembled on site. The column-free, 10,450 m² hall area is used for exhibitions, trade fairs, cultural and sporting events. Provision is made for dividing the internal space into three, enabling parts of the hall and its infrastructure to be used separately.

The basement is used as storage space for the national archives, and therefore the whole building had to meet strict requirements in terms of lasting water-tightness. This also guided the choice of stainless steel for the roofing and gable cladding. A further design aspect was the slightly reflecting surface of the steel.

Multi-purpose Hall, Mons, Belgium

Client:

Dexia Banque, Brussels

Architect:

beg, Bureau d'études Greisch, Liège

A two-storey block down one side of the arched-roof hall contains a foyer, cafeteria, conference hall and offices.



Photos: Jean-Luc Deru, DAYLIGHT s.p.r.l., Liège

Originally built as the media centre for the 2001 World Skiing Championships, this complex has now been turned into a 'centre for wellness and communication'. Its 2000-m² main hall, easy to adapt for a range of functions, a large sports and wellness area, plus swimming pool, saunas, a restaurant and bars, make this an ideal venue for all kinds of events.

Half of the building's 48,000 m³ of volume is buried into the slope. Towards the town, the centre presents an open, transparent aspect in the shape of a glazed, two-storey entrance façade. But seen from the hills above, it looks like a sculpted part of the landscape: all that is visible is the support structure for the hall roof – five prestressed reinforced-concrete box girders clad with matt stainless steel – and three smaller structures rising out of the extensively greened roof surface.

Events Centre, St. Anton, Austria

Clients:

Arlberger Bergbahnen AG;
St. Anton am Arlberg local authority
and tourist association

Architects:

Dietrich/Untertrifaller, Bregenz

Clad in stainless steel, the projections rising out of the large expanse of green roof add interest and rhythm.

Photos: Bruno Klomfar, Vienna



The hall's roof frame and the individual volumes containing saunas, wellness area and restaurant facilities echo the shape of the many hay barns on the hillside opposite.

Restaurant, London, England

Client:
Belgo Group PLC., London
Architects:
foreign office architects, London

Squeezed tightly between two brick buildings either side, the street front to this Belgian beer hall and restaurant is just three metres wide. Diners walk along a 15-m long corridor to reach the rows of wooden tables in the main hall.

The barrel vaults look as if they might push together like the segments of a telescope.

The space in the dining hall is spanned by four barrel vaults, each higher than the one before. The resulting steps where the vaults meet are glazed to create roof-lights, thus creating an exciting spatial effect in the hall.

The vaults are steel arches with wooden pur-lins and thermal insulation in between. Resting on this support structure are a breather membrane, a layer of plywood sheeting with plastic spacers, and geotextile underlay. The outer skin is 0.4 mm standing-seam stainless steel sheet.

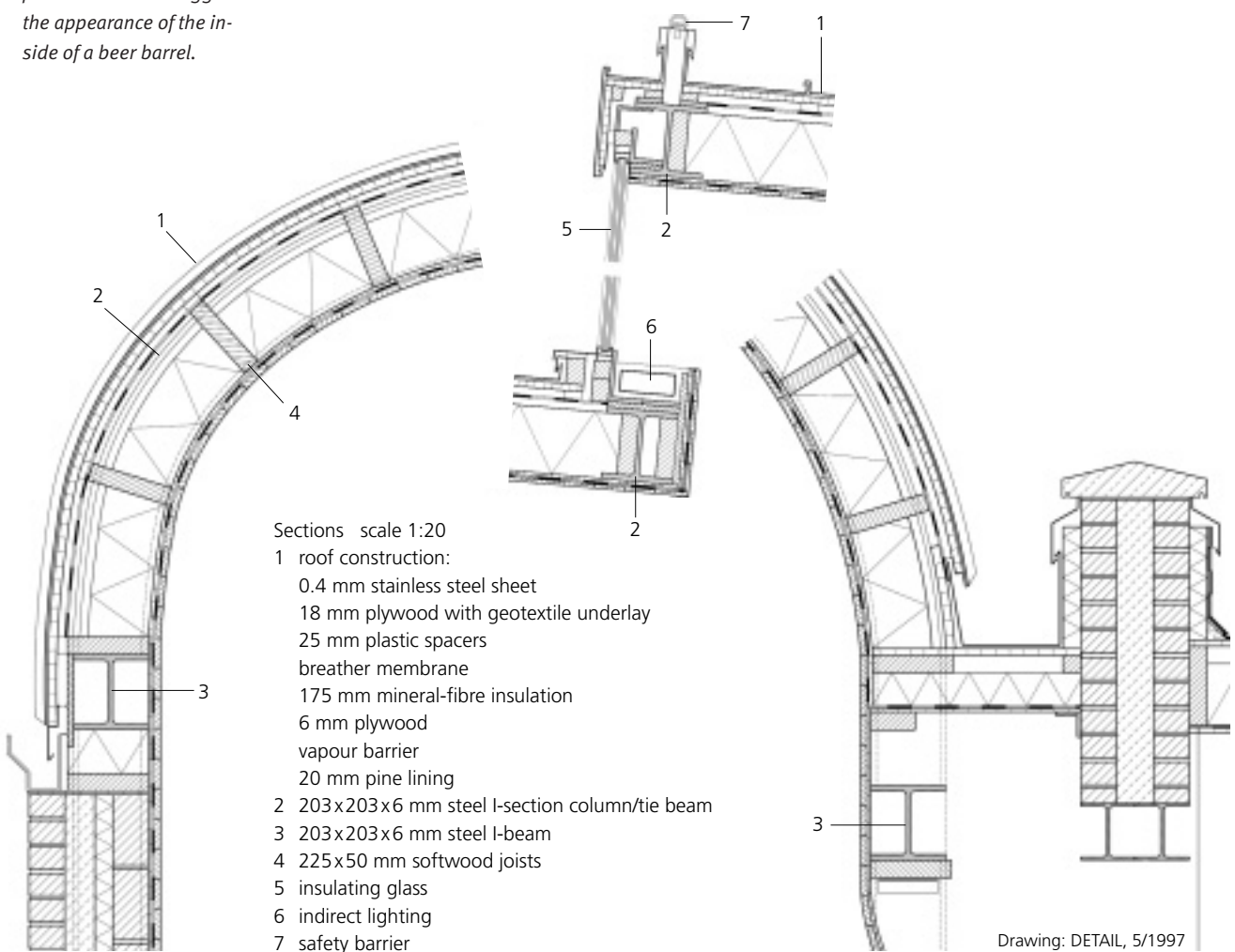
Photos: Valerie Bennett, London





Stainless steel is used for the outer skin of this unusually shaped roof.

The barrel-vaulted hall panelled in wood suggests the appearance of the inside of a beer barrel.



The four-storey, timber-clad tower of the services station is clearly visible from afar.



Motorway Services Station, near Leipheim, Germany

Client:
TANK & RAST GmbH, Munich
Architects:
Albrecht & Partner, Munich

Tin-plated stainless steel sheet protects the roof landscape of the motel from emissions from the nearby motorway.



The visitor-friendly design of the open spaces and the interplay between the tiered building volumes, of services area and motel, plus a spacious, clear layout inside, make this motorway services station a popular and pleasant stopping place. The combination of various materials, such as wood, metal and rendering, also adds to the overall appeal. The roofs of the motel, and all roof overhangs, parapets and canopies are clad in tin-plated standing-seam stainless steel sheet. A key factor in the choice of this roofing was its resistance to the atmospheric conditions found close to the motorways, where, in winter in particular, the air is very humid and high in atmospheric pollutants.

Photos: Marcel Weber, Munich (above), Ugine & ALZ, Sersheim (left)

Administration and Commercial Buildings

Administration Centre, Fürstenfeldbruck, Germany

Client:

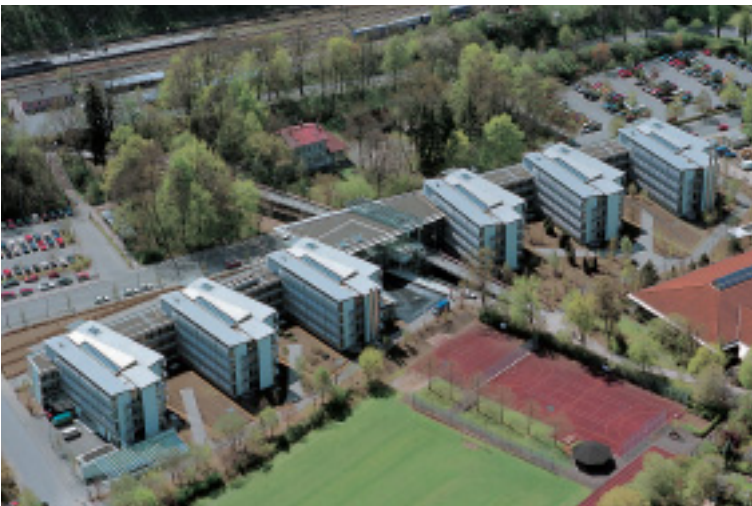
Sparkasse Fürstenfeldbruck

Architects:

Werkraum Architekten, Fürstenfeldbruck

Located on the edge of town, the new administration centre of a local savings bank consists of six, four-storey office buildings arranged in parallel and all linked down one side by a three-storey communications tract with extensively greened flat roofs.

The ventilated flat roofs of the office buildings reflect the internal spatial arrangement. On both long sides, above the offices, is a shed roof, which is inclined towards the centre. Skylights and vertical, glazed openings, which also serve as smoke outlets,



Photos: Bavaria Luftbild Verlags-GmbH, Eching (above), Sparkasse Fürstenfeldbruck (right)

The roof landscape traces the layout of space in the office blocks below.

are integrated in the roof surfaces above the communal areas and communication zones. Tin-plated stainless steel sheet was used to clad the roof frame of timber and steel. Cellulose was blown into the ventilated flat roof as insulation.



Industrial Structures

Dairy, Rosenheim, Germany

Client:
Danone GmbH, Rosenheim
Planning/Roof renovation:
Rudolf Schmid GmbH, Großkarolinenfeld

Seam-welded stainless steel roofing is a cost-effective, hygienic solution for food production facilities.

When putting a new roof on a production hall at this large dairy products factory, the obvious choice of roofing material was seam-welded stainless steel sheet. One benefit of this material is that it creates a weather-resistant, absolutely waterproof roof surface which can be flooded for cleaning purposes, thereby reducing the risk of bacteria build-up. Also the smooth, bright-rolled surface reflects heat back into the atmosphere, preventing overheating in the refrigerated hall and thus reducing overall energy consumption. The total roof area to be replaced was 2000 m². The roofing material used was 0.4 mm stainless steel sheet (grade: EN 1.4436).



Photos: Rudolf Schmid GmbH, Großkarolinenfeld



Milk-processing factories must pay special attention to hygiene; the waterproof surface of stainless steel roofing is very easy to clean.

Freight Centre, Liège, Belgium

Client:

Galliker Transport AG, Altishofen,
Switzerland

Architects:

Atelier d'Architecture Gauthoye-Berhaut,
Embourg



This group of three variously sized buildings displays a harmonious blend of shapes and materials: rigorously geometric volumes with shallow pitched roofs and skylight strips; façades of reddish exposed concrete with wide expanses of glass; and roofing of stainless steel. The roofs of the two large halls –

a maintenance hall for trucks and a warehouse – have a substructure of hollow concrete or painted trapezoid-section sheet on IPE 500 steel sections with 50 mm insulation. The roofing and the cladding on the gables is 0.7 mm stainless steel profiled sheet (grade: EN 1.4301).

Access to the site is through an archway in the administration building.



Chimneys, guttering, downpipes and fixings are all made of stainless steel, like the profiled roofing.

Photos: L. Seresiat, Seraing (above), Willem de Roover, Ghent (left)
Jean-Luc Deru, DAYLIGHT s.p.r.l., Liège (below)



Factory Building, Türkenfeld, Germany

Client:
EMW Rohrformtechnik, Türkenfeld
Architects:
werkstatt für architektur und gestaltung,
Wolfratshausen



The angled shapes of the folded-plate roof set the tone for this interesting building.

The roof of the factory building stretches like a concertina between the two larger volumes either side.

Expansion possibilities for this medium-sized metal-processing company were limited in the town centre, so it moved out to a new business district on the edge of town and built a new factory. The ensemble consists of three structures: a warehouse, a factory building and a combined office and residential block.

The 1200 m² factory building links the taller volumes of the warehouse on one side and the three-storey office section on the other. The roof of the factory hall is a timber folded-plate support structure, covered with tin-plated 0.5 mm stainless steel sheet. The resulting column-free work space below is lit by

natural daylight from the glazed gable ends and roof-lights. Maximum reflection is ensured by also cladding the south-facing shed roof with stainless steel sheet and using light-coloured wood on the undersides of the roof.

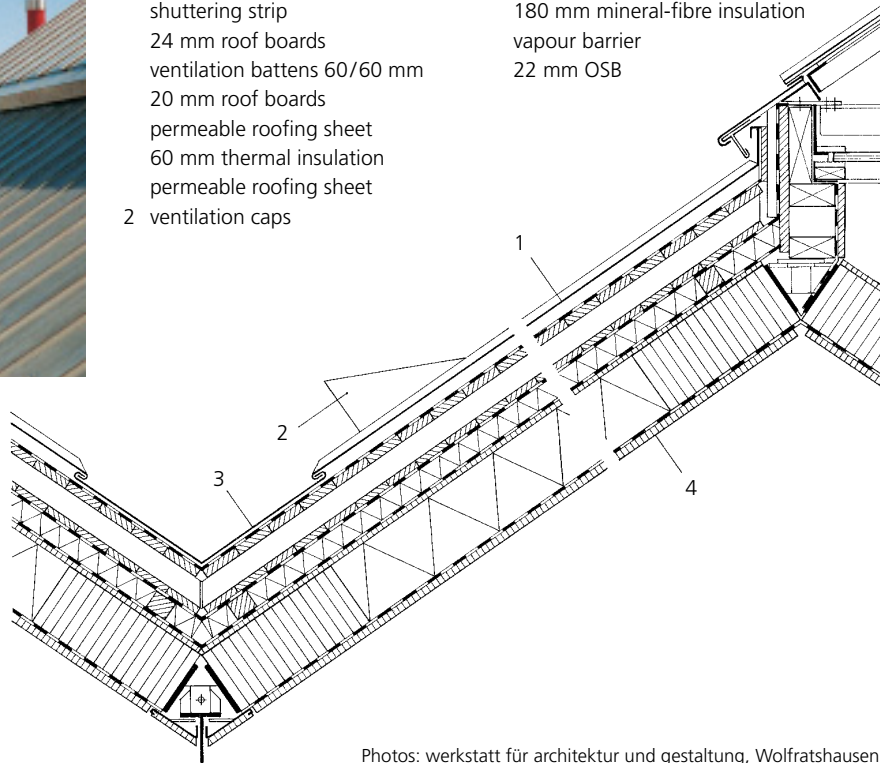


Ventilation caps in the valley gutters take care of ventilation of the roof structure.

Section scale 1:20

- 1 roof construction:
 - 0.5 mm tin-plated stainless steel sheet
 - shuttering strip
 - 24 mm roof boards
 - ventilation battens 60/60 mm
 - 20 mm roof boards
 - permeable roofing sheet
 - 60 mm thermal insulation
 - permeable roofing sheet
- 2 ventilation caps

- 3 0.5 mm stainless steel gutter
- 4 folding-plate construction:
 - 13 mm OSB
 - 180 mm timber frame construction
 - 180 mm mineral-fibre insulation
 - vapour barrier
 - 22 mm OSB



Photos: werkstatt für architektur und gestaltung, Wolfratshausen



Water-Storage Tanks, Kortrijk-Bellegem, Belgium

Client:
VMW, Brussels
Architect:
Ortwin Deroo, Brussels

The domed roofs of the two water-storage tanks blend well with the surrounding undulating landscape. Each tank has a capacity of 10,000 m³ and is 50 m in diameter. The free-spanning roofs are of reinforced concrete, just 8 to 12 cm thick, resting on pretensioned r.c. beams which in turn bear on columns around the outer walls.

The roof construction is made up of 6 cm foam glass thermal insulation, which like the claw plates for fixing the sliding cleats is bonded with hot bitumen. The roof skin is 0.4 mm stainless steel (grade: EN 1.4404), and is continuously seam-welded. As well as providing better resistance against wind loads, this type of roof construction has the added advantage of low weight.

Significant benefit is gained from the low weight of this large, free-spanning roof, made possible by the perfect seal provided by stainless steel.



Photos: Ortwin Deroo, Brussels



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