

BIODIVERSUM REMERSCHEN (L)
PRESS-KIT
VALENTINY HVP ARCHITECTS

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PROJECTINFORMATIONS

Project:	Biodiversum Remerschen
Description:	Informationszentrum „Centre d'accueil Haff Réimech“ zum Naturpark im Dreiländereck bei Schengen, Luxemburg
Location:	Remerschen
Typ:	Ingenieurholzbau
Construction time:	April 2011 - Dezember 2015
Opening:	Juni 2016
Cost:	5 700 000 €
Therefor woodconstruction:	1 500 000 €
Material consumption:	600 m ³ Holz, davon 300m ³ Gouglasien-BS-Holz 720 ² Brettstapeldecke
Owner:	Ministère du Développement durable et des Infrastructures Administration des Bâtiments Publics,
Architects:	VALENTINY hvp architects, Remerschen (Luxemburg) GG Kirchner (Projektleitung) Vera Schülke Oliver Arenz
Planning of structural construction:	SGI ingénierie SA Luxembourg, L-6142 Junglinster, SGI Philip Waldmann
Timberconstruction: in Cooperation with:	Steffen Holzbau S.A., L-6776 Grevenmacher, BCN Bois Consult Natterer SA Ingenieur SIA, Julius Natterer; FH Trier, Prof. Dr. Wieland Becker, P.H.I.P International S.A.R.L
other Partners:	Sopinor Steffen Holzbau Annen Parkett Böhm Kone Aufzug Arendt Climalux Elektro Godart Electro Tech Altwies Schreinerei Werel Benedikt Schwartz Firma Stoll
Design:	VALENTINY hvp architects Oliver Arenz GG Kirchner



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TEXT

Biodiversum in a boat's hull

Dipl.-Ing. (FH) Susanne Jacob-Freitag, Karlsruhe



The new Biodiversum information centre in the nature reserve „Haff Rímech“ is an elaborate timber construction made of douglas fir. It combines frame constructions with a mesh grid of planks. Together they form two opposing half-shells, like an inverted boat.

Around 2002, first thoughts about an information and reception centre for the natural reserve in the „so-called“ three borders region in Schengen, Luxemburg, arose. Since Fall 2014, the „Centre d’acceuil Haff Remich“ exists on the small peninsula of a pond as if it had always been there.

Today's nature reserve between Remerschen and Wintrange was once a sand and gravel mining area. In the first half of the 19th century, people began mining sand and expanded it so far that in the once fertile area, large pits emerged. Over time, groundwater filled these pits and gave the lakeland its topography. Step by step, flora and fauna took possession of the bald and exploited area. Over the years this developed solely by natural sowing of native plants and by wind into a meadowland. Today, the natural park is now one of the world's most important resting areas for migratory birds. This, as well as the nature management's plan of 2004 and the national plan for nature conservation, led to the conclusion to build the „Biodiversum“ in Remerschen. On the one hand, birds should become the main topic of the exhibition. On the other hand, the centre is meant to be an entrance to the nature of the region and to encourage its visitors to explore by themselves.

A longhouse like an inverted boat hull

Initially the building was planned on piles on the lake. For budget reasons, this idea was dropped. Instead, the „Biodiversum“ was built on a small peninsula at the pond. The shape of the building was inspired by the Celtic longhouses of the aboriginal people in that region, the Celts. The architects designed a structure that looked like an upside down boat, extended by an administration space. The Exhibition hall and annex should become a timber construction. Already in 2010, because of its location on the lakeside, enormous work had to be done, such as embankments and sealings for the soil. Following this, from summer 2011 to spring 2012, the base plate and the natural stone stairs making up the foundation had been built.

Concept and building dimensions

The building contains exhibition areas on three floors: basement, ground- and first floor. The visitor enters the „longhouse“ on the ground floor where he is welcomed at the reception desk. From here, the tour starts with the five big topics of the exhibition: Ecology, ancient history, winegrowing, touring exhibitions and the nature reserve in the tripoint of Luxembourg-Germany-France, on the Moselle. Two straight staircases lead down- or upstairs, accompanied by a disability friendly elevator. The basement is also accessible from the outside via the landing stage, which is also an escape route. The floor plan of

the reception centre widens itself conical over a length of about 60m. The land-facing, smaller front forms the entrance and measures about 13,50m width. The water facing front measures 17m. The ridge also runs at an angle and falls down from sea-side's 15m to the entrance's 8m. The bevelled gables of the building are completely glazed with vertical windows. Along with the 15 averted triangle dormers in the bent building shell they provide daylight inside. The administration area forms a flat walk-on-able roof, built in wooden frame construction.

Wooden frame with a grid on a ferroconcrete subconstruction

The Longhouse, including the administration area, is designed to be a wooden structure built on a ferroconcrete subconstruction consisting of a base plate and a partial „basement“. In the first section of the building the main frame is made of glued laminated timber frames (douglas fir), set in a raster of 7,20m and stands on the ferroconcrete floor. In the other half, galleries with generous airspace is created by two per-floor resting, glulam-frames. They connect to the half frames, supports, beams, crossbeams and also to the upper transom of the portal frame. Together, these components form a spatial frame. The-reupon Brettstapel-elements (sit board stacks?), which are stretched from frame to frame, half frame to half frame and are connected to the ceilings. In the end the form of the Longhouse is created by two bent, wooden shells leaning against each other. Its planked grid works as a surface structure.

Reinforcement: transversely frames, longitudinally planked grid

The cross-bracing of the building is assured by the framework and the ferroconcrete elevator shaft whereon the wooden support is leaning. The gridshell, called the rhombus framework (diamond structure), serves the longitudinal reinforcement. The planks transform it into a bracing shell frame. Connected to the prone and OSB-planked gable frameworks, force is taken lengthwise and channelled into the foundations. The (provisional) crossbeams were arranged and received at the heights of the intersection points of the Brettstapel. For the provisional securing, this crossbeams had cutouts on the top, into which the boards are inserted during the installation.

Through template centering to a vaulted network of board ribs.

Steffen Holzbau from Grevenmacher, Luxemburg, had to deliver structural engineering calculations for the main frame and also the grid construction itself. The frame planners used the know-how of Julius Natter from Lausanne, Switzerland. Natter is a specialist in building with knot statics. The framework was made possible by the modification of the Brettstapel-construction method. It is known for high-edge stacking of boards for ceilings, walls and roofs, and less for bent shapes. To achieve the bent roof shape, the Douglas planks were stacked flat horizontally, one above the other. With this method, they are flexible and can be forced onto the bent shape of the net structure. Since the whole grid had to be established by hand on site, questions were raised about which implementation would be the most economical one.

The timber construction company, in agreement with the architect, came to the conclusion that a construction via a centering would be the most practicable and fastest way. So a geometrically exact template was made of arched girders leaning against each other in between hanging crossbars. It was made by 3D CAD modelling and eventually took over the main frame.

The crossbars were on the heights of the crossing points of the board positions arranged and received recesses on the upper side, whereas the boards are placed for preliminary position assurance.

Board after board mounted individually

The carcass of the shell-shaped framework is assembled by hand, outgoing from the surrounding supports. Therefore, every board lamellar is adjusted on site. This decision was made to save time to create every board on PC, which would have been technically possible to produce but is linked to an immense logistical effort on site. So in the end, all lamellas are delivered, marked, cut and immediately assembled. Every board-rib arch consists of a huge amount of different length Douglas fir planks with a w/h profile of 16cm x 3cm. They are bent in 4 layers (two-way twisted) over the centering and bolted to 12cm high ribs.

Following an elaborated laying pattern, two lamellas run through and two lamellas are interrupted at the crossing point. The screws that connect them at the crossing points are set from above, making the screws invisible from below. The „board staples“ are also bolted between the crossing points, so that a continuous bond is made. To connect the board lamellas invisibly at the foot point of the ridge, the planners used U-shaped sheet metal molding. Its legs are put between the lamellas. A sheet banner is arranged between the first and second board lamella and bolted to them. Followed by a third - the second sheet banner is folded up behind it. The fourth lamella is set in front of it and the whole package is again bolted. However, the interweaving of all boards, as described along with the used connection materials, still doesn't leave us with a sufficient rigid framework. Therefore, the

Quote

Nature is a wastrel that doesn't spare neither trouble nor expense to fulfil its work in a minimum of time. - *Thomas Alva Edison*

Nature doesn't have a sense of humor, it is always true, always earnest, always severe, it is always right and all mistakes and errors are human. - *Johann Wolfgang von Goethe*

Nature does nothing uselessly. - *Aristoteles*

Water which is too pure has no fish. - *from china*

Why is the sea king of a hundred streams? Because it lies below them. - *Laotse*

Nature spread many uncomfortable things between its most precious gifts. - *Johann Wolfgang von Goethe*

All architecture aims to influence the mind, not just to protect the body. - *John Ruskin*

The great danger of modern architecture is the bacillus of monotony. - *Alvar Aalto*

Countries reflect their obsessions in their architecture. - *Lawrence George Durrell*

Architecture should participate in drawing and sculpting
Sir Yehudi Menuhin

Architecture must express what a city has to say.
Walter Wallmann

Architecture should be the basis of any contemporary philosophy ... compromises are dangerous . A controversial construction lives longer
. *Arata Isozaki*

network received a board shuttering as a reinforcing planking. Visible on the underside, it serves stabilization for the framework, and also as sub-floor for the roof construction to come. A 1cm wide joint between the visible boards make a decorative bottom view and makes it an acoustic ceiling.

Rhomb Structure at GL- arched girders „suspended“

Above the rhombus-framework, glued laminated arched trusses (w/h = 16cm x 27cm) are placed at an axial spacing of 1.74 m. They lean against each other in the ridge and are connected rigidly to form a two-hinged frame. With the help of glued laminated timber lamellas on the underside of the girders, the rhombus framework is being suspended to them. These wooden lamellas are wider than the trusses. So the overhanging edges can be screwed to the rhombus framework, achieving the suspension. On the framework's underside, the compounding lamellas receive three planking boards to achieve a unified-looking bottom view. Together with the actual planking, which are prefabricated elements and inserted between them, they form a uniform view from below. Following it, the remaining roof construction starts with the vapor barrier with over 16cm thermal insulation up to the Alaska cedar shingles of the hull. The roof construction, without the rhombus framework, measures about 60cm.

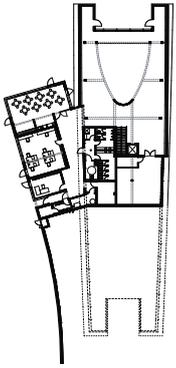
The Biodiversum blends organically into the surrounding area

The „Centre d'accueil Haff Remich“ is to sensitise especially children and teenagers but also grown ups for the conservation of nature and environment. It is a mixture of museum and educational institution which covers questions about ecology and the natural reserve behind the specific example of this region. The Facade covering consists of untreated and rough-cut Alaskan cedar shingles. This covering, together with the organic looking shape of the longhouse, determines the ensemble's character. He also associates the simplicity of a barn as landscape and nature.



PLANS

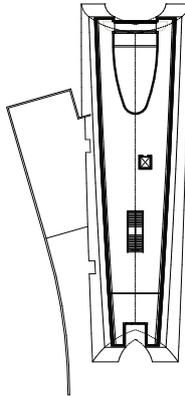
1. Floor Plans



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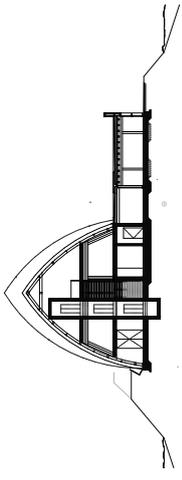


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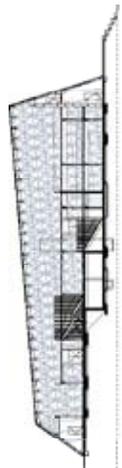


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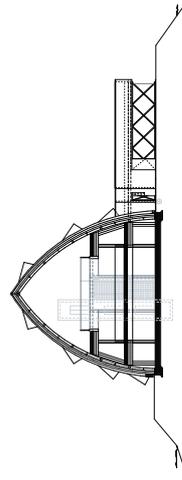
2. Sections



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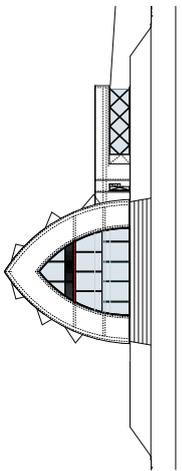


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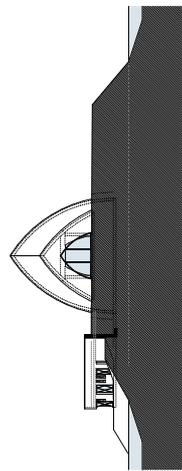


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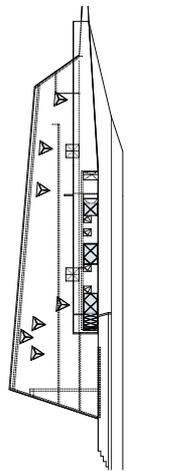
3. Elevation



NW



SO



SW

PHOTOS

by Brígida Gonzalves



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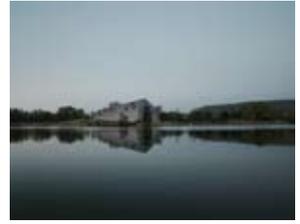
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IMG_3319



IMG_3331



IMG_3397



IMG_3391



IMG_3440



IMG_3441



IMG_3452



IMG_3492



IMG_3495



IMG_3609



IMG_3618



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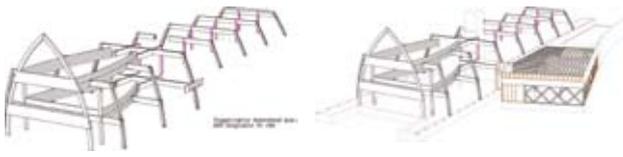


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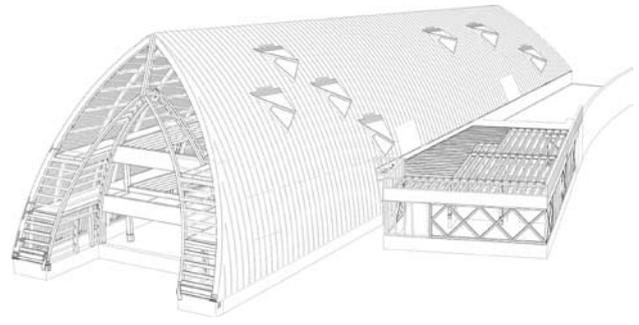
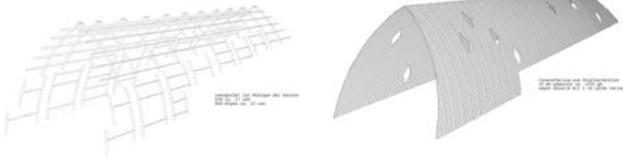
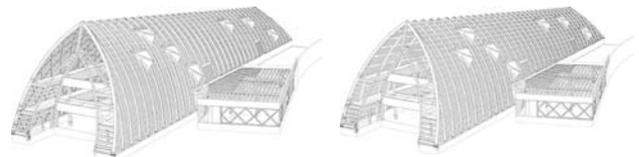
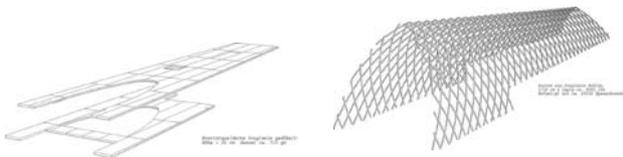
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CONSTRUCTION



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SITEPLAN

