



Sustainable beach restaurant Aan Zee



Name of project:	Restaurant Aan Zee (on the sea) www.aanzeeoostvoorne.nl	Building owner:	Van Marion, Oostvoorne
Typology:	Commercial (Restaurant)	Architect:	Emma Architecten, Amsterdam www.emma-architecten.nl
Location:	Oostvoorne, Netherlands		
Completion:	<ul style="list-style-type: none"> • Designed from 2006-2010 • Construction period: 2011 • Completed and opened: 2011 	Construction management:	Jan Lemmens BV, Oostvoorne
Building area:	500 m ²	Construction:	SvR bouwconstructies, Spijkenisse
Energy concept:	<ul style="list-style-type: none"> • Low energy concept without gas • Heat pump ground source 	Contractor:	I. van Reek en Zn Bouw en Aannemings- bedrijf Oostvoorne
Vaillant products:	<ul style="list-style-type: none"> • Geothermal heat pump VWS220/2 with 11 probes • Multifunctional layered storage system aIISTOR MSS 1,500 litre, with 8 solar panels, total 18,8 m² 	Heating installation:	Vroegh & Hobbel BV, Oostvoorne
		Electrical installation:	Hoogenboom Brielle BV, Brielle
		Windmills:	Fortis Wind Wnergy, Hoogkerk
		Halophyte field:	Ecofyt, Oirschot
		Wood-burning stove:	Lohberger, Austria
		Furniture:	Vervoort, Goilre
		Interior work:	Square vision, Alphen aan de Rijn
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The good feeling of doing the right thing.

The beach restaurant "Aan Zee" designed by Emma Architecten of Amsterdam in the "Natura 2000" sand dune conservation area "Voornes Duin" is a multi-functional restaurant, outdoor sports area, information facility and lookout tower and in many respects self-sufficient. All available natural energy sources, such as the sun, wind, wood, natural convection and geothermal heat, are used for the energy supply, heating, cooling and ventilation of the building. In addition, a sustainable concept for water purification and waste water management was developed for the beach restaurant. The innovative building is heated and cooled by a geoTHERM VWS220/2 geothermal heat pump.

The building "Aan Zee" was erected on a dyke about 9 metres above the water level. It is situated in a sand dune conservation area in Oostvoorne, the Netherlands, not far from the industry and harbour area "Maasvlakte". The special flair of the harbour facilities at a distance, combined with the protected flora and fauna in the direct vicinity, makes the restaurant with its lookout point a popular destination and meeting place for outdoor sports enthusiasts, as well as kite surfers and mountain bikers.

The design by Emma Architecten is strongly inspired by the environment, the shapes and colours of the landscape being interpreted and implemented in the building. All design and technological aspects, such as energy and water management, as well as the interior, the lighting and the gastronomy concept, were planned by Emma Architecten. A special challenge was the connection of the building to the far removed supply and disposal networks. The goal therefore was to make the building as self-sufficient as possible. The electricity is generated by solar modules on the roof and by a windmill; the building is heated and cooled by a heat pump with a geothermal heat exchanger geoTHERM VWS220/2 and storage system allSTORE VPS1500/2, and the waste water is cleaned by a field of halophyte plants. The sustainable concept is also holistically transferred to all areas of utilisation: The cook works with a wood-burning stove and uses ingredients

from local manufacturers. The personnel are clothed in natural fibres, and recyclable materials are used for the furniture. The building itself could also be reused in its entirety and the materials recycled.

Sculptural form of nature, wood and glass

The building, whose façade is characterised by a winding wooden band, rises with great momentum from the dunes like a sculpture and culminates in a lookout tower, which appears to wind around the chimney. The wooden elements of the façade are small and layered, creating a relief. The wood is exposed to the weather, so that it will age over time to blend in even more with the surroundings.

Inside, next to the fireplace area there is an open dining room, which is climatically separated from the outside by an all-glass façade. The room opens onto the terrace and the surrounding area. Towards the back and, from outside, invisibly buried in the dunes there is a sea container that houses the technology and logistics facilities. The interior consists of custom-built furnishings: the long wooden wall also serves as a continuous wooden bench. The fixed reading bench inside continues seamlessly into the outdoor area and appears - like the bar - to rise as a monolith from the sand-coloured earth. Behind the bar is the kitchen, which has the appearance of a row of coloured containers in front of a back wall. Here the kitchen staff cooks over an open fire.

Innovative water and energy concept

The goal was to be able to operate the restaurant with complete self-sufficiency. For this purpose, the latest technologies were used for the generation and distribution of energy, as well as for the water management. Electricity is generated by two windmills, each with 5 kWp, and photovoltaic elements on the roof, which produce about 13 kWp. To save energy, only LED lighting is used throughout the building. The heat is generated by a geoTHERM VWS220/2 geothermal heat pump from Vaillant. Eleven probes at a depth of 95 metres provide a total of 2,090 metres of vertical storage. In combination with eight solar collectors from Vaillant and an allSTOR MSS VPS1500/2 storage system the natural heating and cooling of the building is ensured, as is the hot water supply by means of solar and geothermal heat. The distribution of heat and cold in the building itself is achieved by an in-floor heating system. For this purpose, 3.100 metres of in-floor heating were installed throughout the building, also in the containers. The open fireplace primarily serves to create a cosy atmosphere, but in winter also helps to pre-heat the air supplied to the building. Ventilation of the building is achieved with a natural convection system. A special feature of the building services engineering concept is the water management. The waste water is cleaned naturally in a 200 m² halophyte field, which eliminates the need for connection to the sewage system. First, the fatty components are filtered from the waste water and are later used to supply a biomass heating system.

The restaurant "Aan Zee" is sustainable in every respect - from the design and integration in the landscape, to the constructive and technical structures of the energy and water utilisation, all the way to the preparation of the meals. Emma Architecten have designed a very expressive, sculptural building that discreetly fits into the surroundings, makes sustainable use of resources and will function in harmony with the environment in the long term.

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