



CLIENT
The Municipality of Rotterdam,
Rotterdam Climate Proof

ARCHITECT
Deltasync/PublicDomain Archi-
tects

FLOATING FOUNDATIONS
FlexBase

STRUCTURAL ENGINEERING
Advin

SYSTEMS CONSULTANT
DWA

SYSTEMS ENGINEERING
Vector Foiltec



Floating Pavilion

Rotterdam

NEW CONSTRUCTION - FLOATING PAVILION WITH ADJOINING PLATFORM

Commissioned by the Municipality of Rotterdam, Dura Vermeer has constructed a new floating icon in the Rijnhaven in Rotterdam. The Floating Pavilion is the first result booked by Rotterdam Climate Proof (part of the Rotterdam Climate Initiative) in a series of projects involving climate-proof construction in areas outside the Netherlands' system of protective dykes. The pavilion also unifies the objectives of the city of Rotterdam to half emissions of greenhouse gases such as CO2 and to keep the city climate proof in the future.

Futuristic image

The Floating Pavilion was designed by Deltasync/PublicDomain Architects and consists of three linked dome constructions with diameters of 18½, 20 and 24 metres respectively and a height of approximately 12 metres. The total floor area is 46 by 24 metres. The pavilion is connected to a floating platform that is joined to the quayside by two bridges.

Floating foundations

The semi-transparent domes have floating foundations made of expanded polystyrene (EPS) combined with a grid of

concrete beams. This construction method was developed and patented by Dura Vermeer and Unidek. The partnership between these two companies is known by the product name FlexBase. This product was previously used in the floating greenhouse in Naaldwijk and the floating bird sanctuary on the Maasvlakte.

Technical development

Whereas the floating greenhouse and bird sanctuary are both square-shaped structures, the floating foundations of the pavilion are unique because of their circular form. The basement compartment measuring nine by three metres that is situated within the floating foundations to house the technical facilities is another new development. Similarly to the floating greenhouse and bird sanctuary, the pavilion domes were actually built in the water and the EPS construction was not "launched" in any way. The pavilion islands (and floating platform) were built at RDM Campus in the Heijsehaven in the Heijplaat district of Rotterdam before being transported to the Rijnhaven.

CONSTRUCTION TIME
November 2009 - June 2010

GROSS FLOOR AREA
1,104 m²

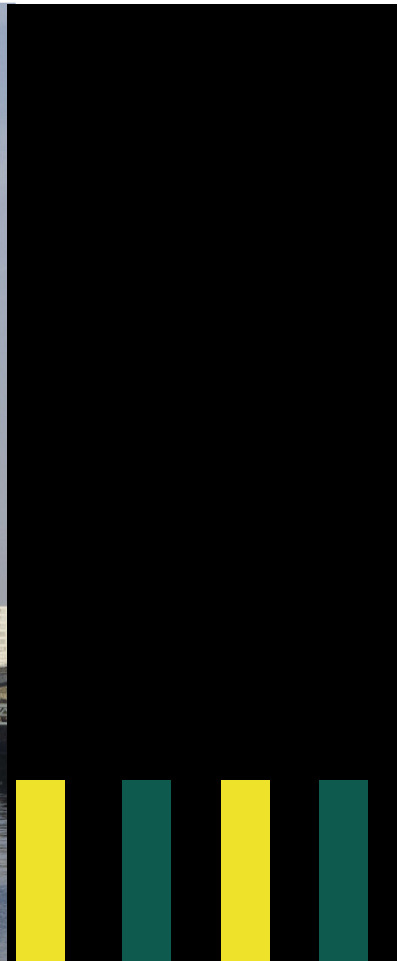
SPECIAL DETAILS
Winner Golden Green Awards
2010





Floating Pavilion

Rotterdam



A hundred times lighter than glass

The geodetic domes are made of steel and covered with a lightweight ETFE-foil membrane. This material, which is a hundred times lighter than glass, was previously used in the construction of the Olympic swimming pool in Beijing.

Energy efficient

The floating pavilion incorporates a large number of innovative and renewable techniques that create an energyefficient and largely self-sufficient structure. The pavilion has, for example, its own heat recovery system and separate climate zones that allow heating and cooling to be adjusted in line with the way in which the domes are used. The solar collectors installed on the roof of the smallest dome, which was designed to be used as an auditorium, enable the sun's heat to be used to cool the pavilion via the process of evaporation. The utilisation of phase change materials (PCMs) creates a thermal buffer that keeps the auditorium cool during the day in summers. At night when the auditorium is no longer used, the buffer can be refilled. Waste water is purified on the islands and reused for flushing toilets.

Exposition space

Over the next five years, the complex will serve as an expertise centre for demonstrating innovative and inspiring methods for tackling climate, energy and water issues. This focus makes the pavilion the showcase and calling card of a number of water management organisations such as the Rotterdam National Water Centre, which is currently being set up. In this way, the Floating Pavilion strengthens the competitive position of the Netherlands water management sector across the board.

