BARTELS & VEDDER

Interdisciplinair Ingenieurs & Consultancybureau

Floating techniques, innovations and engineering by Bartels & Vedder for durable floating cities and projects

info @bartelsvedder.nl WWW.BARTELSVEDDER.NL +31 (0) 6 422 398 53

Bartels & Vedder BV is an engineering and consultancy agency, specializing in engineering infrastructures, land based buildings, floating structures and flood proof building.

The company is founded in 2011 after its owners developed numerous new building techniques and floating foundations since 2004 in the development and engineering firm AquaLife.

Together with a team of specialists, who use an integrated and interdisciplinary approach and in addition to traditional construction, infrastructure, and non-residential construction, also serves the area of off-shore and floating.

At Bartels & Vedder, we pride ourselves on working as a team with specialists, from feasibility studies to actual realization of the project, working on innovations and making buildings possible. This all from a practical sense and coming with realistic solutions.

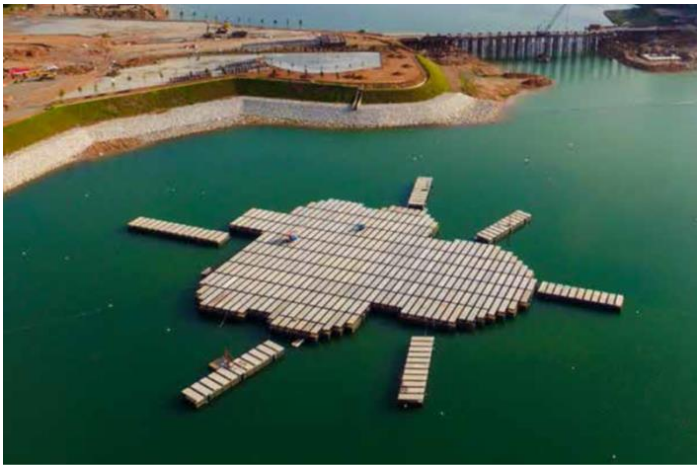
Our engineering and advice concern the following types of 'Flood Proof' projects:

- **Floating houses and villa's**
- **Floating parks**
- **Floating offices**
- **Floating islands**
- **Floating neighbourhoods and cities**
- **Floating solar**
- **Floating jetties**
- **Mooring structures**
- **Fendering**
- **Bridges**

We offer the following services:

- **Structural calculations**
- **Nautical calculations (stability, drift forces, waves)**
- **(3D BIM) drawings**
- **Structural advice**
- **Project management**
- **Product development**
- **Monitoring and guidance**

In the following pages, innovations of Bartels & Vedder regarding floating technologies and projects are shown.



MODULAR FLOATING ISLAND TECHNOLOGY

BARTELS & VEDDER has invented and developed a modular floating foundation technique to built large floating foundations in every shape and size.

The technique is based on prefab modular concrete slabs with a specially engineered rebar structure and couplings. The structure has an EPS (polystyrene) float. These floats can consist out of other materials as well, such as reinforced plastic, steel, aluminium or concrete pontoons.

The structure gets its strength from the 3D truss system in the prefab concrete elements.

Because of the modular configuration, the elements can be built off-site in a factory to be shipped to location and to be connected to large floating islands.

The space in between the concrete slabs can be used for installations, storage or other means.

The largest structure that has been built with this technique, is the 6,000m^2 Floating Ferry terminal in Malaysia. The prefab elements have been produced at 100 km from Kuala Lumpur and shipped 400 km into the jungle to built the floating island.

The biggest dome on the floating island has a span of around 44 meters and a height of 24 meter.

Next of being technology supplier of the project, Bartels&Vedder also supplied the complete structural engineering, nautical engineering, 3D drawings and site engineering.

For more information please contact Jelle Vedder of Bartels & Vedder bv.

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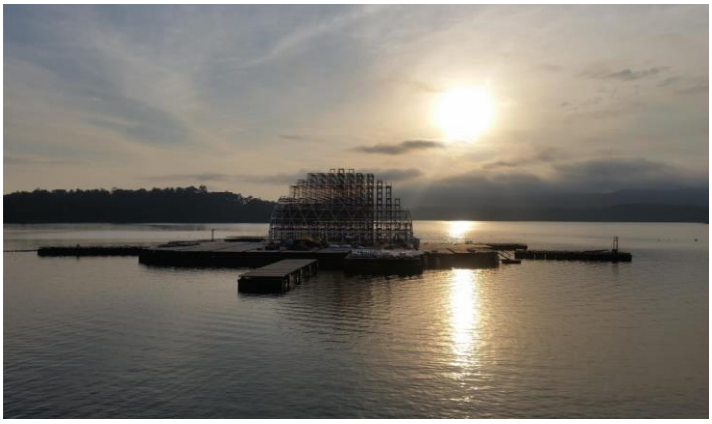

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FIBRE REINFORCED COMPOSITE HULLS

BARTELS & VEDDER has invented and developed the fibre reinforced composite hulls in 2009-2010 for floating houses and structures, as an alternative to concrete hulls.

The technique has been developed by Bartels&Vedder to be able to:

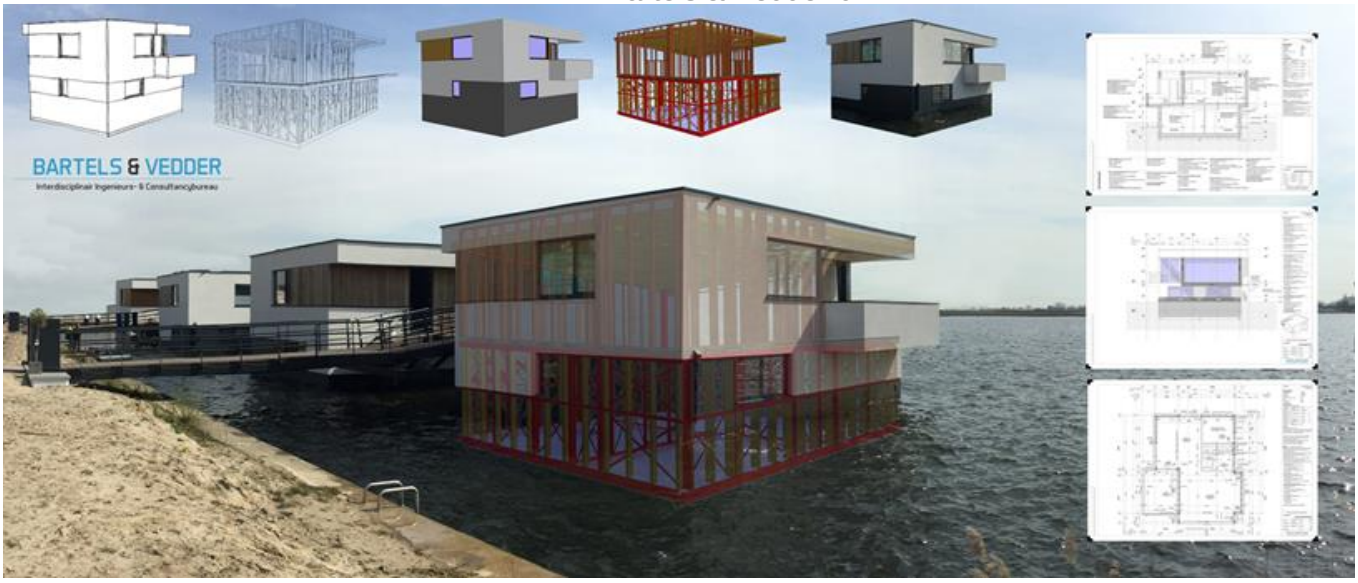
- Manufacture hulls with a lot of design freedom;
- Be able to built floating buildings in areas with low water depths;
- Have a maintenance poor and durable floating basement.

The structure consists of a steel or another loadbearing frame, which forms the rib cage of the structure. The structure is being covered by prefabricated sheets of fibre reinforced composites to add extra strength and to form the water tight hull.

Several projects have been built with this innovative technology, such as the floating villa's in Delft in the Netherlands and the floating villa's in Woerden in the Netherlands.

Next of being technology supplier of the project, Bartels&Vedder also supplied the complete structural engineering, nautical engineering and 3D drawings for the projects.

For more information please contact Jelle Vedder of Bartels & Vedder bv.



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INNOVATIVE CONNECTION SYSTEMS FOR CONCRETE HULLS

BARTELS & VEDDER has invented and developed several technologies to connect (prefab) concrete hulls to form large floating foundations.

Some of these technologies use techniques such as;

- Pre-tensioning technologies;
- Bolted connections;
- (semi) flexible connections.

These technologies developed and engineered by Bartels&Vedder makes it possible to connect smaller and large (prefab) concrete hulls to each other, to form large floating foundations. Bartels&Vedder hase implemented this technology in the following projects:

- Floating park (350 meter x 30 meter)
- Floating office building (90 meter x 30 meter)
- Floating farm (22 meter x 22 meter)
- Diving centre (60 meter x 13,8 meter)

Next of being technology supplier of these projects, Bartels & Vedder also supplied the complete structural engineering, nautical engineering and 3D drawings for the projects.

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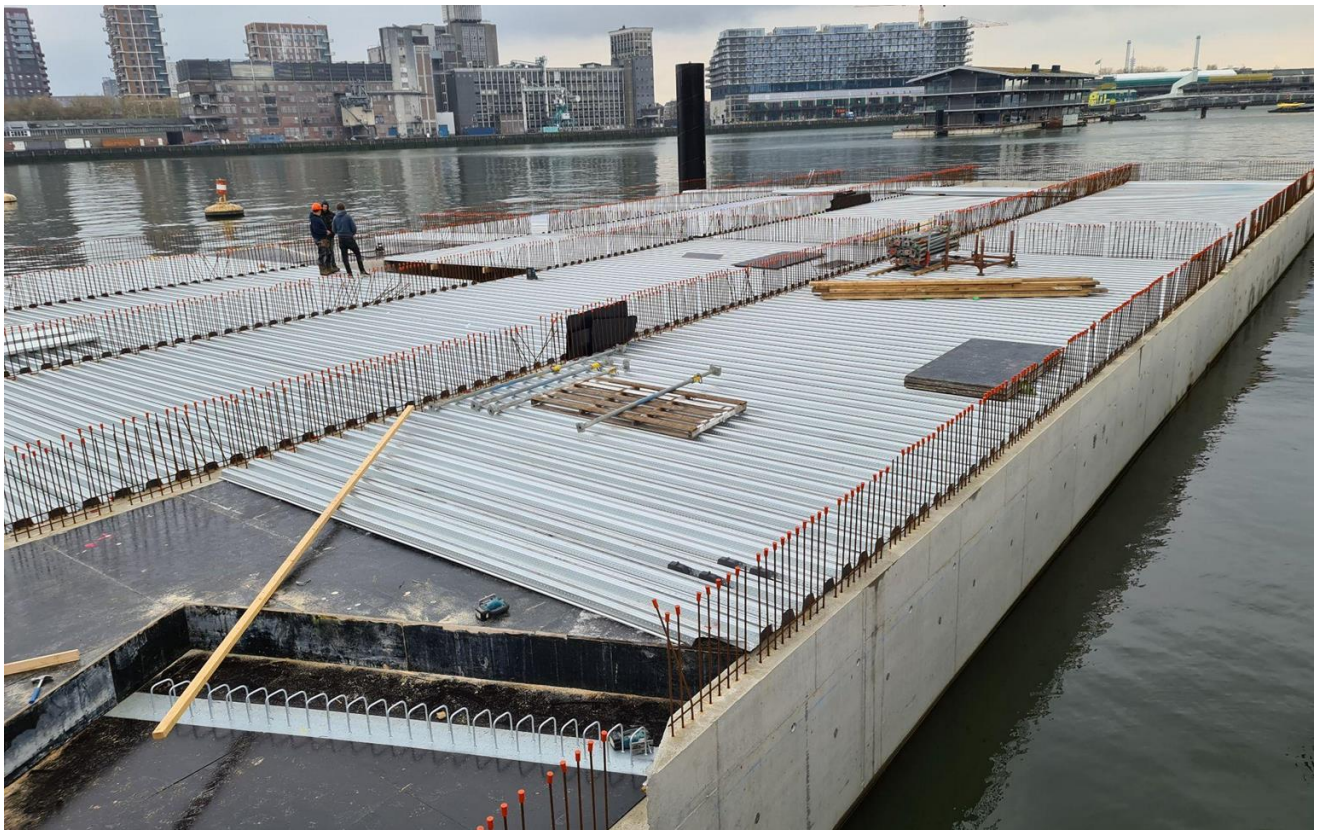


STRAATEN
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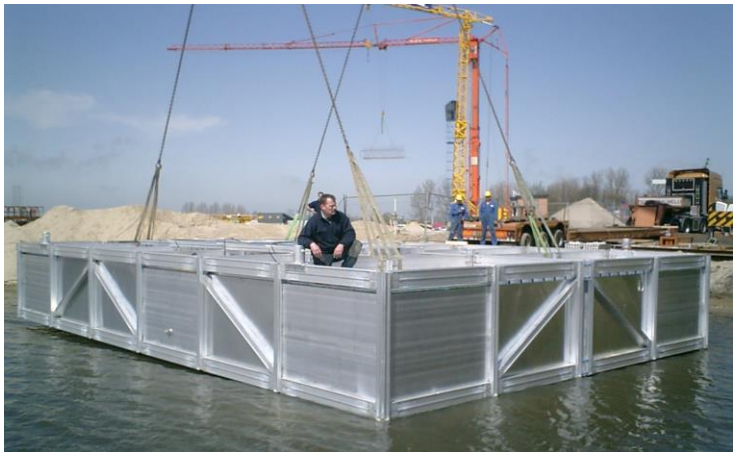


MODULAR (ALUMINIUM AND CONCRETE) LIGHT WEIGHT FLOATING FOUNDATIONS

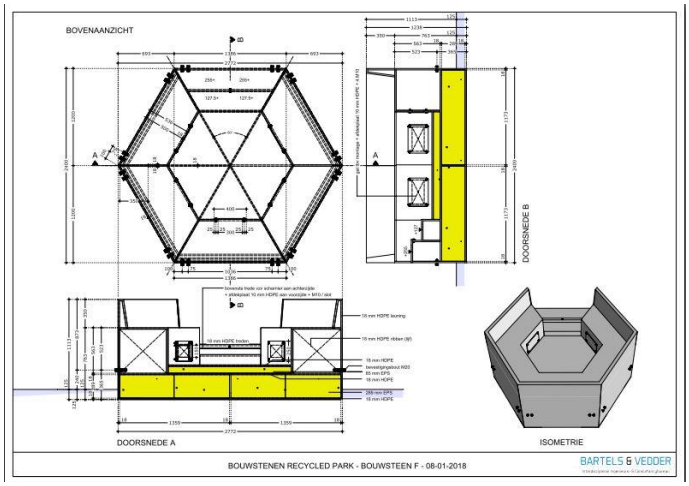
BARTELS & VEDDER has invented and developed the modular (aluminium and concrete) light weight foundation technology, to create large modular floating platform with a low draft to be used in shallow waters.

The modules have special engineered connections to be able to expand the floating platform, even after the superstructures have been built on top of it. The upside is that these modules can be disconnected as well to be used elsewhere.

First project to be built with this product is ‘The Veerhuis’ in the Netherlands. A variant in concrete and EPS is being designed for floating meadows.

Next of being technology supplier of these projects, Bartels&Vedder also supplied the complete structural engineering, nautical engineering and 3D drawings for the projects.

For more information please contact Jelle Vedder of Bartels & Vedder bv.



MODULAR HDPE AND EPS LIGHT WEIGHT FLOATING FOUNDATIONS

BARTELS & VEDDER has developed modular HDPE floats, filled with EPS for the Recycled Park in Rotterdam, The Netherlands.

We designed and engineered a floating body that exists of two materials: EPS and HDPE. In many project EPS served as the main floating element *(visit our EPS Floating products)*, but for the Recycled Park the HDPE was chosen as the main element.

HDPE (High Density Polyethene) is a strong, sturdy and opaque plastic. This waterrepellent material can be found in commonly used household products like plastic buckets, bottles, containers and so on.

It's mainly used for products that require a very long shelf life. For the Recycled Park (which will float in the main river of Rotterdam), the HDPE is created from recycled plastics that have been collected out of the main river.

If you wish to use our techniques and products, or if you require some consultancy and advice for your (upcoming) projects, simply us!

(HDPE) TRIM TANKS

BARTELS & VEDDER has developed several trim tanks for leveling out floating structures. These often consist of HDPE tanks which is filled with air by pressing the water out underneath.

Sometimes floating structures need to be moved due to changes in the vicinity or changes that require a repositioning.

The floating structures need to be lifted, moved and balanced on their new location. In some of these projects we engineer and designed special trim tanks for the lifting and straightening of floating structures.

If you wish to use our techniques and products, or if you require some consultancy and advice for your (upcoming) projects, simply **contact** us!

SELECTED PROJECTS
of
BARTELS & VEDDER

Floating village Nijmegen (project Lentse Kust)

- 27 floating houses
- Engineer: Bartels & Vedder
- Developer: Balance D'eau
- Architect: Zeinstra Veerbeek
- Contractor: Zederik bouw (Damsteegt)
- Finished: In progress

SELECTED PROJECTS
of
BARTELS & VEDDER

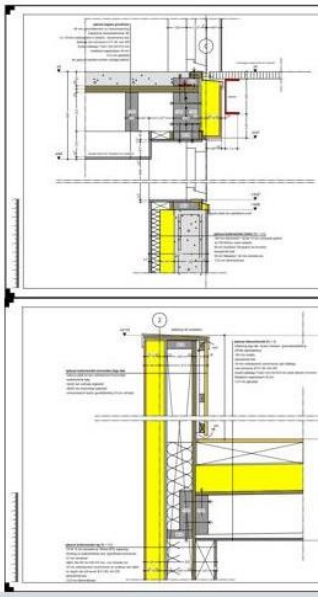
WikkelboatsRijnhaven Rotterdam

- +/-70 m2
- Engineer: Bartels & Vedder
- Developer: Wikkelboat
- Architect: -
- Contractor: Hercules
- Finished: 2022

SELECTED PROJECTS
of
BARTELS & VEDDER

Waterrocks Zeewolde

- 9 floating villa's
- Engineer: Bartels & Vedder
- Developer: Balance 'D'eau
- Architect: Waterstudio.NL
- Contractor: Zederik Bouw (Damsteegt)
- Finished

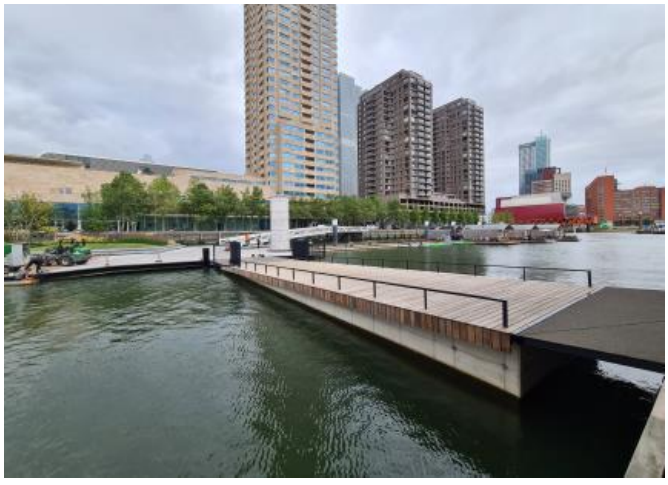


3D BIM MODEL - TEKENINGEN

SELECTED PROJECTS
of
BARTELS & VEDDER

Floating Park Steigerpark Rijnhaven Rotterdam

- +/-10.000 m2
- Engineer: Bartels & Vedder
- Developer: Gemeente Rotterdam
- Architect: Carve
- Contractor: GKB
- Finished: Phase1 : 2022 Phase2: start 2023



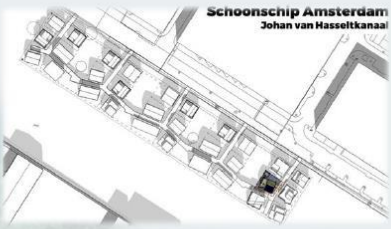
FLOATING STRUCTURES AND BUILDINGS

SELECTED WORKS

SCHOONSCHIP, AMSTERDAM | THE NETHERLANDS
2016 – 2020

Project status: Construction

A large scale floating residential area, existing of all floating villas arising in the Johan van Hasseltkanaal, a branch of the IJ-canal in Amsterdam. This floating "district", called Schoonschip will be the most sustainable floating housing project in Europe which will exist of a total of 30 houses, 46 households and over 100 residents.



OUR INVOLVEMENT

- Engineering of the floating foundations/cellars of 16 houses
- Engineering of the mooring piles and construction of 16 houses
- Engineering of the structural design of 16 houses
- Determining and engineering the stability and draught (depth) of 16 houses
- Structural drawings for building permit applications of 16 houses
- Conceptual structural drawings for construction of 12 houses
- 3D BIM structural model of 4 houses
- Shopdrawings (Construction drawings)

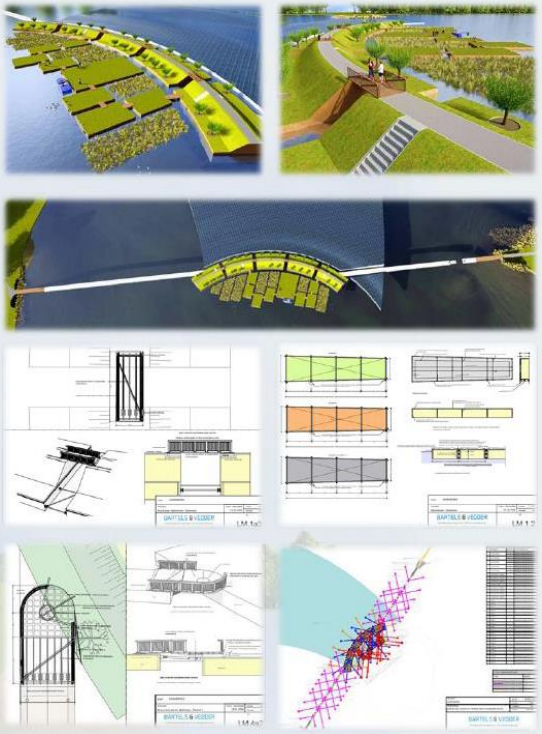
FLOATING STRUCTURES AND BUILDINGS

SELECTED WORKS

K3 DELTA, LINGEMEREN | THE NETHERLANDS
2018 – 2020

Project status: development

The formerly agricultural area Lingemeren is being transformed to a water-rich nature and recreational area. In the center of the lake an island, existing of smaller connected islands, will form a sustainable link between the north and south shore. These (concrete cellar) islands are linked by means of flexible, hinged structural elements, housing different functions like pedestrian and cycling lanes. The anchorage of the island should be considered for both the whole island as well as the smaller connected island.



OUR INVOLVEMENT

- Engineering of the floating linkable concrete cellars
- Engineering of the hinged and rotatable structural connections of the floating islands
- Engineering and design of the anchorage elements and plan
- Determining stability and draught (depth) of the islands

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FLOATING STRUCTURES AND BUILDINGS

SELECTED WORKS

FLOATING FARM, ROTTERDAM | THE NETHERLANDS
2016 – 2019
Project status: Construction

The Floating Farm is a self-sufficient transparent floating dairy farm where visitors can see the cows and get acquainted with all the processes that take place on the farm.

OUR INVOLVEMENT

- Engineering and design of the floating linkable concrete cellars
- Determining stability and draught (depth)
- Engineering of the main load-bearing structure

PRODUCT DEVELOPMENT:

- Floating linkable concrete floating cellars

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FLOATING STRUCTURES AND BUILDINGS

SELECTED WORKS

WATERRIJK FLOATING HOUSES, WOERDEN | THE NETHERLANDS

2017 – 2018

Project status: Completed

12 luxurious floating houses on the Cattenbroekerplas in The Netherlands

OUR INVOLVEMENT

- Engineering and design of the floating foundations
- Engineering and structural design of the houses
- 3D BIM model
- Architectural drawings for Building Permit application
- Shopdrawings

PRODUCT DEVELOPMENT:

- Floating Glass fibre composite basement cellars

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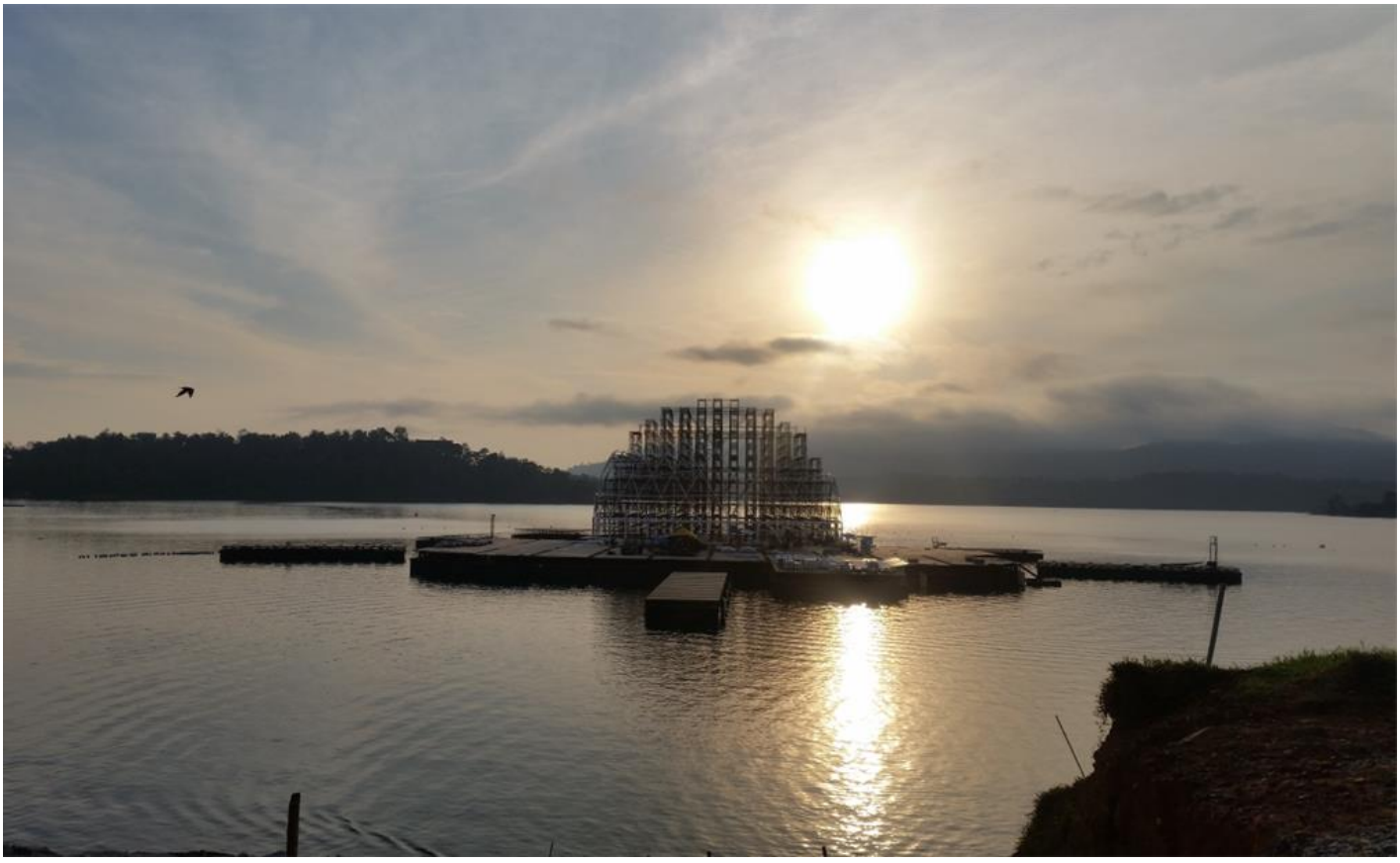

The projects shown in this document are just a selection of the projects of Bartels&Vedder. When more examples of projects are requiered or more info is needed, please contact us.

ADDRESS

Neerduist 5e
3751 LX, BUNSCHOTEN-SPAKENBURG
THE NETHERLANDS

EMAIL

INFO@BARTELSVEDDER.NL

PHONE

+31 6 422 398 53

WEBSITE

WWW.BARTELSVEDDER.NL