Look around and meet the world of Van Oord

Frans Pijpers | SDB Day 2018 | 06-07 June 2018
About us – Company profile

- Leading international marine contractor

- Specialised in:
  - Dredging
  - Offshore oil & gas
  - Offshore wind

- Our Marine ingenuity is all about smart and innovative solutions

- Independent family-owned business

- Long-term view to provide marine solutions of value

- Safety, sustainability and continuity go hand in hand
We are a Dutch family-owned company with over 150 years of experience as an international marine contractor. We value open communication with our clients and stakeholders. Our company culture is one of entrepreneurship and engaged employees. We think and act with responsibility and focus on the long term.
Vision and Mission

Vision
Our vision is to create a better world for future generations by delivering Marine ingenuity.

Mission
As a global maritime contractor, we focus on dredging, oil & gas infrastructure and offshore wind. We work safe and closely with our clients and stakeholders to create innovative and sustainable solutions.
we (create care work together succeed)
we create ( )
we care
we work together
we succeed
About us – Worldwide presence

Van Oord Worldwide

Europe
- Azerbaijan – Baku
- Belgium – Zele
- Cyprus – Nicosia
- France – Le Blanc-Mesnil Cédex
- Germany – Bremen
- Gibraltar
- Italy – Amelia
- Kazakhstan – Aktau
- Latvia – Riga
- Netherlands – Gorinchem
- Netherlands – Rotterdam
- Norway – Bergen
- Portugal – Lisbon
- Romania – Constanta
- Russia – Moscow
- Russia – St Petersburg
- Spain – Madrid
- Turkmenistan – Ashgabat
- Ukraine – Odessa
- United Kingdom – Small Dole

America
- Bahamas – Nassau
- Brazil – Rio de Janeiro
- Canada – Calgary
- Canada – Ontario
- Curacao – Willemstad
- Mexico – Mexico City
- Panama – Panama
- United States – Houston

Africa
- Angola – Luanda
- Mozambique – Maputo
- Nigeria – Ikeja-Lagos

Middle East & West Asia
- Bahrain – Manama
- India – Mumbai
- Qatar – Doha
- United Arab Emirates – Dubai

Asia & Australia
- Australia – Brisbane
- Australia – Perth
- China – Shanghai
- Filippinen – Manilla
- Hong Kong
- Indonesia – Jakarta
- Korea – Busan
- Malaysia – Kuala Lumpur
- Singapore
- Taiwan – Keelung City
- Thailand – Bangkok
- Vietnam – Hanoi

Head office
Rotterdam, Netherlands

47 Branches worldwide
Our people share a passion for water and technology, as well as developing and achieving innovative, sustainable solutions for our projects.
Minimise any harmful effects, and encourage positive ones

Van Oord Guards programme:
- PlumeGuard
- FaunaGuard
- ReefGuard
Activities – Dredging

- Ports and waterways
- Land reclamation and constructing artificial islands
- Constructing dikes, revetments and coastal defences
- Building jetties, groynes and quay walls
- Removing contaminated bed sediment
- Vertical and horizontal drainage

Looking closer
- Epicentre of Dutch marine engineering
- Megaproject Palm Jumeirah
- Maasvlakte 2
Activities – Offshore oil & gas

Offshore oil & gas

- Integrated solutions for the installation of nearshore pipelines, cables and offshore constructions
  - Landfall construction
  - Trenching and backfilling
  - Installation of shallow water pipelines, cables and buoy mooring systems
  - Installation of gravity based structures

- Subsea rock installation for the stabilisation and protection of pipelines, cables and other constructions on the sea bed

Looking closer

- U-864 counterfill project
- Tetney Sea line project
Activities – Offshore wind

− Engineering, Procurement and Construction (EPC) contractor

− Focus on Balance of Plant (BoP) contracts, consisting of foundations, scour protection, infield cables, offshore high-voltage substations, export cables, WTG installation and onshore works

− Focus on transport and installation (T&I) projects

− Market leader Northwest Europe

− Specialized offshore wind equipment

Looking closer

› Gemini

› Walney Extension
We operate the world’s most advanced equipment

- State-of-the-art vessels
- Highest quality and safety and sustainable standards
- Continuous investment programme

**Activities - Equipment types**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>We operate the world’s most</td>
<td>Trailing suction hopper</td>
</tr>
<tr>
<td>advanced equipment</td>
<td>dredger</td>
</tr>
<tr>
<td>State-of-the-art vessels</td>
<td>Cutter suction dredger</td>
</tr>
<tr>
<td>Highest quality and safety and</td>
<td>Flexible fallpipe vessel</td>
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<tr>
<td>sustainable standards</td>
<td>Offshore wind equipment</td>
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<tr>
<td>Continuous investment programme</td>
<td>Backhoe</td>
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<td></td>
<td>Side stone dumping vessel</td>
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<td></td>
<td>Water injection dredger</td>
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<td></td>
<td>Split hopper barge</td>
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<td></td>
<td>Shallow water pipe lay barge</td>
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<tr>
<td></td>
<td>Other equipment</td>
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</tbody>
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Looking forward: Investments
Conclusion

Summary

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  - Offshore oil & gas
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This was a ‘short’ introduction to Van Oord D&M Contractors bv
Next we will zoom in on Satellite-Derived Information applications in Dredging and Marine Works
Satellite-Derived Information applications in Dredging and Marine Works
Satellite-Derived Bathymetry:

During tendering stages:
- Can provide additional information on accessibility and potential sailing routes
- Can provide additional information on nautical depths

During preparatory stages:
- Can enhance safe navigation in unknown and/or hazardous waters
- Can be beneficial in planning sailing routes, potential borrow areas and to optimize specific survey campaigns (e.g. sand search)

During execution of the works:
- Do not yet envisage the use of SDB. Depends on the specified Survey requirements and internal progress Survey requirements.
- Soon we hope to validate SDB data against our own in-house Hydrographic survey systems, which may create further support.
Satellite-Derived Imaging:

During tendering stages:

- To provide additional information on site conditions, such as coastal sabkhas (salt flats) or topography
- To provide additional information on erosion or accretion due to marine constructions / developments over time

During preparatory stages:

- Same as above and to record status prior to any construction activities

During execution of the works:

- To monitor any undesired changes due to construction activities or to substantiate any allegations
- More and more a contractual obligation to provide to the Client on regular basis (for example to create a time lapse video for the progress of the works)
During tendering stages and/or preparatory stages:

- Can provide additional information on possible seagrass or corals or rock outcrops (serving as habitat for crabs) to be relocated or restored
- Can provide additional information on possible pipelines or other existing features on the seabed

During execution of the works:

- To monitor any effect of the construction works on the environment
- To preserve the environment as much as possible by adapting work methods and work areas.

Ongoing case study: added value of SFC for sand search campaigns, correlation of satellite data against identified samples
Although we considered this type of satellite-based monitoring for dredging activities on several projects, this never materialized because we were either unsuccessful with the tender or the project specified more or less round the clock and on-line monitoring or full water column monitoring.

However, we will certainly consider this option to supplement the contractual requirements on water quality monitoring.
Example SDB – for planning purposes and safe navigation

As obtained from existing electronic charts

As provided by EOMAP, area in total 200 sq km !!!!!
Survey vessel and Dredger utilized on this specific project

Acting survey boat Blackbird

Trailing Suction Hopper Dredger Ham 318

**DIMENSIONS**
- Length over all: 227.30 m
- Breadth over all: 32.05 m
- Length between perpendiculars: 210.10 m
- Breadth moulded: 32.00 m
- Depth moulded: 17.12 m
- Draught - Light ship weight: 4.69 m ast / 3.19 m fore
- Draught - International freeboard: 11.74 m
- Draught - Dredging mark I - 15 miles: 13.00 m
- Draught - Dredging mark II - 8 miles: 13.55 m

**CAPACITIES**
- Hopper volume: 39,467.000 m³
- Dredging depth - Normal: 70.0 m / 101.0 m / 135.0 m
- Dredging depth - Maximum: 135.0 m
- Trailing suction pipes - Diameter: 2 x 1.20 m
- Shore delivery pipe - Diameter: Ø 1.10 m
- Shore delivery pipe - Bow coupling: Ø 1.10 m (Ø 1.10 m optional)
Progress status at a certain moment in time

Inner side of atoll is approx. 90 km² !!!!!!
Example SDB – Satellite-Derived Bathymetry

As obtained from existing electronic charts

As provided by EOMAP
Can our csd Athena enter the area safely?

Self-propelled cutter suction dredger Athena:

**DIMENSIONS**

- **Length over all**: 135.80 m
- **Breadth over all**: 27.82 m (without tendering)
- **Length between perpendiculars**: 108.00 m
- **Breadth moulded**: 27.80 m
- **Depth moulded**: 9.00 m
- **Draught – Light ship weight**: 5.62 m
- **Draught – International freeboard**: 6.60 m
Example SFC – Seafloor and Habitat Classification

As provided by the contract

As delivered by EOMAP

Figure 3: Habitat map of construction area, where green indicates seagrass field and red coral colonies.
Example Satellite Derived Bathymetry

As obtained from existing Electronic Charts

As provided by EOMAP
Example Google Earth and matching SFC
Example SFC – pipeline detection
Thank you for your attention, any questions please let us know

View towards Atlantis The Palm, Palm Jumeirah Island

Tshd Rotterdam sailing towards Atlantis The Palm
Back in the early days ‘we’ had to send our Dutch astronaut, Andre Kuipers, into space to obtain some images from the Palm and the World Islands, which is a lot easier and faster nowadays.
Will the below ‘survey techniques’ now be outmoded by SDB?