# WELCOME
# #TOGETHERJDN

Today, we are proud to give you an insight into the world of Jan De Nul. We show you our warehouses and workshops, as well as our excellent developments all over the world. Get to know our family and for one day be with us at Jan De Nul.

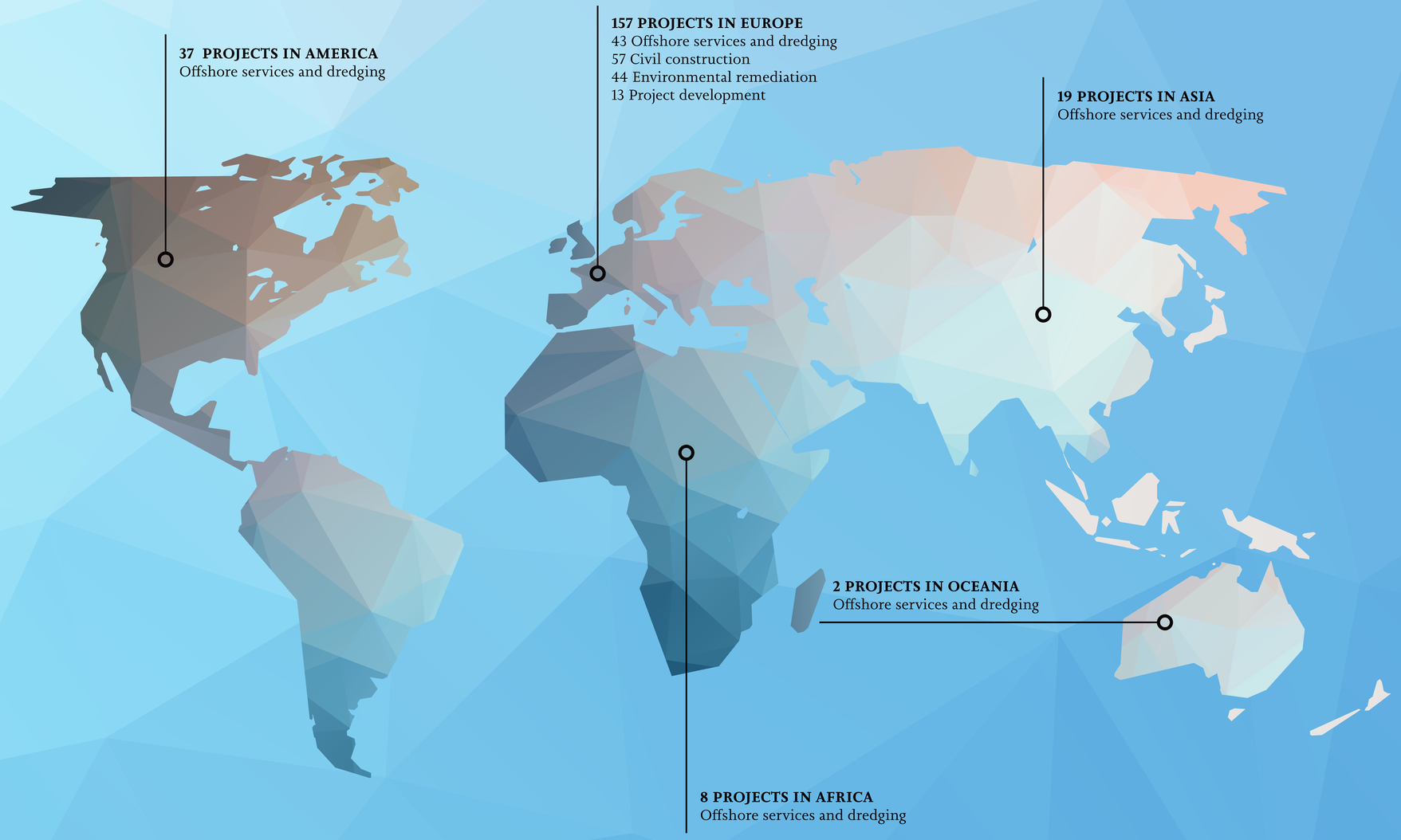
By the way, did you know that our family counts 6,644 members worldwide? And, believe it or not, we are still looking for many more to strengthen our teams.

We are glad you are here! Have a nice trip and who knows, maybe you will soon become part of the family too.

# JAN DE NUL

## KEY FIGURES

# IN 2021


37 PROJECTS IN AMERICA
Offshore services and dredging
157 PROJECTS IN EUROPE
43 Offshore services and dredging
57 Civil construction
44 Environmental remediation
13 Project development
19 PROJECTS IN ASIA
Offshore services and dredging
2 PROJECTS IN OCEANIA
Offshore services and dredging
8 PROJECTS IN AFRICA
Offshore services and dredging

There are

# 6,644

of us worldwide and yet that is not enough. Will you become our new colleague?

99

nationalities.

# 52

countries
in which we
were operating
by 2021.

# 1.7 BILLION EURO

Turnover in 2021.

# 223

## projects in 2021.

- 109 Offshore services and dredging
- 57 Civil construction
- 44 Environmental remediation
- 13 Project development

Our fleet has more than

**90**

dredging and installation vessels.

We have been operating in

**118**

countries since our founding.

# MARINE SERVICES

## We enable seafaring and protect life on land

Land Reclamation
Coastal and shore protection
Port Infrastructure
Dredging

## SINCE 1951

In 1951, we carried out our very first dredging job: delivering 530,000 $m^3$ of dredged material for the construction of the E40 highway between Brussels and Ostend near Jabbeke.

# OFFSHORE SERVICES

## We supply the world with energy

Offshore wind farms
Submarine cables and interconnections
Oil and gas services

## SINCE 1991

We completed our first offshore project in 1991: in Zeebrugge, we dredged the trenches for a 1,300 km gas pipeline originating from Norway.

# CIVIL ACTIVITIES

## We ensure better mobility on land and water and build a world for tomorrow

Infrastructure works
Buildings: offices, retirement homes, hospitals, residential projects
Foundation works with subsidiary Soetaert

**SINCE 1849**

Civil construction is where it all began for us. In 1849, Leo De Nul established himself as a building contractor and ‘qualified staircase manufacturer and joiner’ in Aalst. Leo is the first entrepreneur in the family.

In 2015, we acquired Ostend-based company Soetaert, which specialises in complex piling and foundation techniques. These activities perfectly complement our construction expertise above ground.

# ENVIRONMENTAL ACTIVITIES

## We contribute to a circular world

Site remediation
Remediation of ports and port areas

## SINCE 1996

We acquired environmental company Envisan in 1996, and gained crucial expertise in this domain. Environmental themes are also increasingly required in dredging and civil engineering works.

# PROJECT DEVELOPMENT

## We unburden, unlock and develop

Brownfield Development
Complex Redevelopment projects
Conversion Projects
Regular Real Estate Development

## SINCE 2012

In 2012, PSR joins the group, one of the first private developers in Belgium. PSR nicely complements our existing environmental department.

# VESSELS

Our vessels are modern, versatile, innovative and sustainable!

And most of them are of our own design. Thanks to this diverse range, we can offer the offer the ideal composition for every project.

**31**
TRAILING SUCTION HOPPER DREDGERS

**13**
CUTTER SUCTION DREDGERS

**6**
BACKHOE DREDGERS

**17**
SPLIT HOPPER BARGES

**5**
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**3**
CABLE INSTALLATION VESSELS

**5**
ROCK INSTALLATION VESSELS

**3**
HEAVY LIFT VESSELS

**2**
MULTIPURPOSE-SCHEPEN

**2**
OFFSHORE JACK UP INSTALLATION VESSELS

**139**
FLOATING AUXILIARY EQUIPMENT

# JAN DE NUL

## IN ASIA

# BANGLADESH

# UNLOCKING THE PORT OF PAYRA

Contract value

500

MILLION

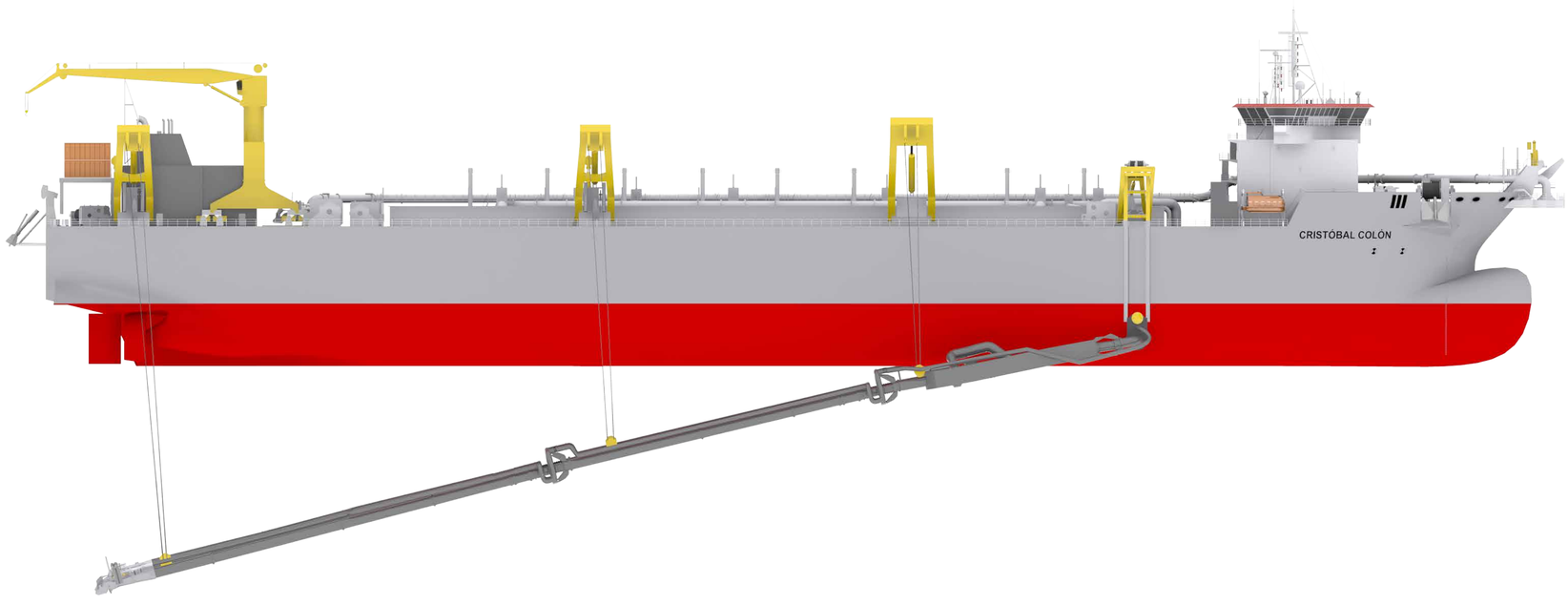
EURO

The Payra Port Authority is investing in a major upgrade of the port. To ensure that the port will remain accessible to larger ocean-going vessels, we are deepening the Rabnabad access canal to the port. With an impressive fleet of vessels, we are dredging the canal to a depth of 10 metres.

# 4 M

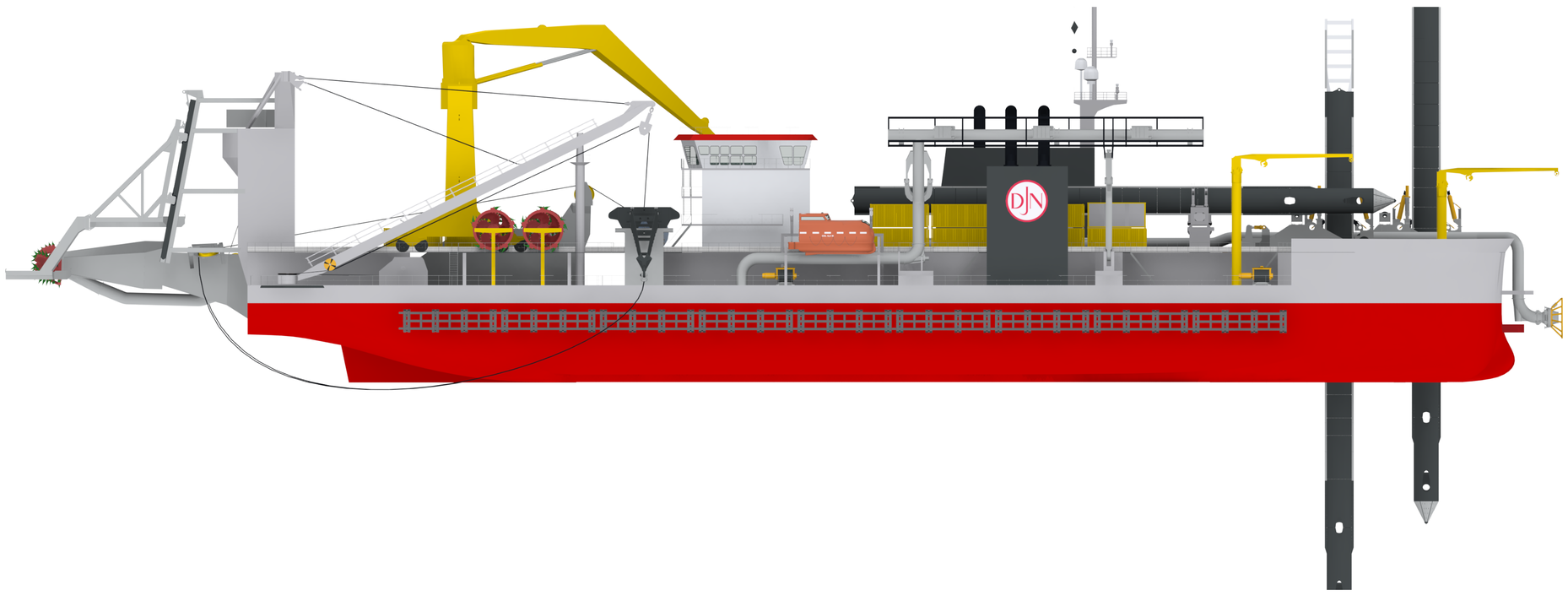
That's the thickness of the layer to be dredged to deepen the channel to 10 m

# 4+




# TRAILING SUCTION HOPPER DREDGERS

# 2




# CUTTER SUCTION DREDGERS

# WHY ARE WE DOING THIS?

We are helping to expand the port of Payra. This project is of great economic importance for Bangladesh and will boost the local economy and labour market.

# DID YOU KNOW THAT...

the sea off the coast of Bangladesh can be very rough? For this reason, we need to add extra reinforcement to our equipment.

# TAIWAN

# DESIGNING, BUILDING AND MAINTAINING AN OFFSHORE WIND FARM

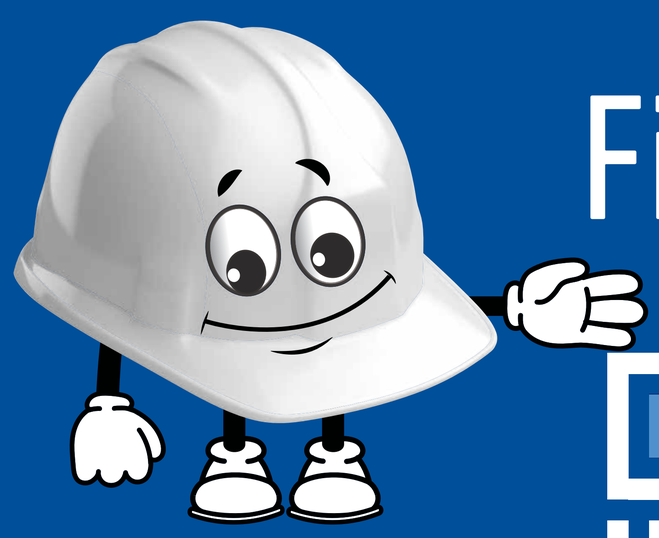
We made history in 2018: we were the first European wind farm builder winning the first wind project outside Europe. Eight kilometres into the sea, we built the first national wind farm off the west coast of Taiwan. We were responsible for the design, construction and installation of all components. And after completion, we are also responsible for their maintenance during a period of five years.

TPC's wind farm consists of

**21**

wind turbines of 5.2 MW each.

# HOW DO YOU BUILD SUCH A TURBINE?

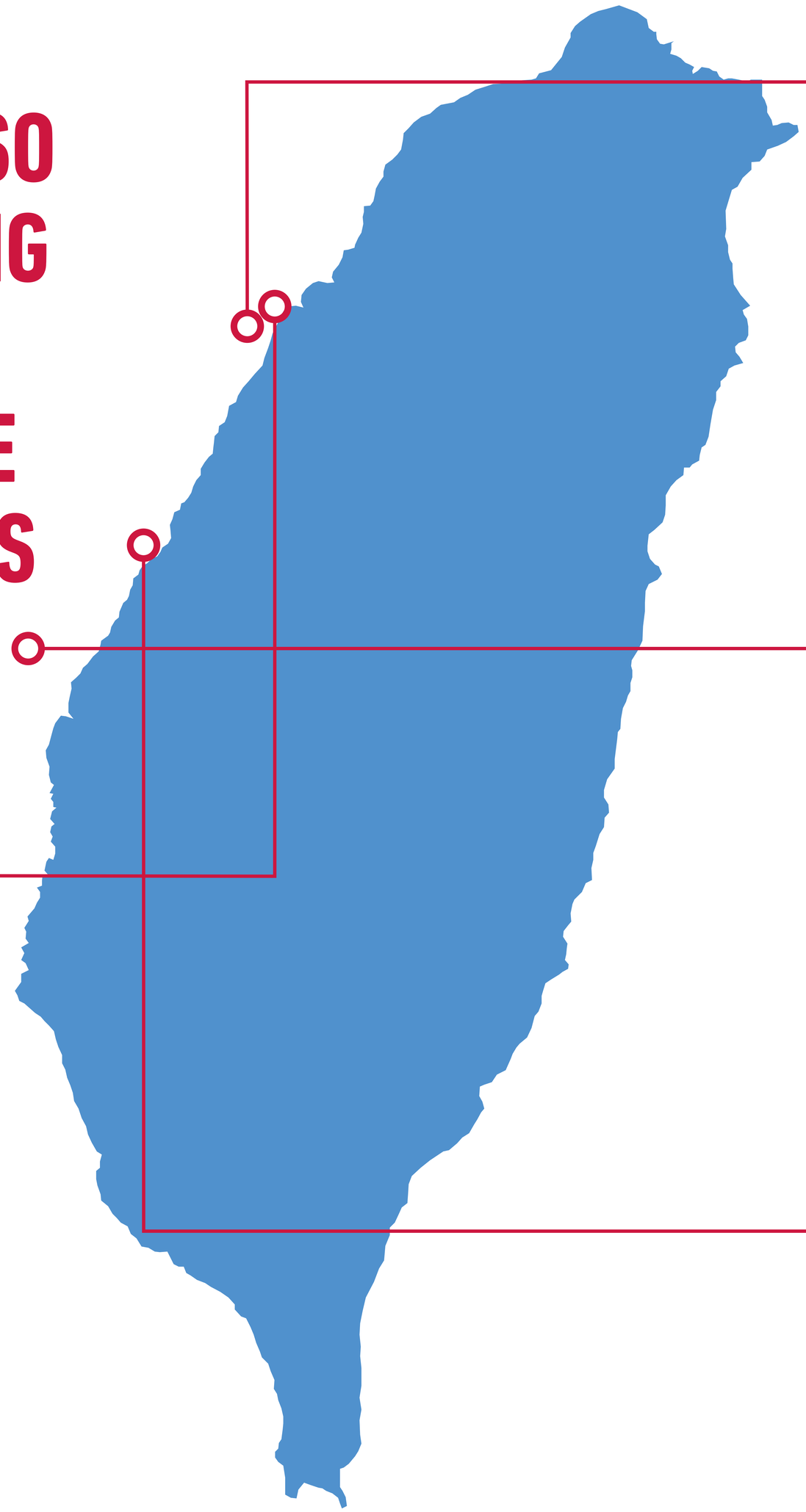


Find out here

# WHY ARE WE DOING THIS?

The world is making a transition to more electricity and less fossil fuels. Taiwan does not want to miss the boat either. We are proud to be at the forefront of Taiwan's own energy transition.

# IN TAIWAN, WE ARE ALSO CO-BUILDING ANOTHER 3 OFFSHORE WIND FARMS



Formosa 1 Phase 2
20 wind farms
120 MW

Greater Changhua
111 wind farms
900 MW

Formosa 2:
47 wind farms
376 MW

TPC
21 wind farms
109.2 MW

In total, this wind farm will produce

**109.2 MW**

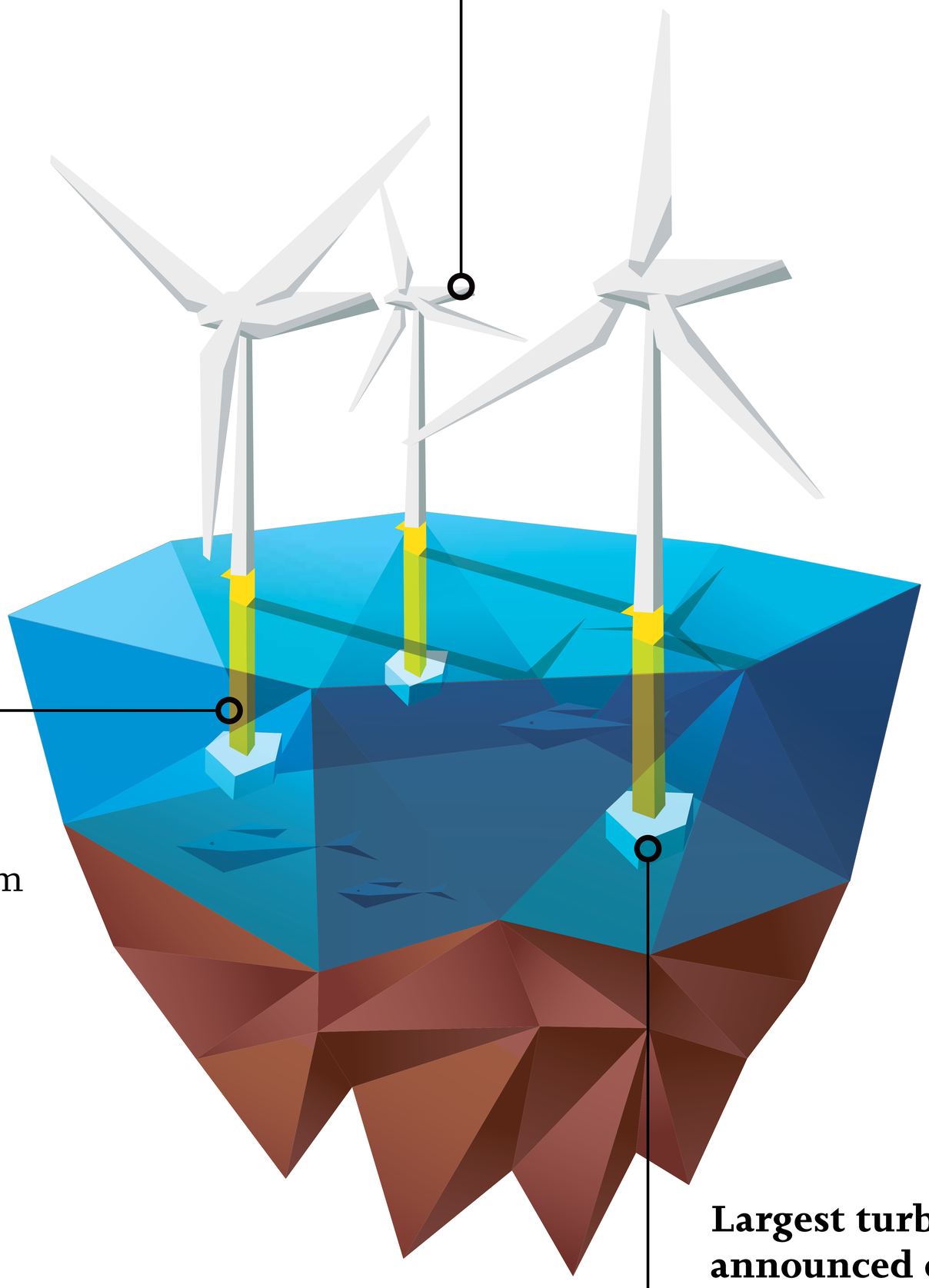
# DID YOU KNOW THAT...

the Corona pandemic had a huge impact on the execution of this project? Personnel and equipment could barely get in or out of Taiwan. Quarantines could at times last up to 4 weeks!

# 269 M

From head to toe, including rotor blades, the wind turbines are 269 metres high. The tower alone is 70 metres high.

**Offshore wind turbines (Nobelwind - 2016)**
Length of the blades: 54.7 m
Rotor diameter: 112 m
Height of the hub: 79 m
Power output: 3.3 MW



**Offshore wind turbines (Doggerbank - 2023)**
Length of the blades: 107 m
Rotor diameter: 220 m
Height of hub: 140 m
Power output: 13-14 MW

**Largest turbines announced on the market**
Blade length: 118 m
Rotor diameter: 242 m
Height of hub: 150 m
Power output: 16 MW

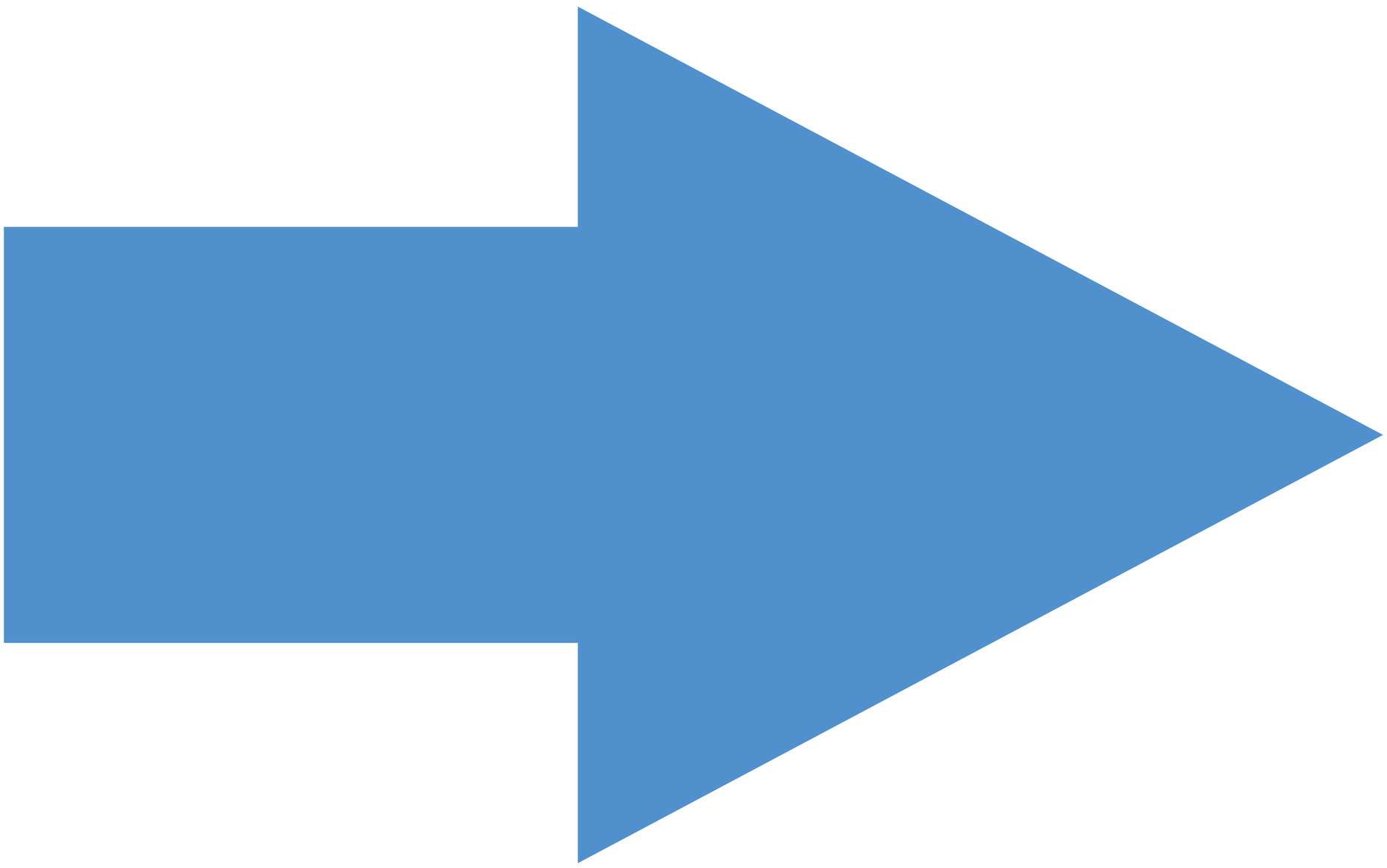
# DID YOU KNOW THAT...

the turbines have been specially designed for this project so that they can withstand the severe tropical storms off the coast of Taiwan?

# JAN DE NUL

## IN OCEANIA

# AUSTRALIA EXPANDING BRISBANE AIRPORT



Brisbane airport announced in 2010 that it would expand. The need for an additional runway was high. For this project, we created a new platform of dredged sand covering 741 acres. A unique feat: the sand still had to be led from the dredger all the way to the airport, through eight kilometres of steel pipes.

# 220

During peak periods, no less than 220 Jan De Nul employees were working on the project. 75% of them were local workers.

# 8 KM

The dredger was at a 1.5-hours sailing distance from the airport. To save time, the vessel pumped 13 million $m^3$ of sand through a pipeline as long as 8 kilometres.

# DID YOU KNOW THAT...

the newly dredged sand platform first needed another two years or so to stabilise? The ground is swampy and therefore required extra ‘drying time’.

# JAN DE NUL

## IN AMERICA

# USA

# BUILDING THE VERY FIRST OFFSHORE WIND TURBINES IN AMERICA

America is a special market. To get started there, ship owners must be mindful of the 'Jones Act', a law that prohibits foreign vessels from entering the domestic maritime market. As a result, America was a closed market for a long time. In 2020, we made history as we were the first European wind turbine installer there to build a 12 MW wind farm off the coast of Virginia.

# 12,500 TONNES

To protect the turbines' foundations from erosion, we installed 12,500 tonnes of rock around them.

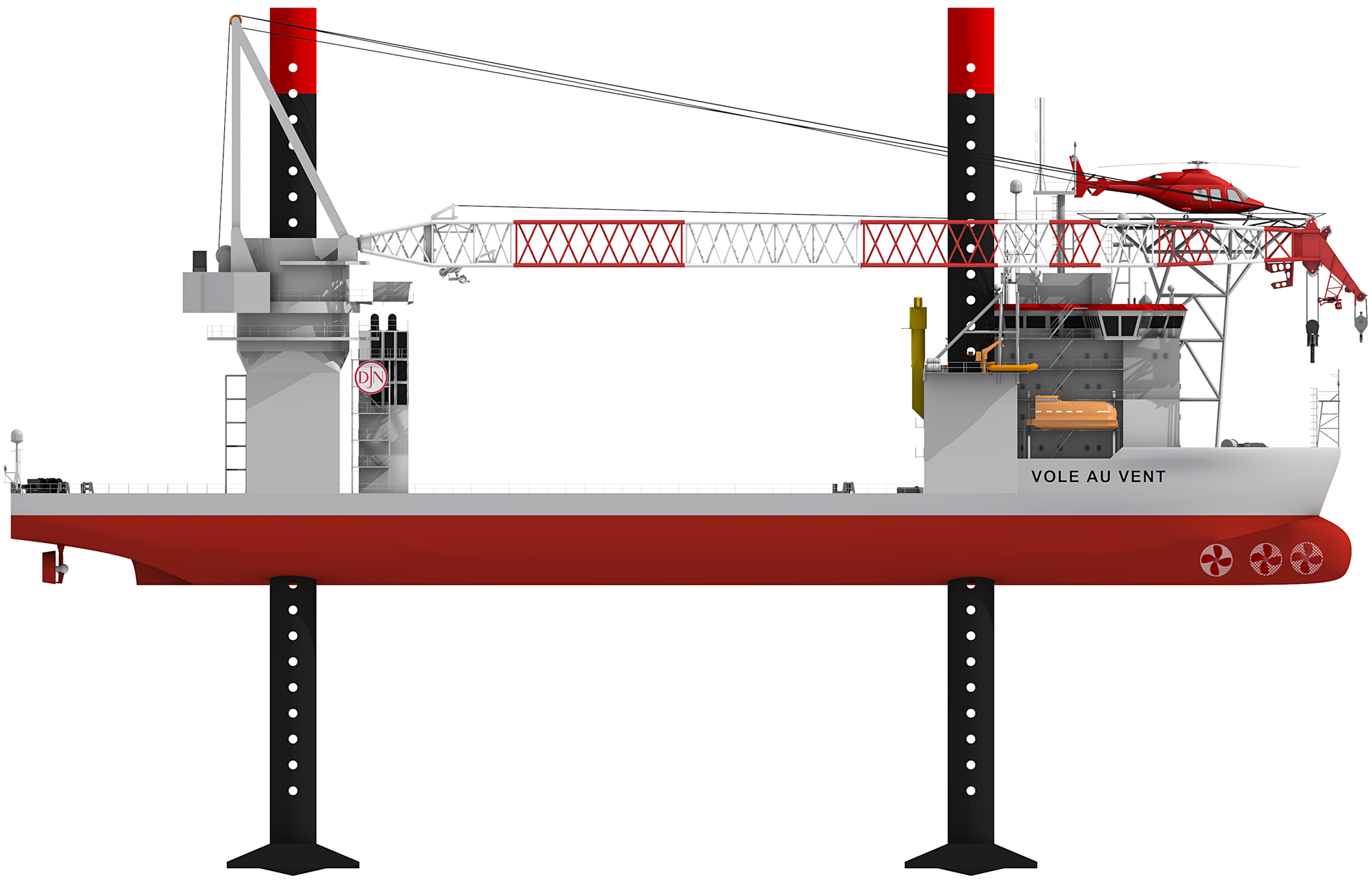
# 75 M

The blades of the wind turbines are 75 metres long and weigh 26.5 tonnes each.

# WHY ARE WE DOING THIS?

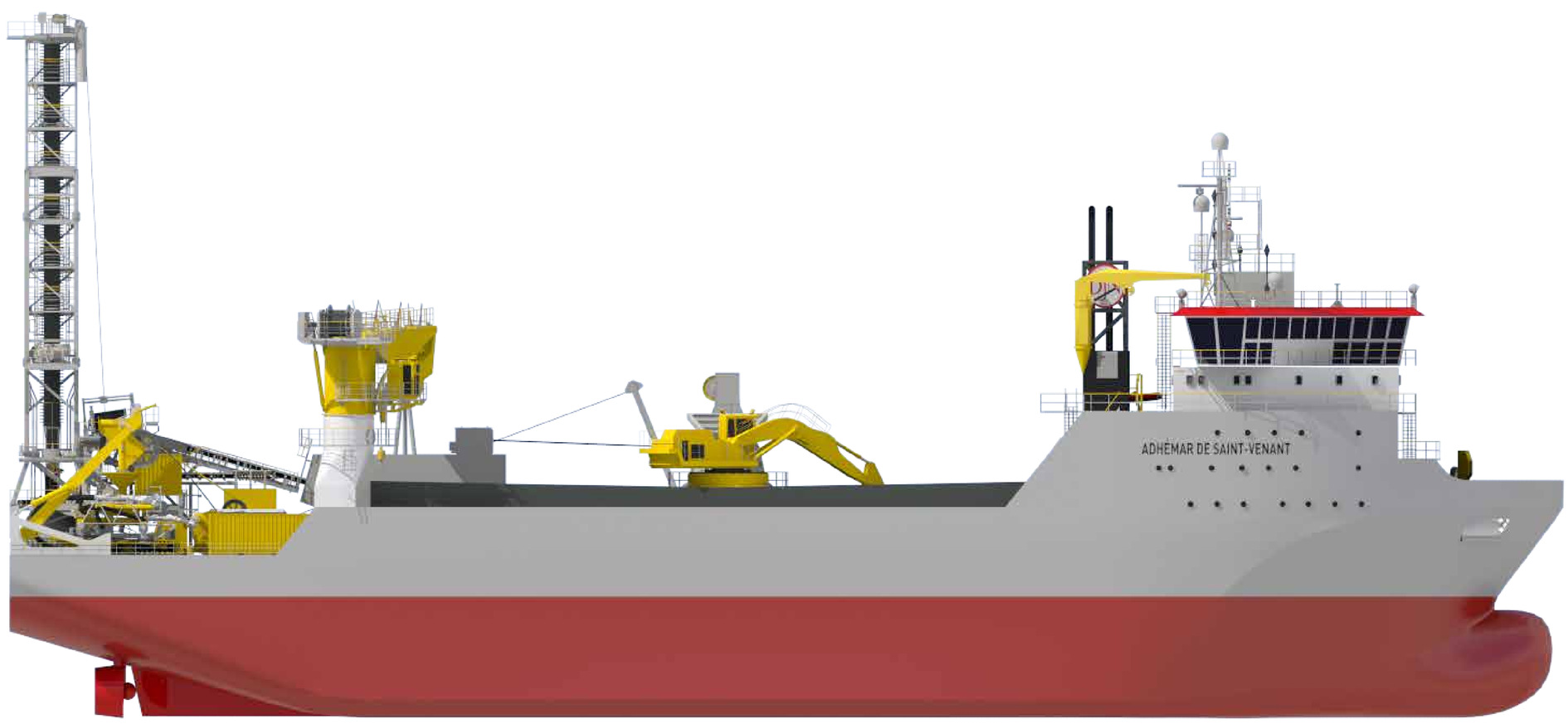
The world is facing a major energy transition. Less fossil fuels, more electricity. With the project in Virginia, the United States have also started building offshore wind farms. We are proud being able to contribute to that start.

# VOLE AU VENT




# OFFSHORE JACK-UP INSTALLATION VESSEL

# ADHÉMAR DE SAINT-VENANT




## MULTIPURPOSE VESSEL

# DID YOU KNOW THAT...

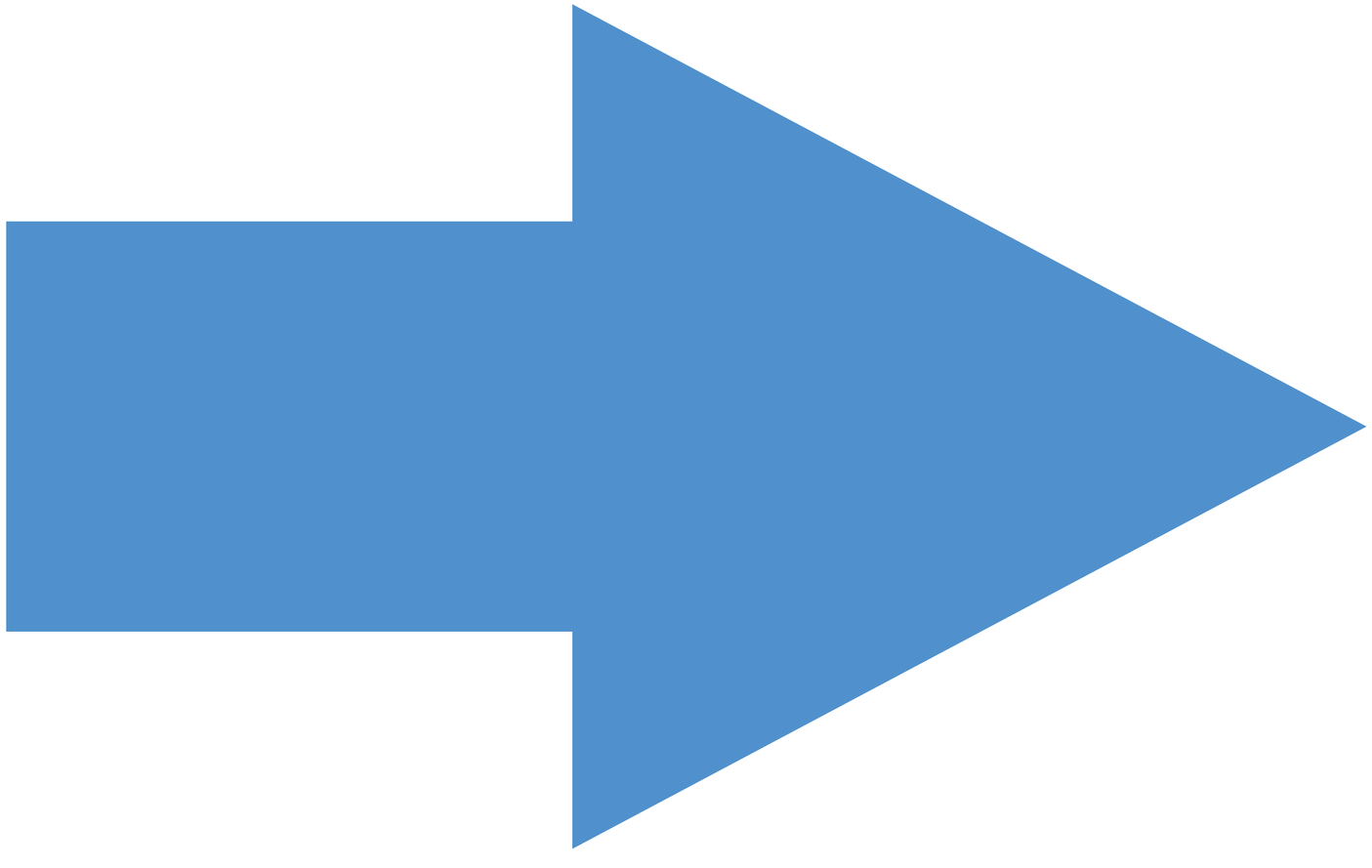
there was no suitable port nearby to stock all heavy components? We therefore stocked everything on a big transport ship and thus created our own port!

# DID YOU KNOW THAT...

we use a bubble curtain to reduce the noise of underwater installation works? A rubber hose with holes is placed in a circle on the seabed all around the ship. Air escapes through the holes, forming a curtain of bubbles through which noise cannot pass. This is how we protect aquatic life.

# PANAMA

# INCREASING THE CAPACITY OF THE PANAMA CANAL



The 81 km-long Panama Canal has the world's largest lock complexes. Ships bridge a difference in height of 26 metres. The canal had to upgrade itself to allow the ever larger ships to pass. A project fitting Jan De Nul like a glove. We not only built both lock complexes, one on the Atlantic side and one on the Pacific side. We also dredged the access to it and deepened several areas in the canal.

# Dimensions of the locks

**55 M** wide

**427 M** long

**18.3 M** deep

# 40 MILLION $M^3$

Or 16,000 Olympic swimming pools. That's how much soil we had to excavate to build the lock complexes.

# 9,000

About 9,000 people helped to build the lock complexes.

# 5 MILLION $M^3$

That's how much concrete we used to build the locks and water saving basins.

# WHY ARE WE DOING THIS?

The Panama canal is a crucial route for global trade. Thanks to the new locks, the Panama Canal can now handle even the most modern ships. We proudly contribute to the growth of global maritime trade.

# DID YOU KNOW THAT...

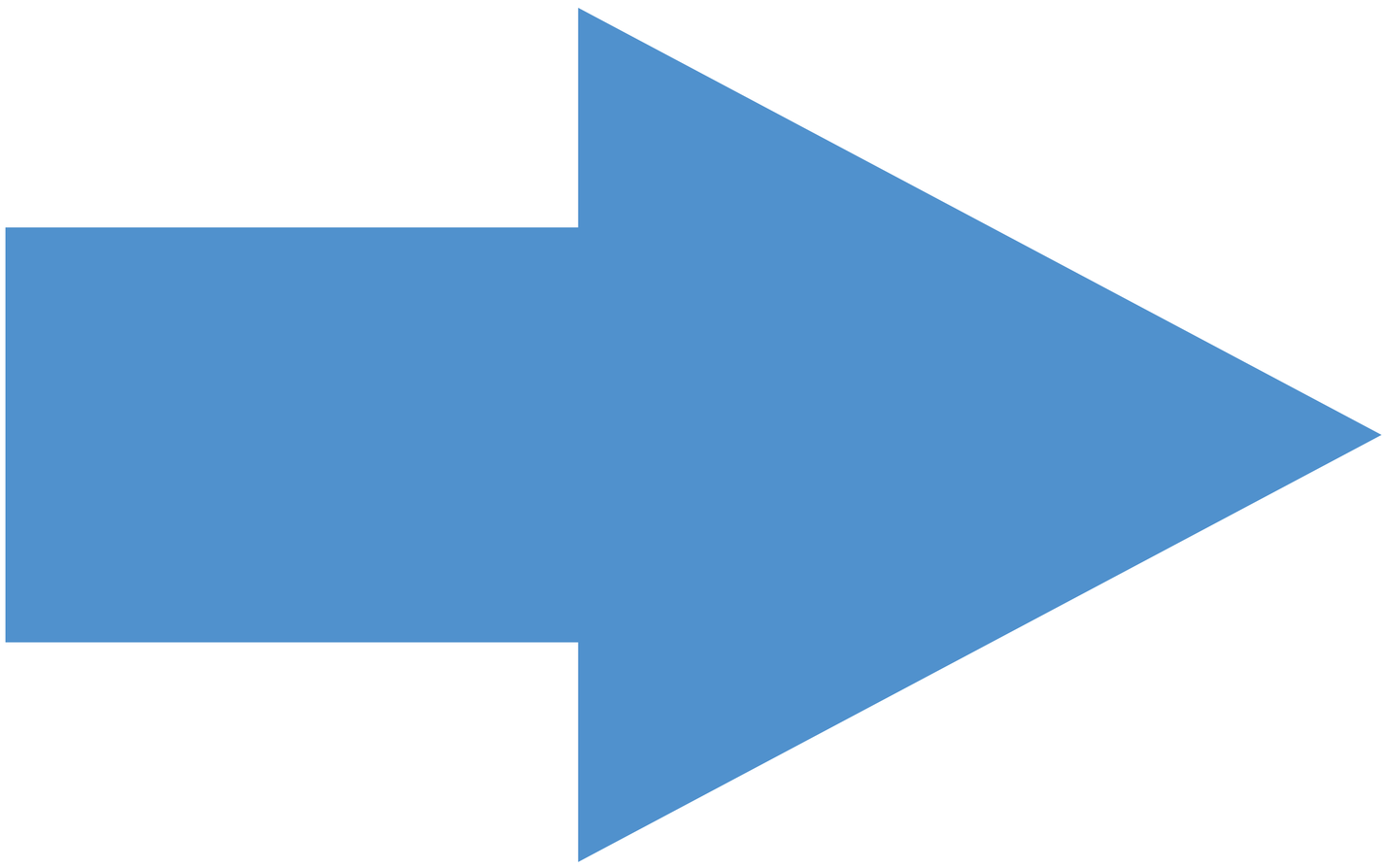
the locks of the Panama Canal are a serious time saver for ships? A ship sailing from New York to San Francisco through the Canal will travel a distance of 9,500 kilometres. This is less than half of the 22,500 kilometres via Cape Horn in South America. This means that no less than 2 weeks' time is saved.

# JAN DE NUL

## IN AFRICA

# BENIN

# BUILDING AN UNDERWATER BREAKWATER TO PROTECT THE COAST



Benin's coast is subject to erosion by powerful waves from the Atlantic Ocean. We worked out the solution: we built a 5-km-long underwater breakwater, 180 metres offshore and parallel to the shore.

Two advantages: the breakwater breaks the force of the waves, reducing erosion. And the breakwater does not disrupt visibility, as it is underwater.

# 5 KM

The underwater breakwater is 5 km long.

# 2.5 MILLION $M^3$

We needed 2.5 million $m^3$ of sand to rebuild the beaches.

# WHY ARE WE DOING THIS?

Because of its location alongside the Atlantic Ocean, the coast of Benin, like the rest of the West African coast, is struggling with erosion. This has a negative impact on the coastal strip, the living conditions of local people and also on coastal tourism. We helped Benin to restore its coast.

# 1-3 TONNES

Each rock for the breakwater weighs 1-3 tonnes. That's the weight of 3 cars.

# DID YOU KNOW THAT...

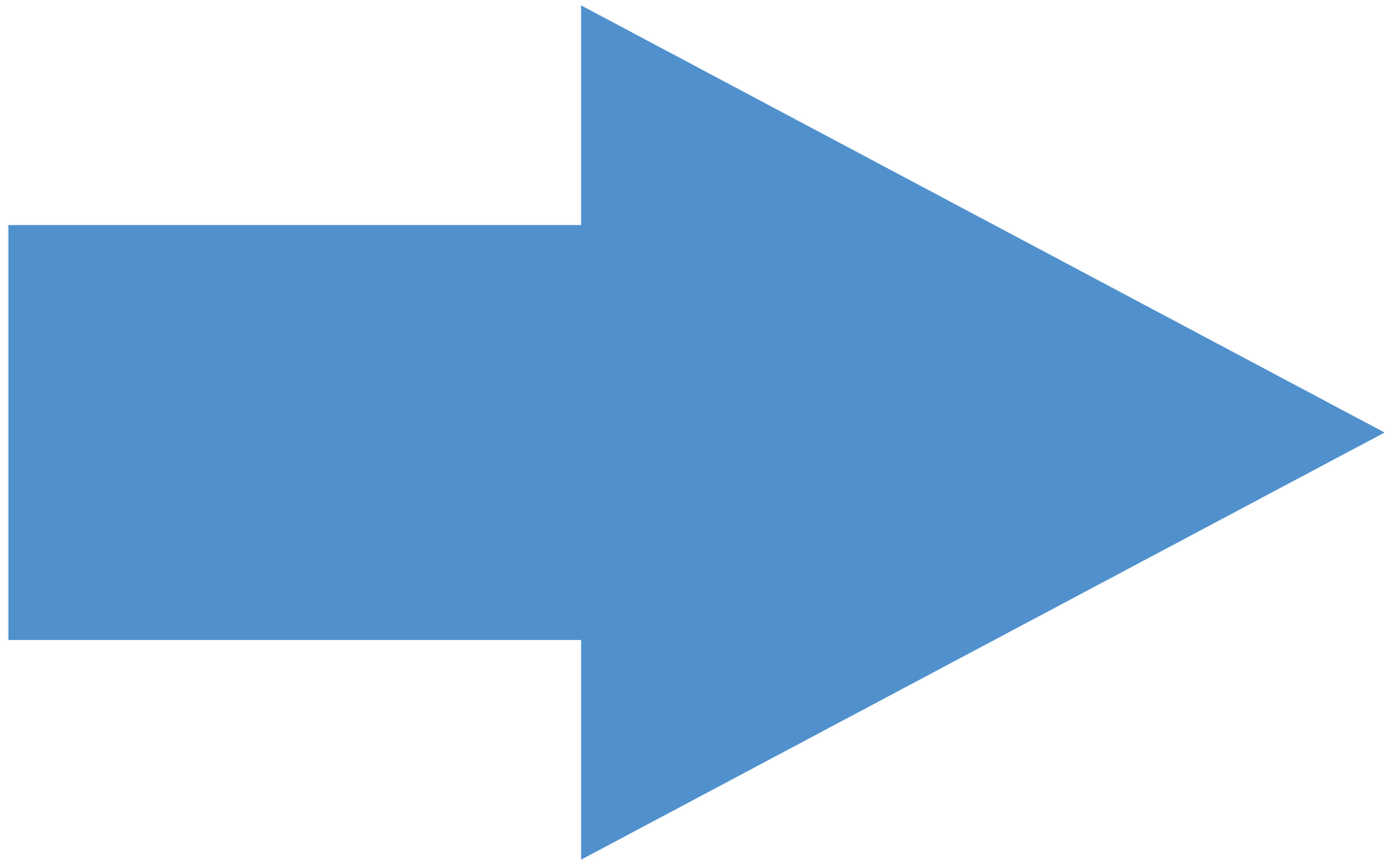
the inspiration for this solution came from nature itself? The breakwater mimics a coral reef, the natural coastal protector.

# DID YOU KNOW THAT...

the breakwater not only reduces coastal erosion? It is also a protected area for fish and other marine organisms. After a year in the water, we could observe truly diverse marine life on the rocks of the breakwater. Species that are normally rare in the region can now flourish in and around the breakwater.

# EGYPT

# DOUBLING THE CAPACITY OF THE SUEZ CANAL



The Suez Canal in Egypt has connected the Mediterranean Sea with the Red Sea since 1869 and has been the shortest shipping route between Europe and Asia ever since. At the request of the Suez Canal operator, we worked on doubling the canal's capacity. For this, we mobilised an impressive fleet of Cutter Suction Dredgers to deliver the works at a record pace.

7

We mobilised the seven most powerful cutters in the world, all part of our fleet.

# 200 MILLION $M^3$

With all parties combined, we dredged away 200 million $m^3$ of sand to create the new canal.

# 150 M

The second Suez Canal is 150 metres wide and 25 metres deep.

# WHY ARE WE DOING THIS?

The realisation of this second canal, parallel to the first, will allow convoys to cross each other halfway and thus allow simultaneous passage in two directions, doubling the capacity of the canal.

# DID YOU KNOW THAT...

this project was executed in less than a year? Quite impressive for such a huge project. We worked together with fellow dredgers to make this possible.

# JAN DE NUL

## OUR FLEET

Our ships are modern, versatile, innovative and sustainable! And most of them have been designed internally.

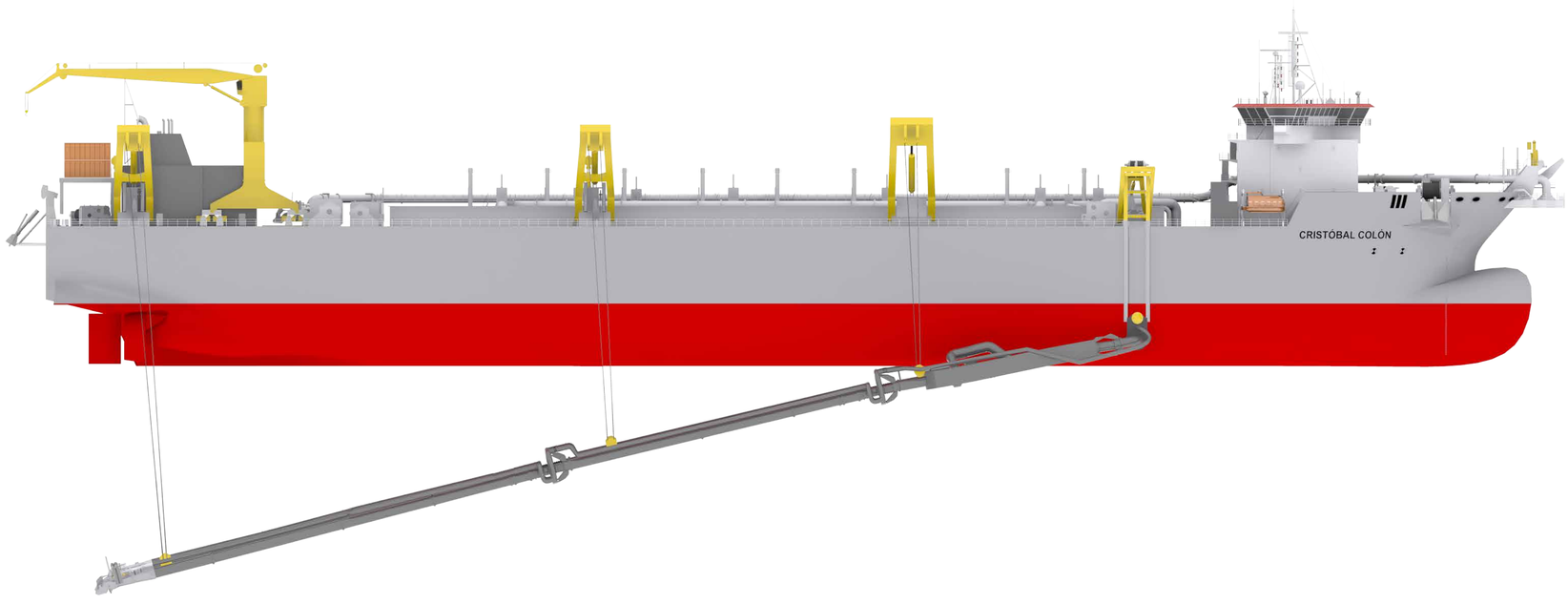
Thanks to our very diverse and versatile fleet, we can offer the ideal mix for realising any project.

# TRAILING SUCTION HOPPER DREDGER

A trailing suction hopper dredger is like a sailing hoover with a large on-board cargo hold or ‘hopper’. With one or two suction pipes, the vessel sucks up the material and transports it to the on-board hopper.

Once the hopper is full, the ship will again unload the material at another location. This may be in open sea, on a beach or behind a quay wall.

# 31




# TRAILING SUCTION HOPPER DREDGERS

# VESSELS WITH ULTRA LOW EMISSIONS

# FOR A CLEANER AND GREENER SHIPPING INDUSTRY

ULEv
ULTRA-LOW EMISSION

We are global pioneers in terms of shipping: our newest vessels emit extremely little. We call them ULEv or Ultra-Low Emission vessels.

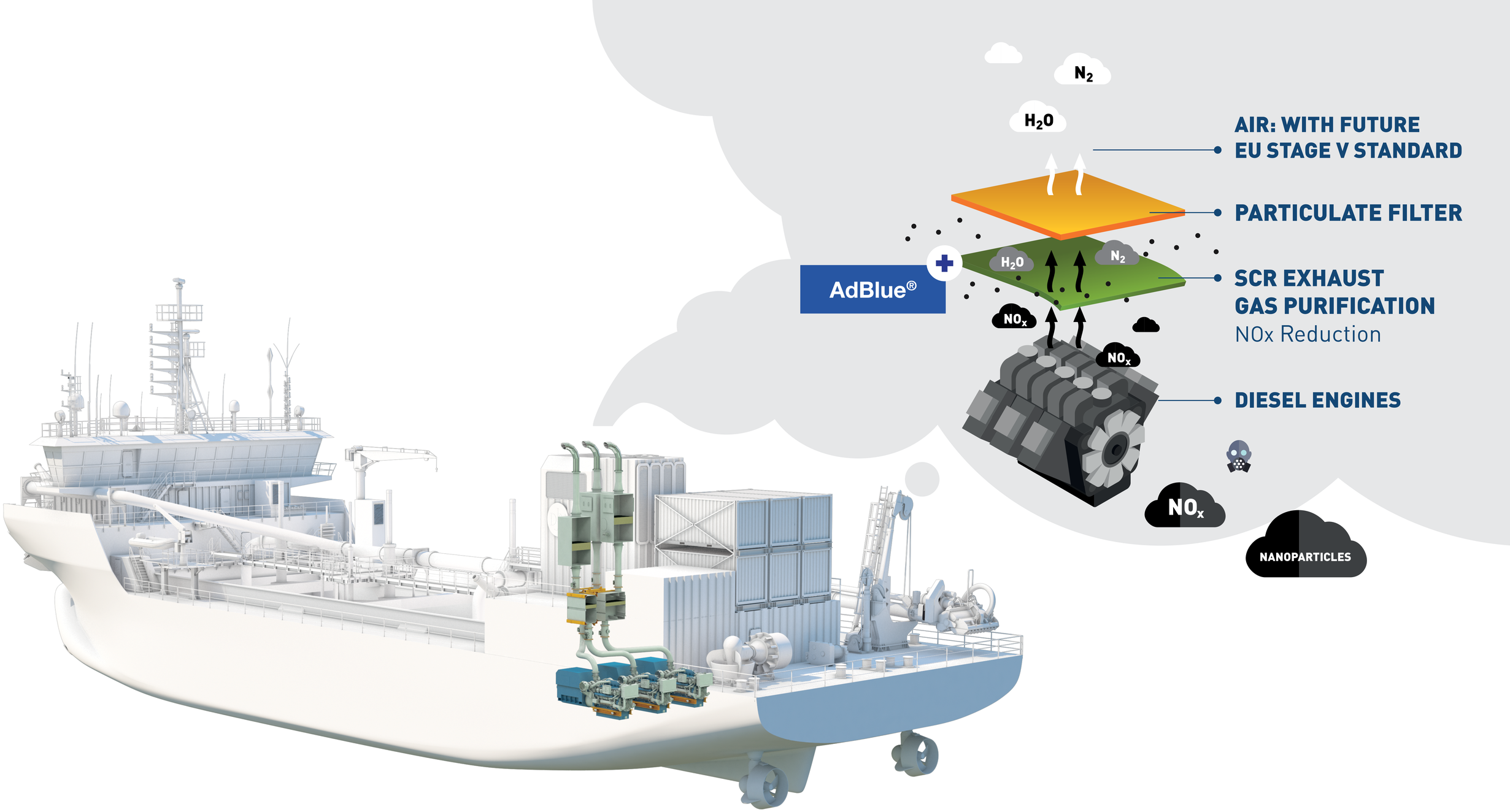
How does it work? A two-stage catalytic filtration system in the blue chimney treats exhaust gases and prevents the emission of nanoparticles. Our ULEv vessels outperform the strictest emission standards!

# WHY ARE WE DOING THIS?

Air pollution is one of the major hazards to public health. Marine works mainly take place along the coast and in the vicinity of ports and densely populated areas. We see it as one of our main missions to reduce our footprint.

# DID YOU KNOW THAT...

thanks to us – Bureau Veritas, a world leader in inspection and certification, has developed a new certification system for the performance of ULEv vessels? Jan De Nul writes history in shipping.

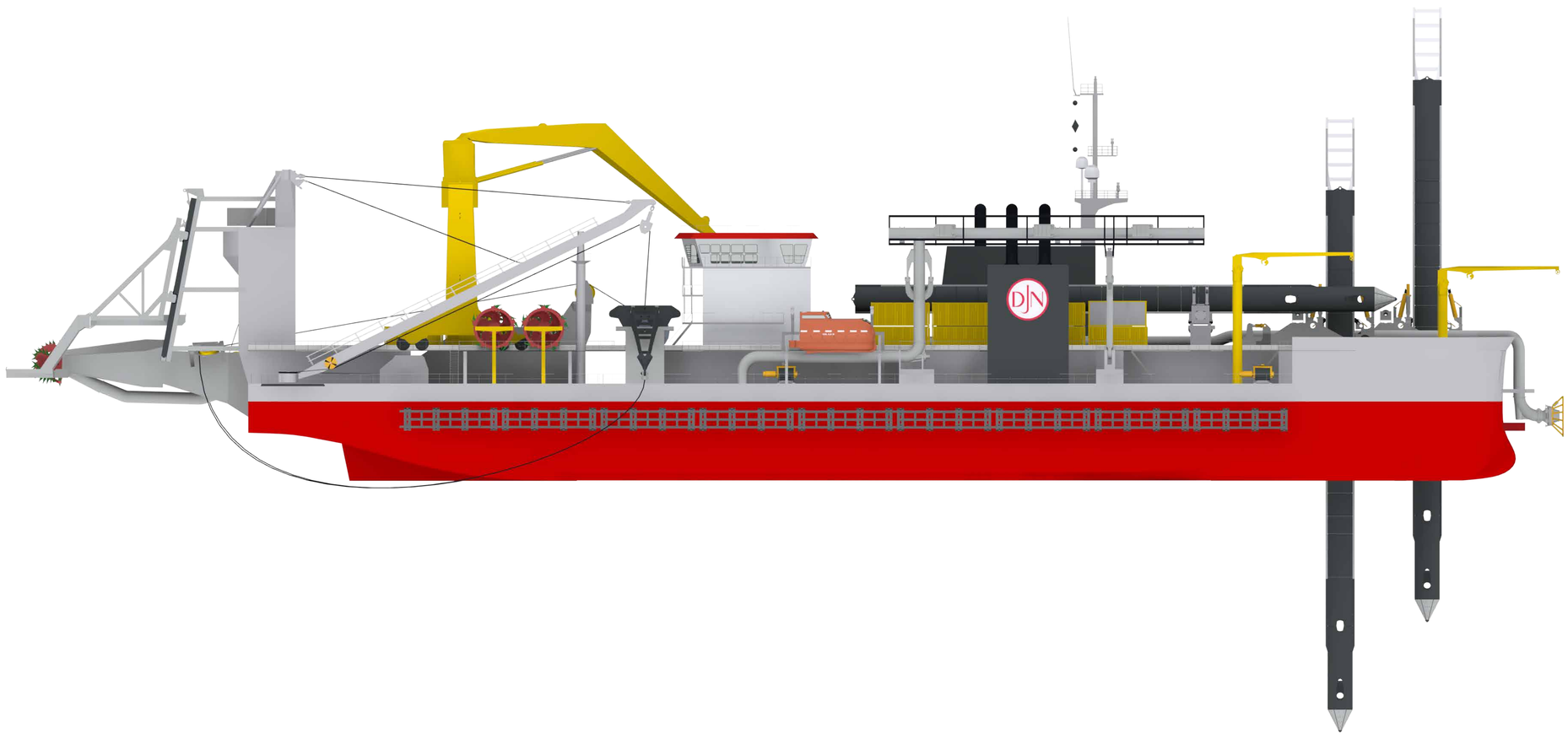

$N_2$
$H_2O$
AIR: WITH FUTURE
EU STAGE V STANDARD
PARTICULATE FILTER
AdBlue®
$H_2O$
$N_2$
SCR EXHAUST
GAS PURIFICATION
NOx Reduction
$NO_x$
$NO_x$
DIESEL ENGINES
$NO_x$
NANOPARTICLES

# CUTTER SUCTION DREDGER

A cutter suction dredger is a dredger with a rotating cutter head with cutter teeth cutting the seabed into fragments and sucking it in.

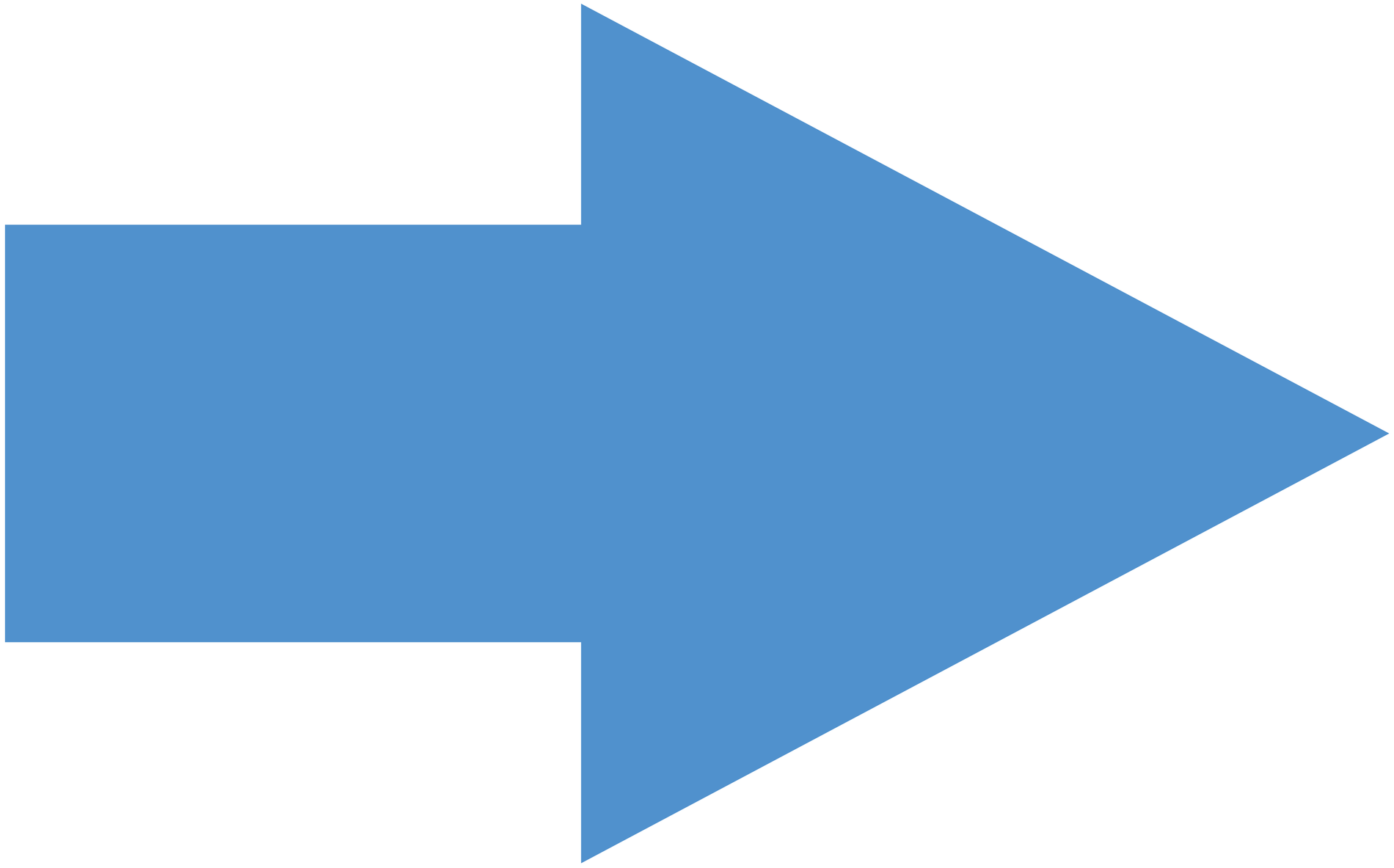
There is no hopper on board. The cutter suction dredger therefore pumps the dredged material into self-propelled barges or through a floating pipeline to shore.

# 13




# CUTTER SUCTION DREDGERS

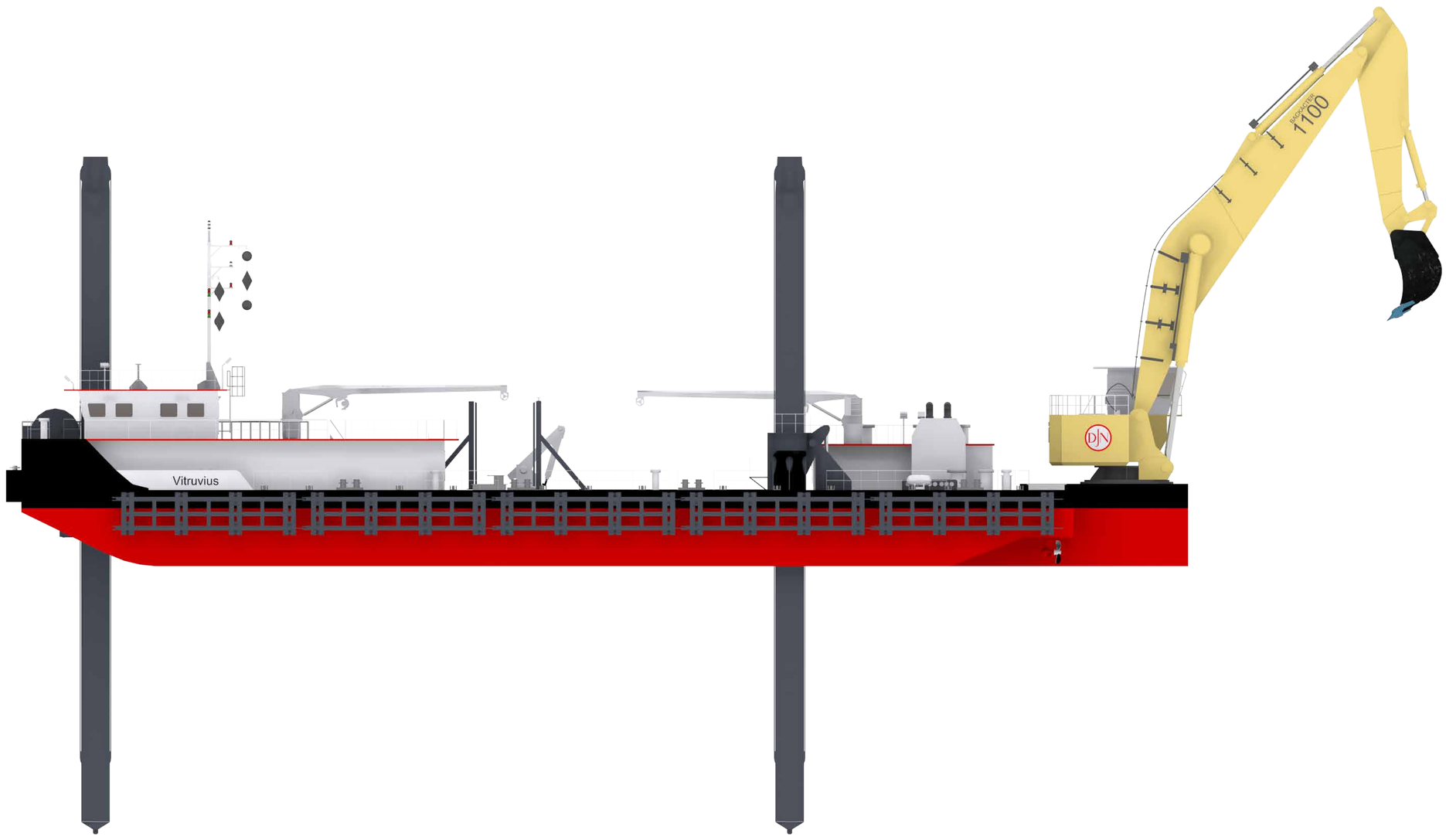
# BACKHOE DREDGER



A backhoe dredger is a stationary dredger that basically consists of an hydraulic crane on a floating pontoon. The pontoon is secured to the bottom with piles.

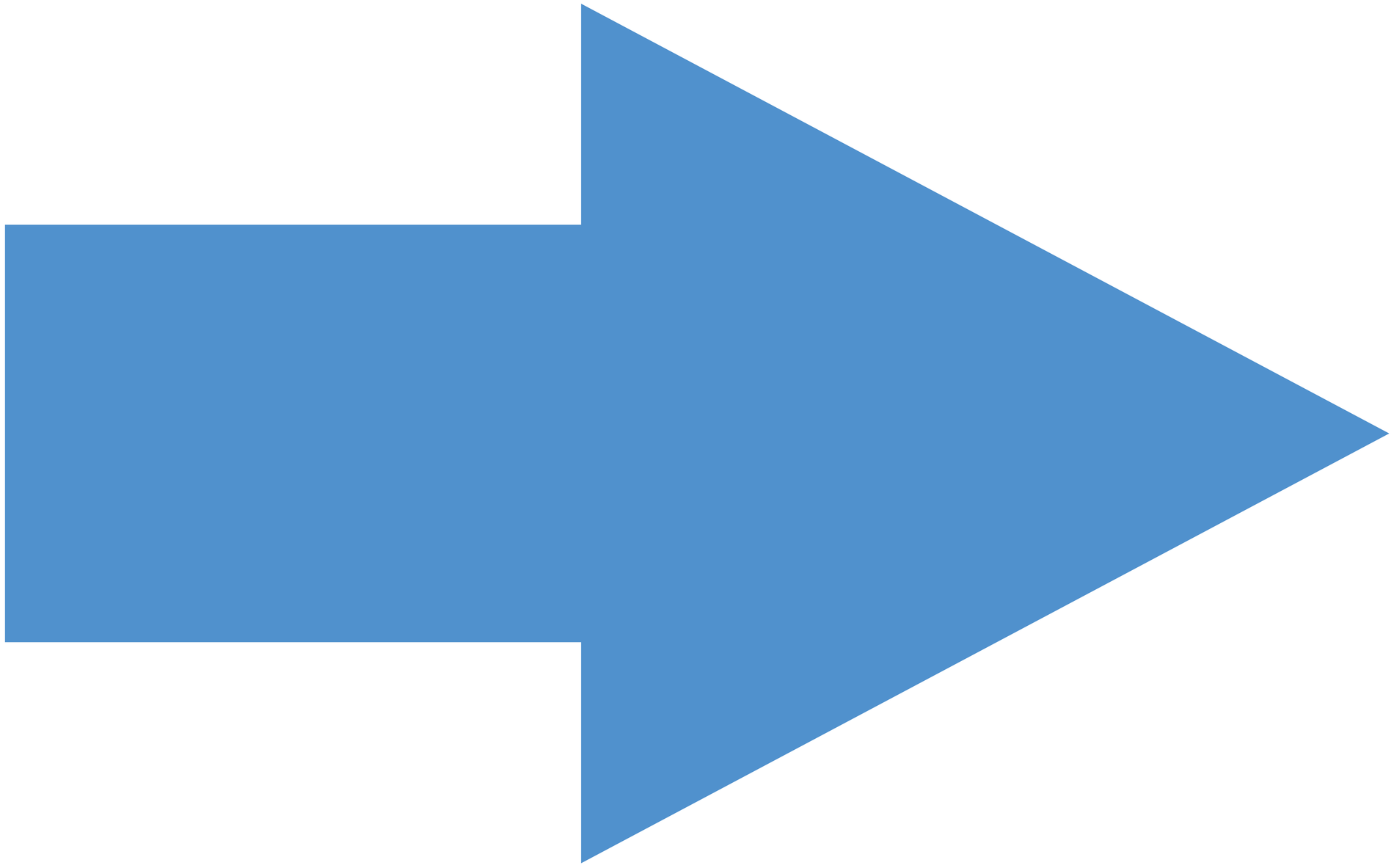
The crane removes the soil from the water with its bucket and transfers it into a split hopper barge.

# 6




# BACKHOE DREDGERS

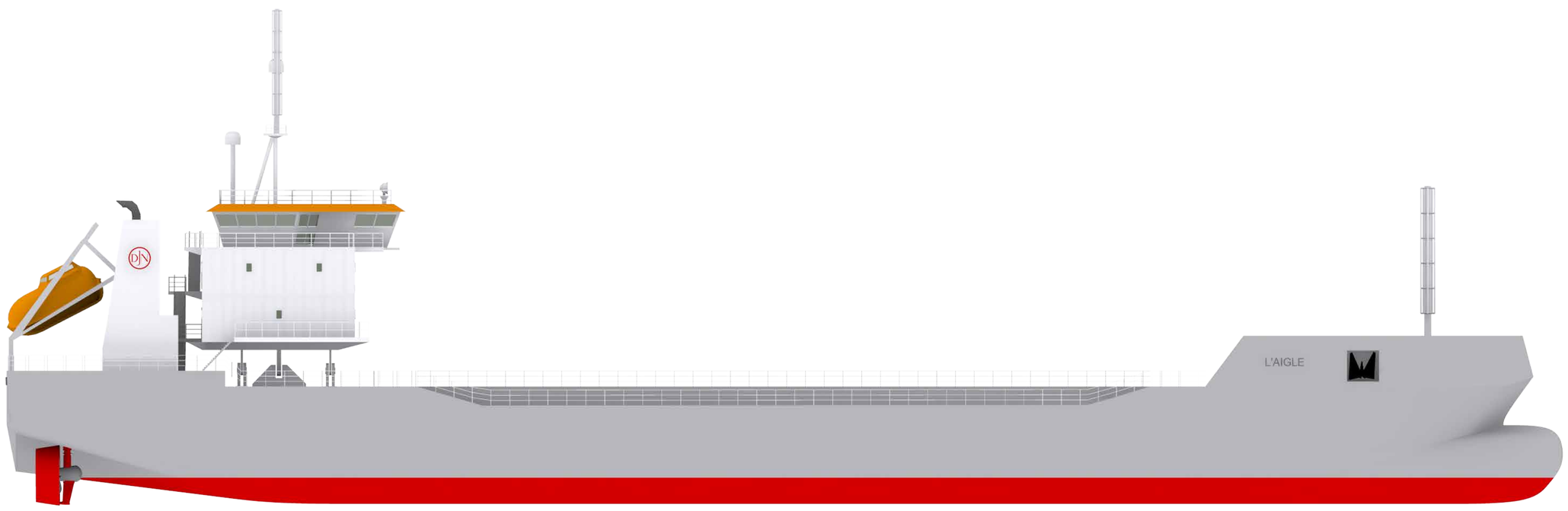
# SPLIT HOPPER BARGE



A split hopper barge is a vessel transporting dredged spoil in its hopper. The split barge thus assists cutter suction dredgers or backhoe dredgers, which do not have a hopper on board.

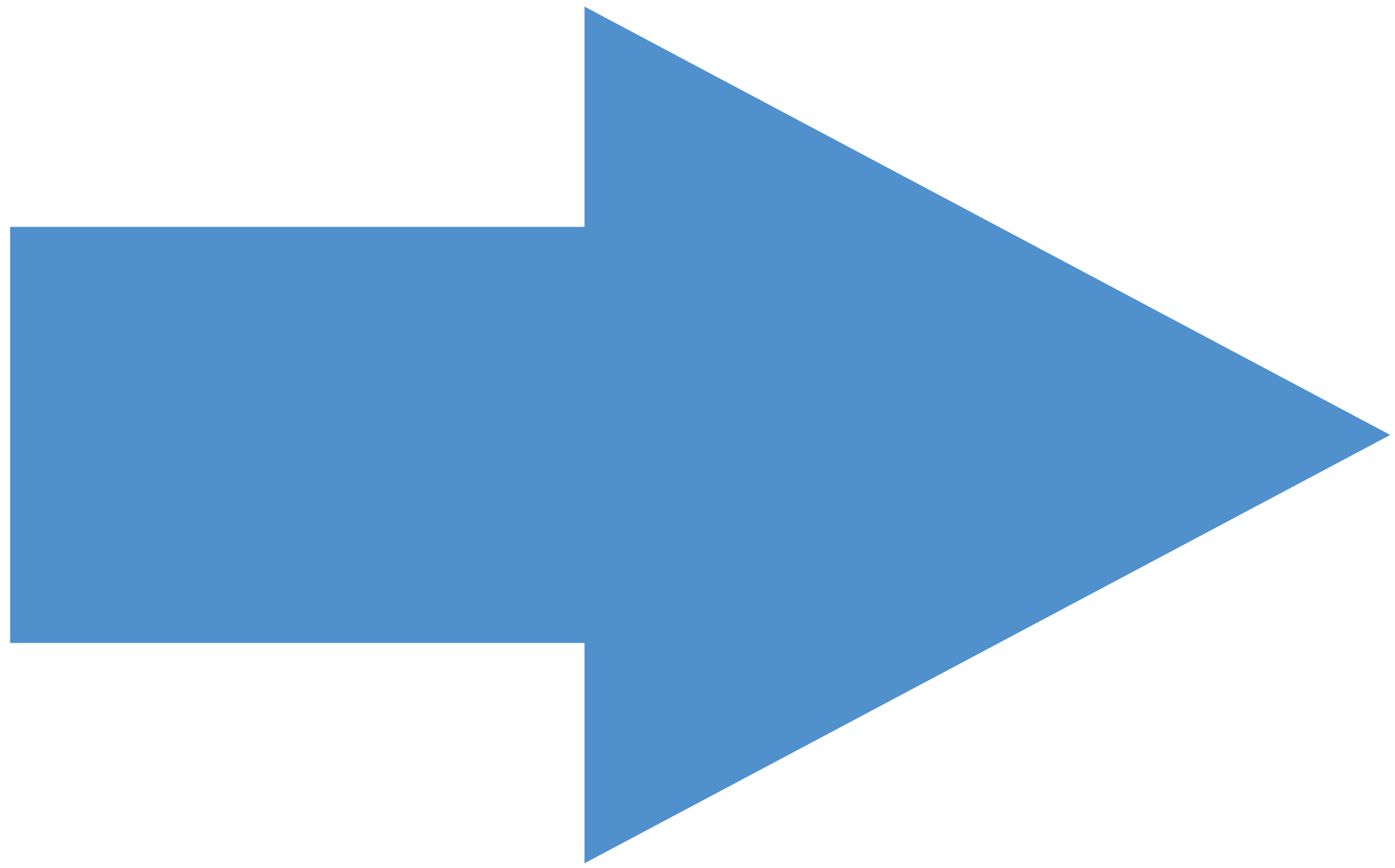
The body of the split hopper barge consists of 2 halves. The vessel ‘splits open’ to unload its cargo.

# 17




# SPLIT HOPPER BARGES

# CABLE INSTALLATION VESSEL

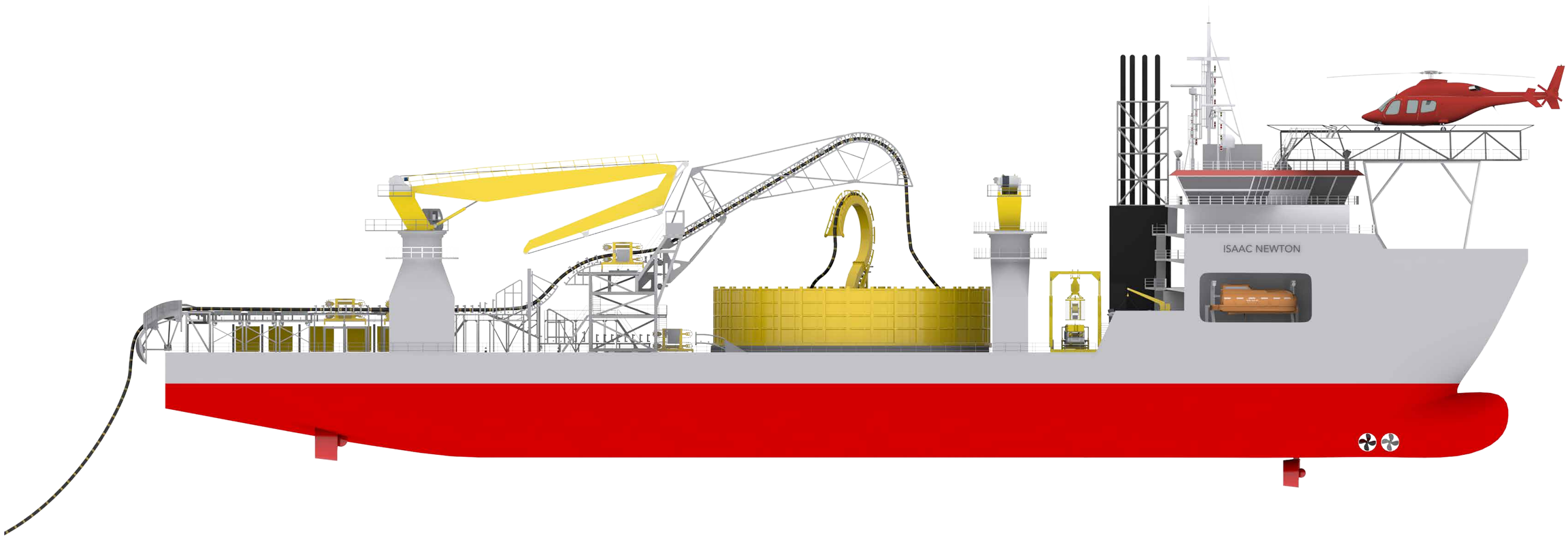


A cable installation vessel connects structures at sea and brings energy generated at sea to land by laying submarine cables and ‘umbilicals’.

Our cable installation vessels are equipped with one or more turning tables allowing to continuously load and install very long cables.

**‘UMBILICAL’** refers to the umbilical cord. This type of cable unites different cables, such as power cables, fibre-optic cables, fluid supply cables and so on. Undersea umbilicals typically carry electricity, data and hydraulic fluids.

# 3



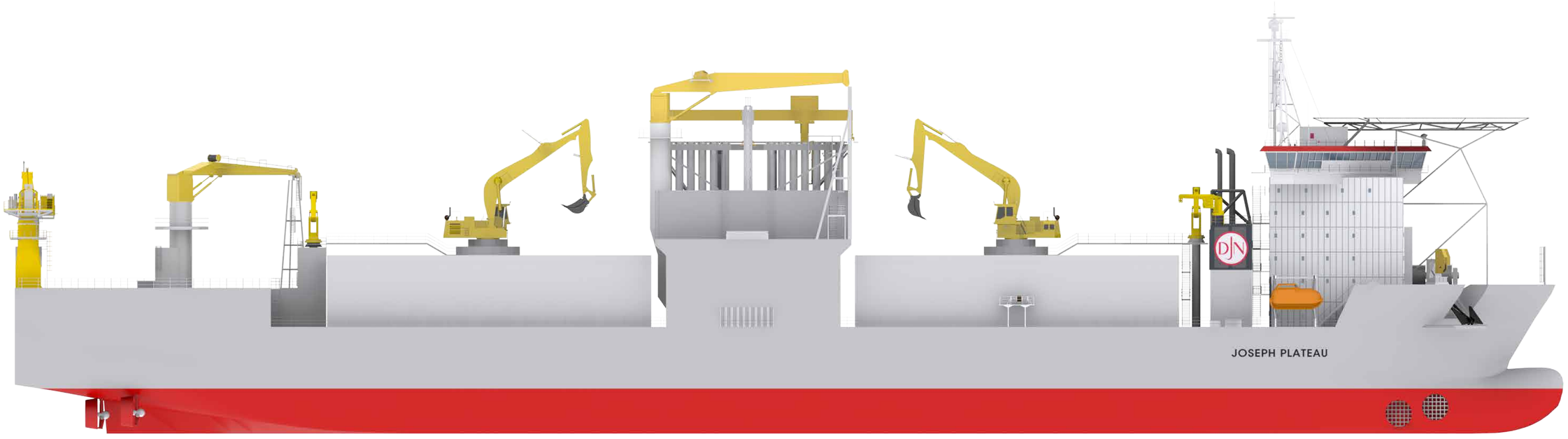

# CABLE INSTALLATION VESSELS

# ROCK INSTALLATION VESSEL

A rock installation vessel is a vessel that is used for dumping stones accurately onto the seabed. Two types exist within this category: a side stone installation vessel, which pushes the stones sideways overboard, and a fall pipe vessel, which guides the stones down to the seabed through a pipe.

Why dump stones? To cover and thus protect underwater structures.

# 5



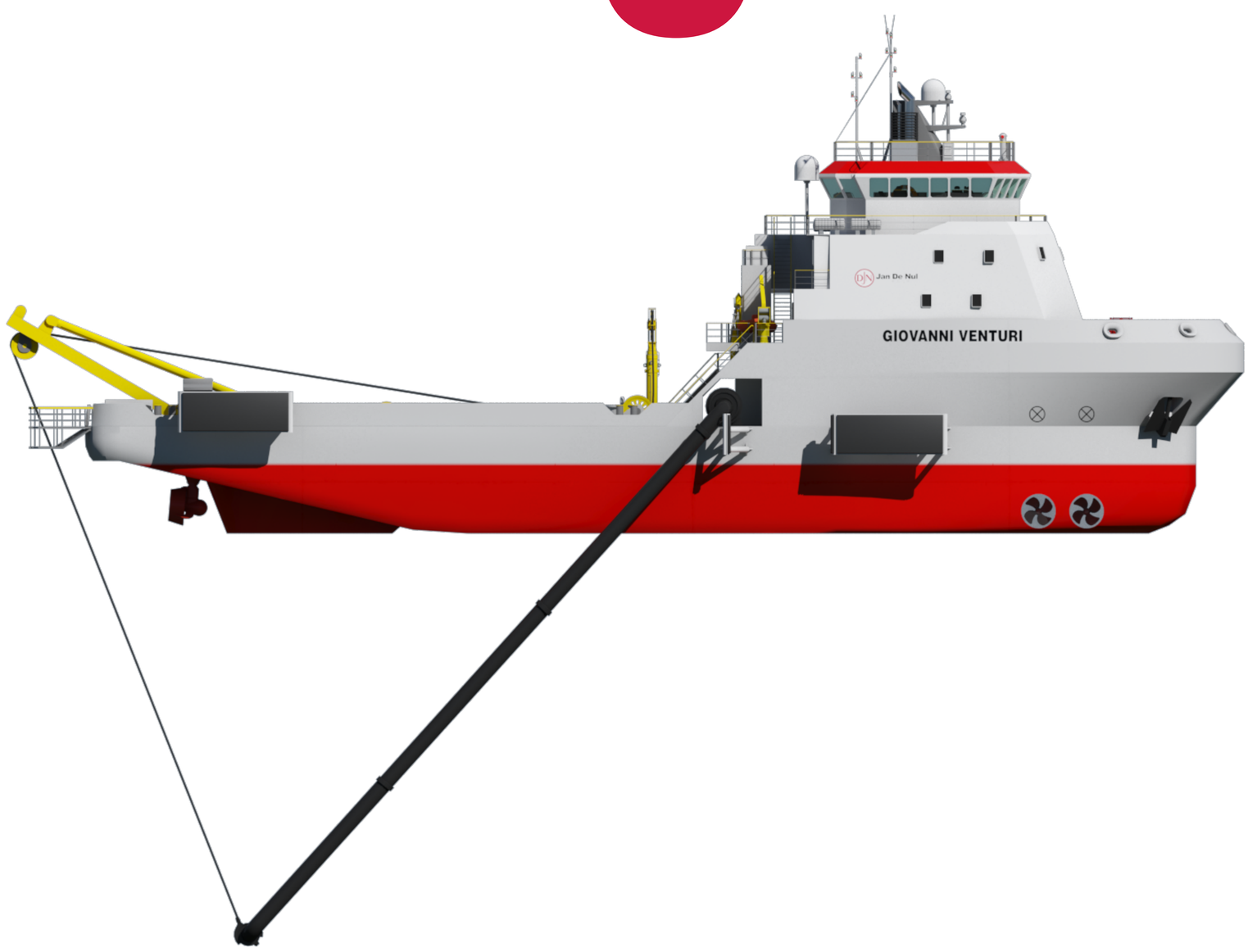

# ROCK INSTALLATION VESSELS

# WATER INJECTION DREDGER

A water injection dredger injects water under low pressure into the subsurface, causing the soil material to move.

This type of vessel is smaller than a trailing suction hopper dredger and thus more practical in ports and rivers where the work area is often smaller.

# 5




# WATER INJECTION DREDGERS

# VOLTAIRE AND LES ALIZÉS

# OUR LATEST GENERATION OF INSTALLATION VESSELS FOR OFFSHORE WIND ENERGY PROJECTS

Two next-generation ships: designed entirely in-house and both built in China. Les Alizés and Voltaire are the first in their category that will be able to install the latest generation of wind turbines of up to 20 MW at sea.

**Les Alizés** is a crane vessel for the floating installation of foundations for offshore wind turbines.

**Voltaire** is a jack-up installation vessel with four legs for the installation of offshore wind turbines, spacers and foundations at sea.

# > 3,000 TONNES

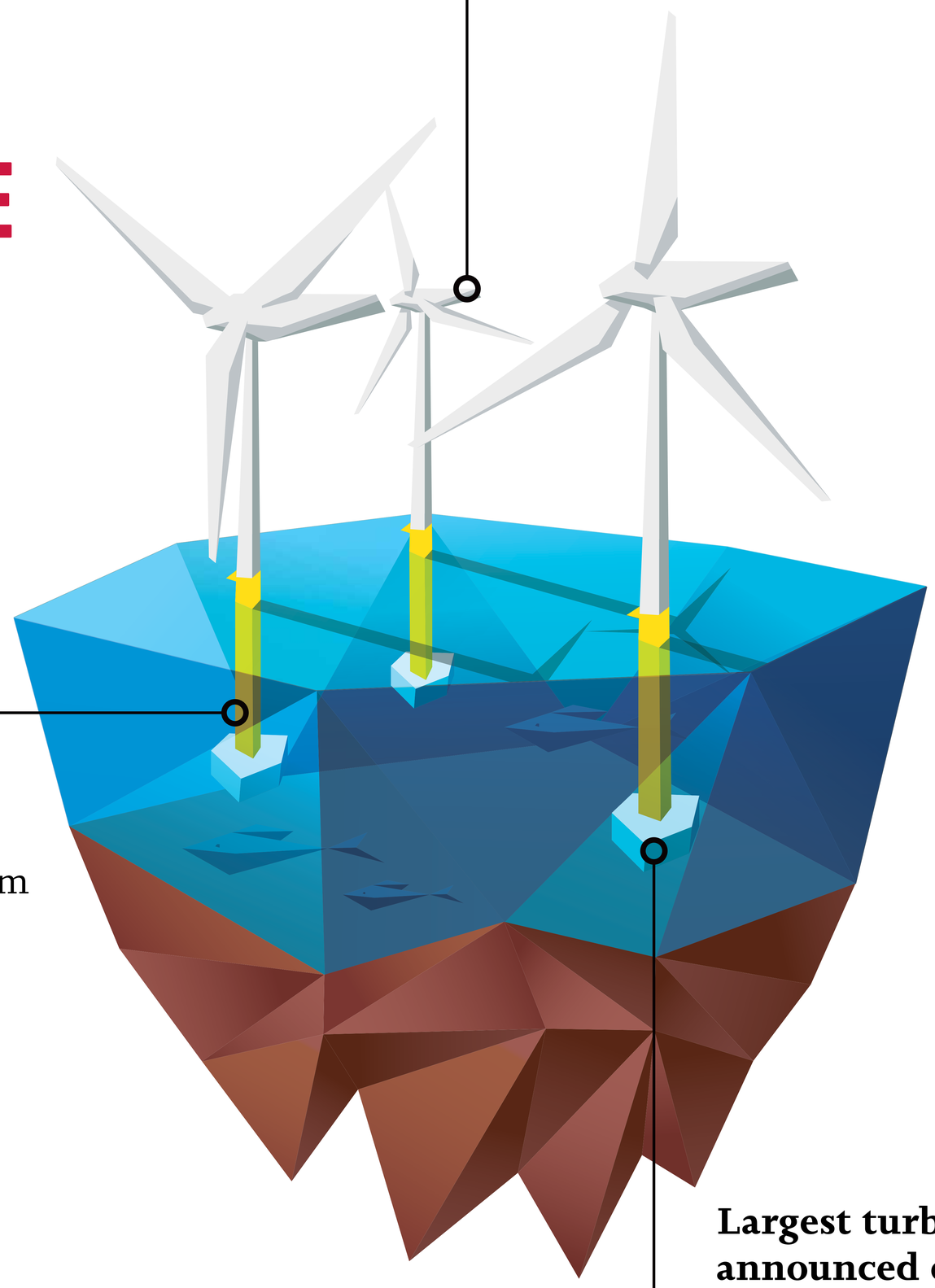
The Voltaire has a main crane with a lifting capacity of over 3,000 tonnes

# 5,000 TON

Les Alizés has a crane with a lifting capacity of over 5,000 tonnes

# 26 MILLION HOMES IN EUROPE CURRENTLY ON OFFSHORE WINDENERGY

**Offshore wind turbines (Nobelwind - 2016)**
Length of the blades: 54.7 m
Rotor diameter: 112 m
Height of the hub: 79 m
Power output: 3.3 MW



**Offshore wind turbines (Doggerbank - 2023)**
Length of the blades: 107 m
Rotor diameter: 220 m
Height of hub: 140 m
Power output: 13-14 MW

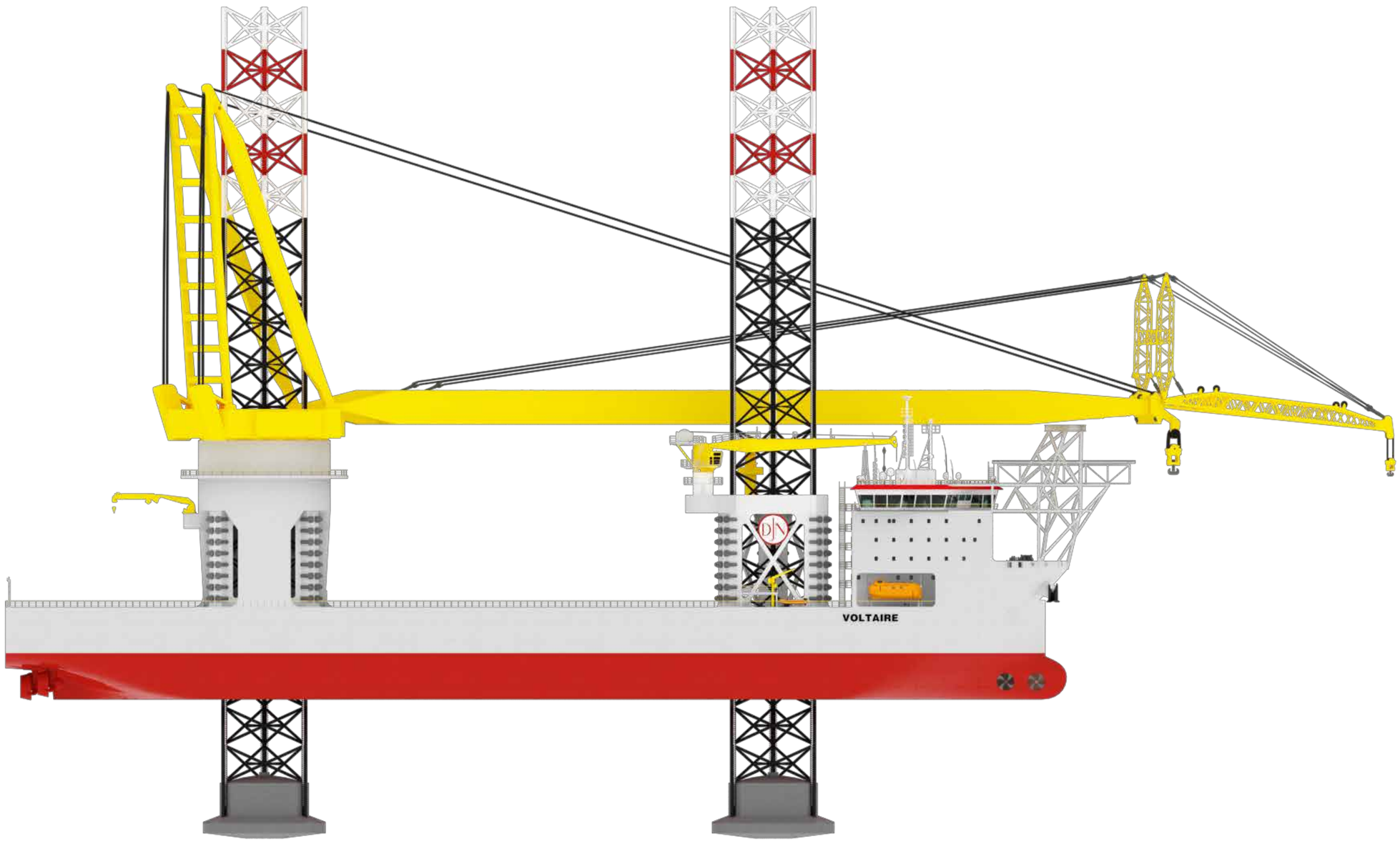
**Largest turbines announced on the market**
Blade length: 118 m
Rotor diameter: 242 m
Height of hub: 150 m
Power output: 16 MW

# JACK-UP INSTALLATION VESSEL

A jack-up installation vessel is a vessel with legs that can hoist itself above the water to ensure stability during installation works at sea.

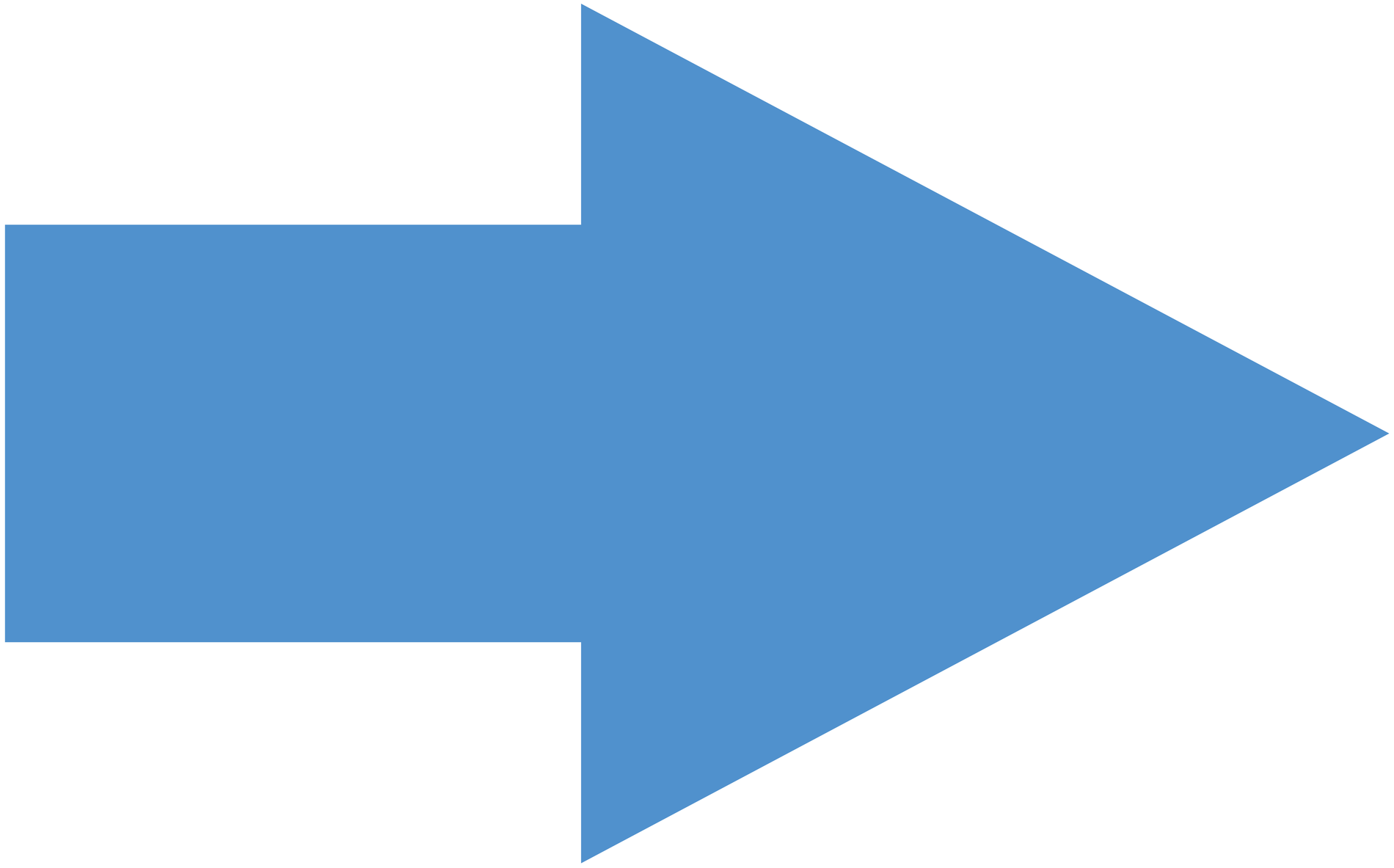
These vessels have been built for installing offshore wind farms but are also perfectly deployable for other offshore activities.

# 2




# JACK-UP INSTALLATION VESSELS VOLTAIRE AND VOLE AU VENT

# MOONFISH



Burying cables up to 8 metres below the seabed. Impossible? Not for our Moonfish! Our trencher is a unique and innovative concept, completely designed and built in-house.

The machine's long, metal blade is equipped with powerful water jets that "blow away" the soil, creating a trench.  At the same time, the Moonfish places the cable in this trench, which is then immediately covered again. The cable is in place!

# 250 TONNES

That's the weight of the trencher Moonfish

# 8 M

The unprecedented depth at which the Moonfish cables are buried.

# 11 M

Height of the Moonfish

# 36.7 kPa

The Moonfish's soil pressure, less than 40% of the human footprint

“**Impossible**” is not in our dictionary. But “innovation” very much is. We are always looking for new applications to solve existing problems. And if something does not yet exist, we create it ourselves. Our multidisciplinary engineering department designs and monitors the construction. Our own joinery workshop and welding shop manufacture project- or equipment-specific parts.

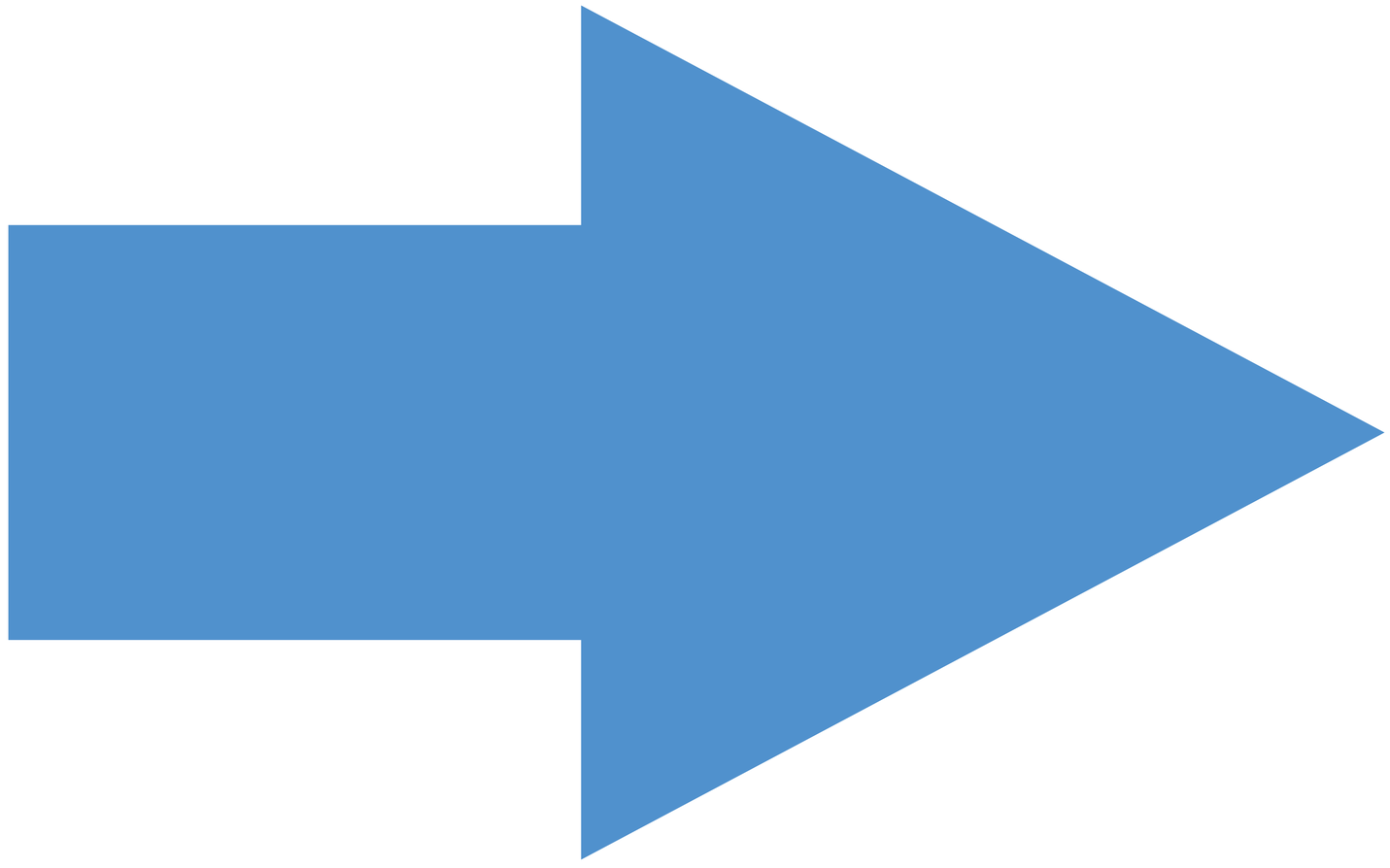
**An example? The Moonfish, our truly unique trencher! #impossiblemadepossible**

# JAN DE NUL

## IN THE MIDDLE EAST

# ABU DHABI

# ELECTRIFYING THE TRADITIONAL ENERGY INDUSTRY



In the Arabian Gulf, we will soon install two cable clusters that will connect the islands of Al Ghallan and Das to the Abu Dhabi mainland for the so-called Lightning Project. The cables are part of a large submarine network connecting all production facilities off the coast of Abu Dhabi to the onshore power grid. As a result, offshore production will consume much less carbon.

# 1,000 KM

All together, we will install about 1,000 km of cable. This makes it the largest submarine cable installation project ever.

# 7 - 2

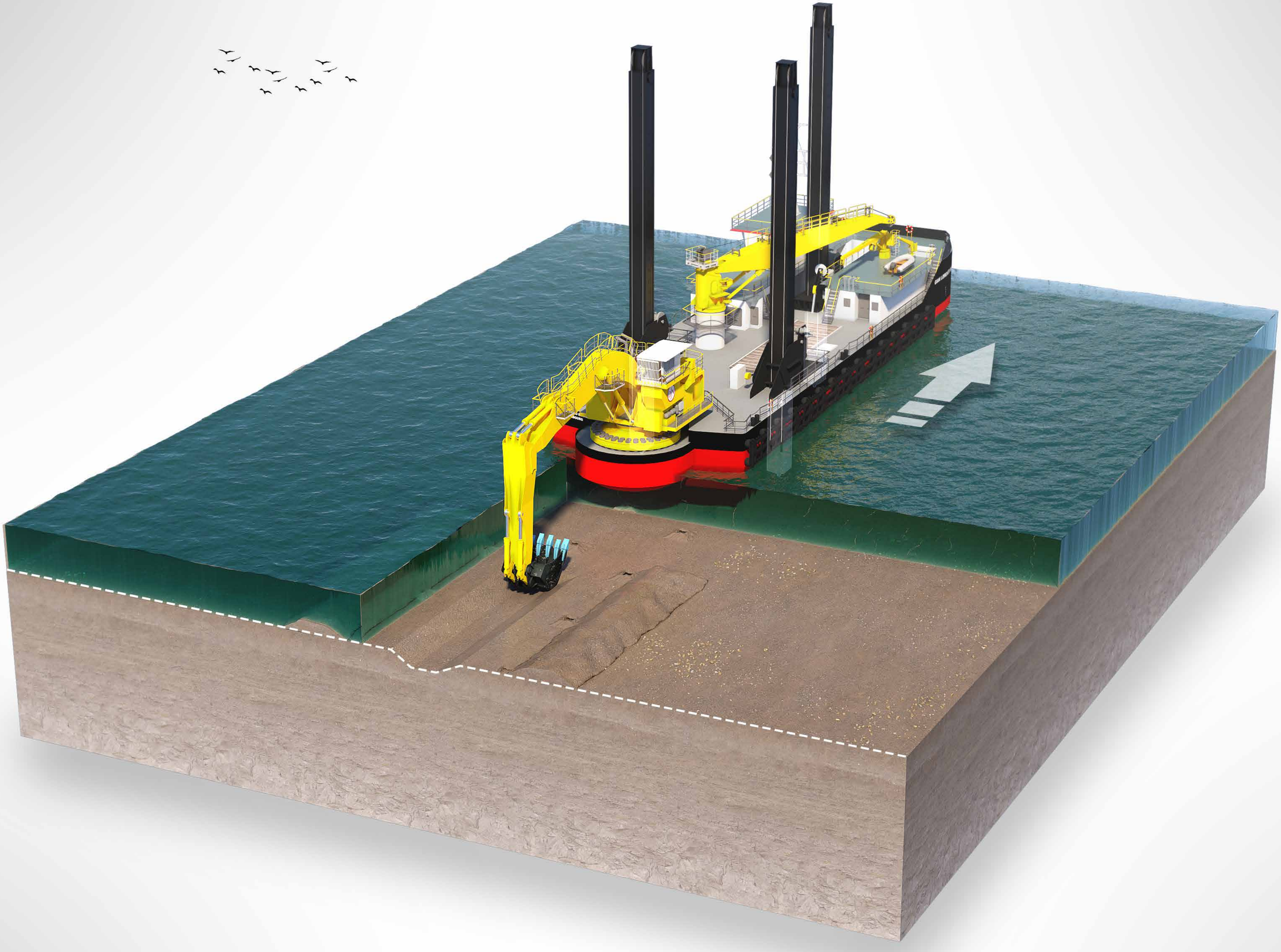
In all, we will install 7 cables in 2 clusters. The first cable cluster contains three submarine cables, the second four.

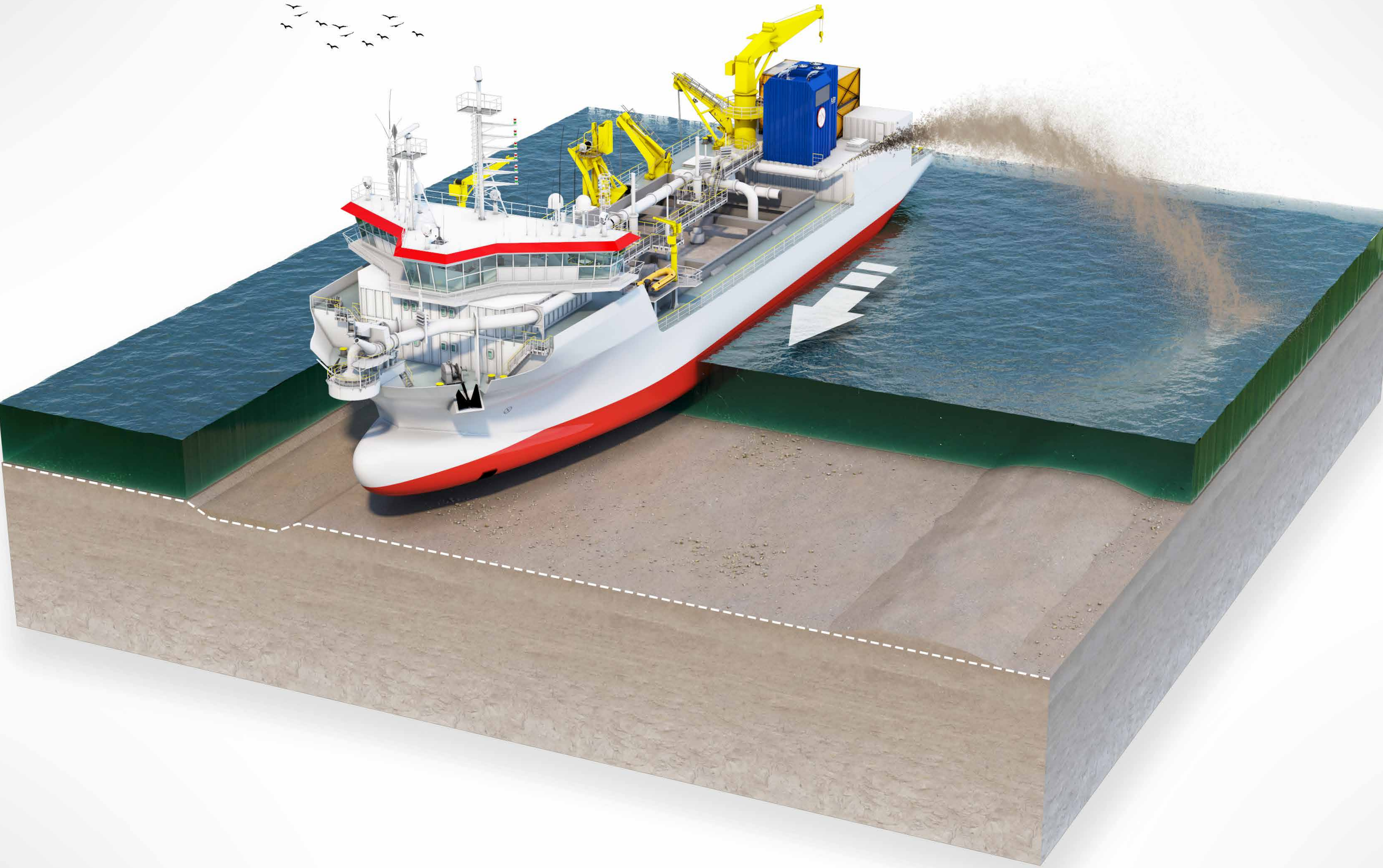
# WHY ARE WE DOING THIS?

In anticipation of a world full of renewable energy, the traditional energy industry is focussing on greening their production process. Under the umbrella ‘Power from shore’, offshore production units around the world are powered with electricity, enabling offshore production to consume much less carbon.

# DID YOU KNOW THAT...

a direct current cable was chosen to bridge this distance? An alternate current cable reaches its limits when spanning such long distances.





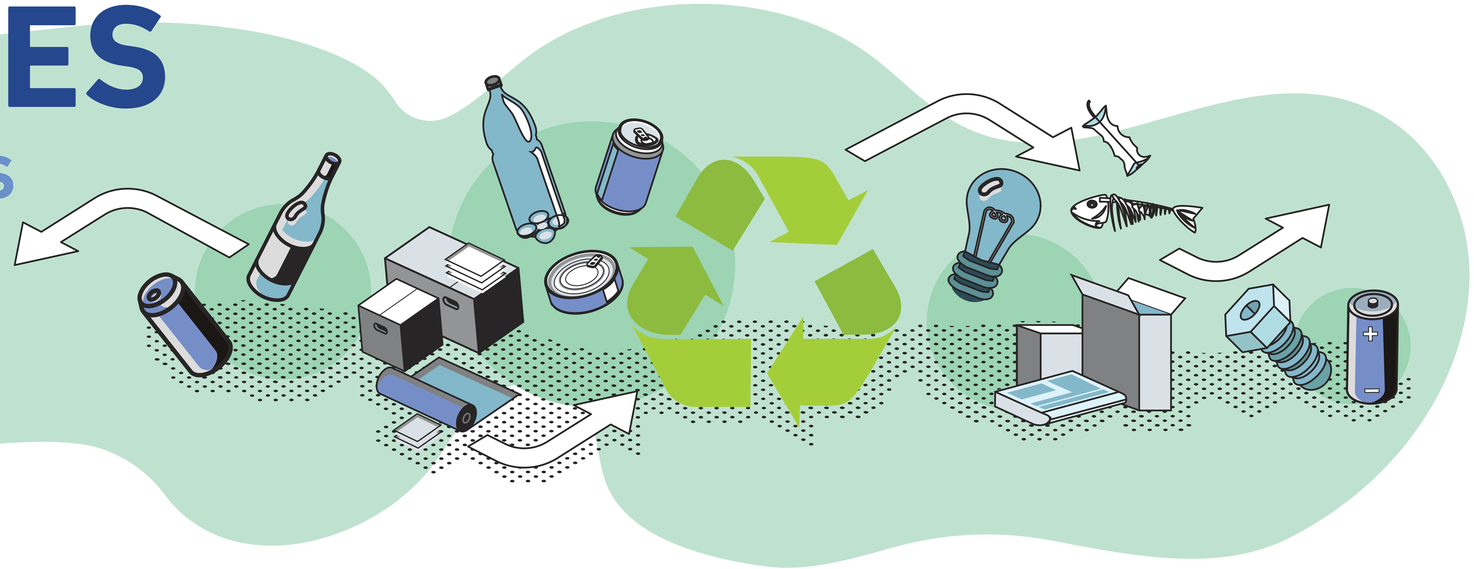
LUXEMBOURG

# DID YOU KNOW THAT...

our Cable Installation Vessels Isaac Newton and Connector are equipped with two cable carousels? This makes them ideally suited for cable installation works of this size.

# JOINING FORCES

## FOR PURE WASTE STREAMS



DJN

CODE ZERO

# 30

# Special waste flows

# 86%

Of the total amount
of waste is recycled

# DID YOU KNOW THAT...

Did you know that this spring, in recognition of our plastic reducing initiatives on board of our ships, we received the ‘Waterlogic Oceansaver’ award?

# Main waste flows

- 785 tonnes of metal
- 100 tonnes of timber
- 100 tonnes of residual waste
- 60 tonnes of paper

# OUR ZERO WASTE INITIATIVES

**WE REDUCE PLASTIC PACKAGING**
More than 43,000 shipments worldwide every year. Since 2020, we have been using thinner wrapping film, thus saving no less than 600 kg of plastic per year.

**WE RECYCLE POLYSTYRENE**
We process our polystyrene waste into high-quality insulation materials that are sustainable and circular. In 2021, we delivered some 1,300 kg of polystyrene.

**WE RECYCLE TEXTILES**
We work with an external partner who processes our discarded textiles circularly into fun laptop bags, pen bags and tote bags.

**WE SAVE THE OCEAN!**
Every year, millions of tonnes of microplastics end up in the ocean, threatening marine life. We are taking action by providing alternatives to plastic bottles in the office and on our ships.

More than

30

Water dispensers installed and no more plastic cups

# 25,088

Plastic drink bottles saved

# CODE ZERO

## ZERO EMISSIONS

**2022**

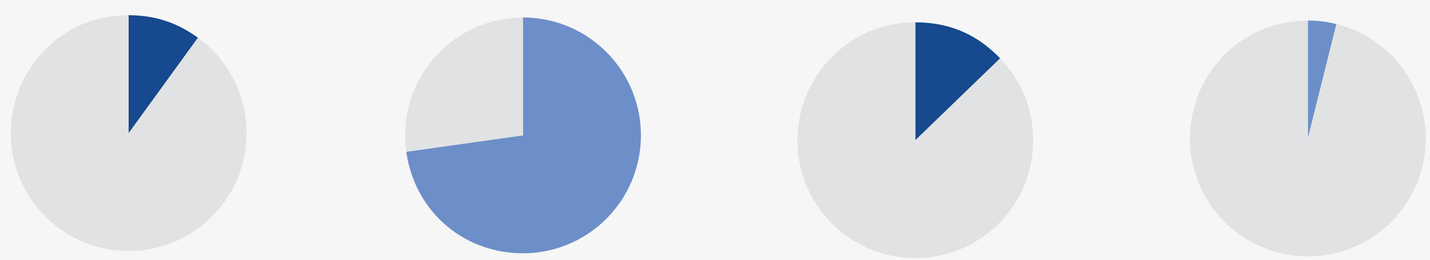
CHECK THE WEBSITE FOR MORE INFO

CODE ZERO

## CARBON FOOTPRINT 2021 BENELUX

As a part of the $CO_2$ performance ladder Jan De Nul verifies their carbon footprint for the dredging, civil and environmental operations in the Benelux. The $CO_2$ emissions in 2021 were 52.091 ton $CO_2$.

(SCOPE 1&2)



| OFFICES, WORKSHOPS AND WAREHOUSES BENELUX | DREDGING BENELUX | CIVIL BENELUX | ENVIRONMENTAL EU |
|---|---|---|---|
| 10% | 73% | 13% | 4% |

More ambitious! NEW!

## TARGETS 2022 BENELUX

(SCOPE 1,2 & 3)

**30%**

30% absolute reduction of $CO_2$ emissions from dredgers in Benelux in the period 2022-2030 compared to base year 2019

MEASURES

+ Replace fossil fuel cars by hybrid and electric vehicles
+ Promote bicycle use
+ Raise awareness

**98%**

Minimum 98% renewable electricity used in all offices, workshops and warehouses by 2022

MEASURES

+ Reduce energy use
+ Generate renewable electricity
+ Purchase renewable electricity of local origin
+ Ecological site office

**50%**

On 50% of all design projects, emissions due to steel purchase, concrete purchase or soil transport have to be reduced by 2022.

+ Increase energy efficiency
+ Optimisation of operational measures by continuous monitoring
+ Use of Renewable and Low Carbon Fuels
+ Use of Ship Energy Efficiency Management Plans (SEEMP)

MEASURES

**10%**

10% reduction of emissions of company cars by 2025 compared to 2018

+ Reduce energy use
+ Generate renewable electricity
+ Purchase renewable electricity of local origin

MEASURES

**75%**

Minimum 75% renewable electricity used in civil and environmental project by 2022

+ Lean design: use less steel, concrete or transport
+ Use low-carbon steel, concrete or transport

MEASURES

**WE ACHIEVED OUR 2021 TARGETS, AND ARE ON THE RIGHT TRACK FOR 2022**

Questions or suggestions?
Let us know at codezero@jandenul.com

# HYDROGEN-POWERED EXCAVATOR

We are always looking for possible solutions to reduce our $CO_2$ emissions and make our machinery more sustainable. At the Terranova site in Zelzate earlier this year, together with our consortium partners, we commissioned a hydrogen-powered excavator. With this 'dual fuel' machine, powered by diesel and hydrogen, we are reducing our emissions and taking another step towards 100% CO2-neutral operations.

# 50%

This first-generation ‘dual fuel’ machine reduces $CO_2$ emissions by up to 50%.

# DID YOU KNOW THAT...

we also have an electric-powered bulldozer in our machinery park? Caterpillar's hybrid D6 XE bulldozer! In 2022, the machine was the first of its kind to go to work on a Belgian construction site: one from Jan De Nul!

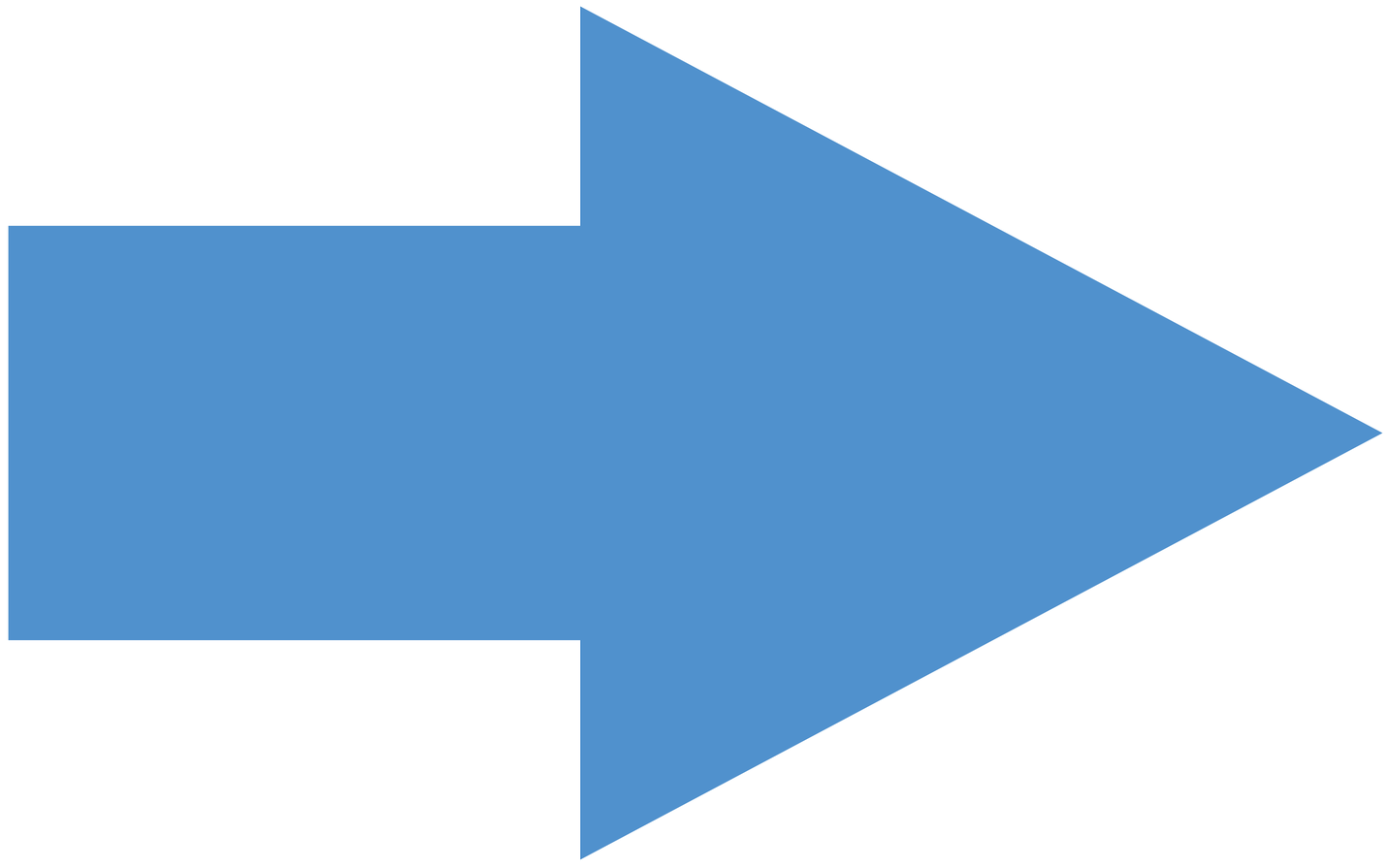
# 55,000

At the Terranova site, we built the largest solar park in the Benelux. The 55,000 solar panels provide green electricity for 4,000 families.

# JAN DE NUL

## IN EUROPE

# NETHERLANDS
# USING NATURAL ELEMENTS TO PROTECT THE COAST



The old concrete Prince Hendrik sand dike on the Dutch island of Texel no longer met legal safety requirements. We submitted a design to restore nature with the construction of a 3-km-long dune (a sand dike), closing off mudflats and salt marshes where nature could revive. The Dutch client was immediately on board with our story.
The project meets many needs: it creates a future-proof water barrier in the form of dunes and improves the ecological value of the Wadden Sea.

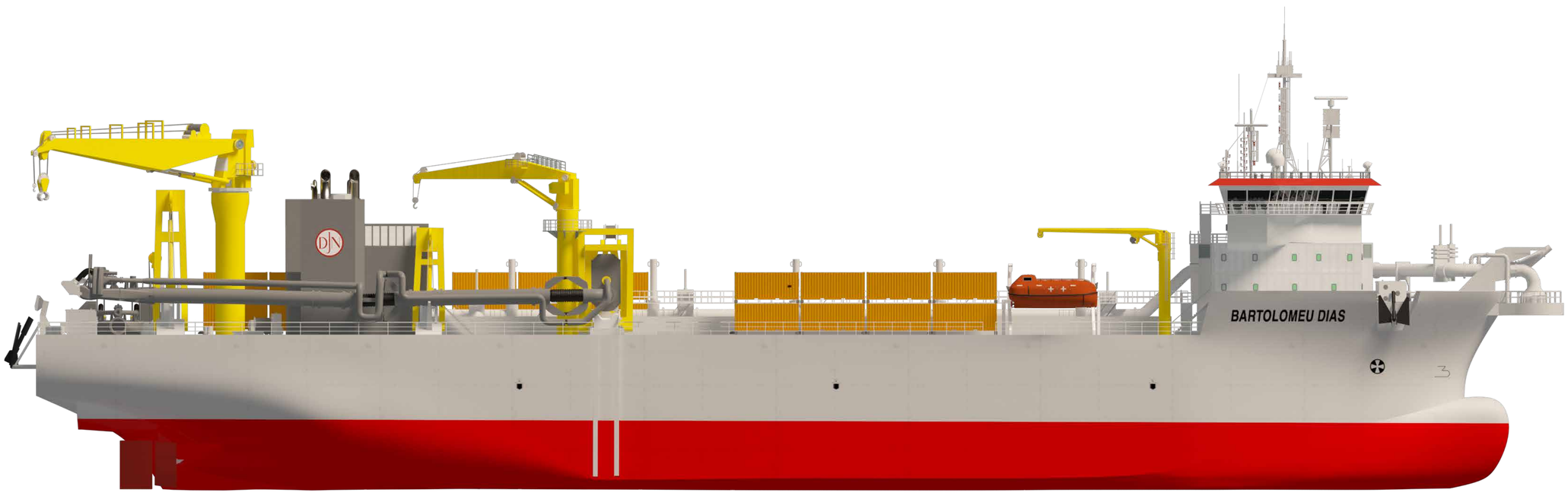
# 400

The new area, with the 3-kilometre-long sand dune and the salt marshes and mud flats behind it, is as big as 400 soccer fields.

# 14,000 $M^3$

The hopper of the Bartolomeu Dias can carry 14,000 $m^3$ of sand at a time.

# BARTOLOMEU DIAS




This project has already won awards for its sustainable and green credentials. On 29 November 2019, the Prince Hendrik sand dike project won the Nature Award of the Dutch Network of Green Agencies.

# 5 MILLION $M^3$

The creation of this new stretch of nature required 5 million $m^3$ of sand. Trailing Suction Hopper Dredger Bartolomeu Dias dredged this volume in the North Sea and brought it to the project area.

# DID YOU KNOW THAT...

our own welding workshop was also responsible for welding and assembling the steel viewing pavilion on Texel's beach?

# WHY ARE WE DOING THIS?

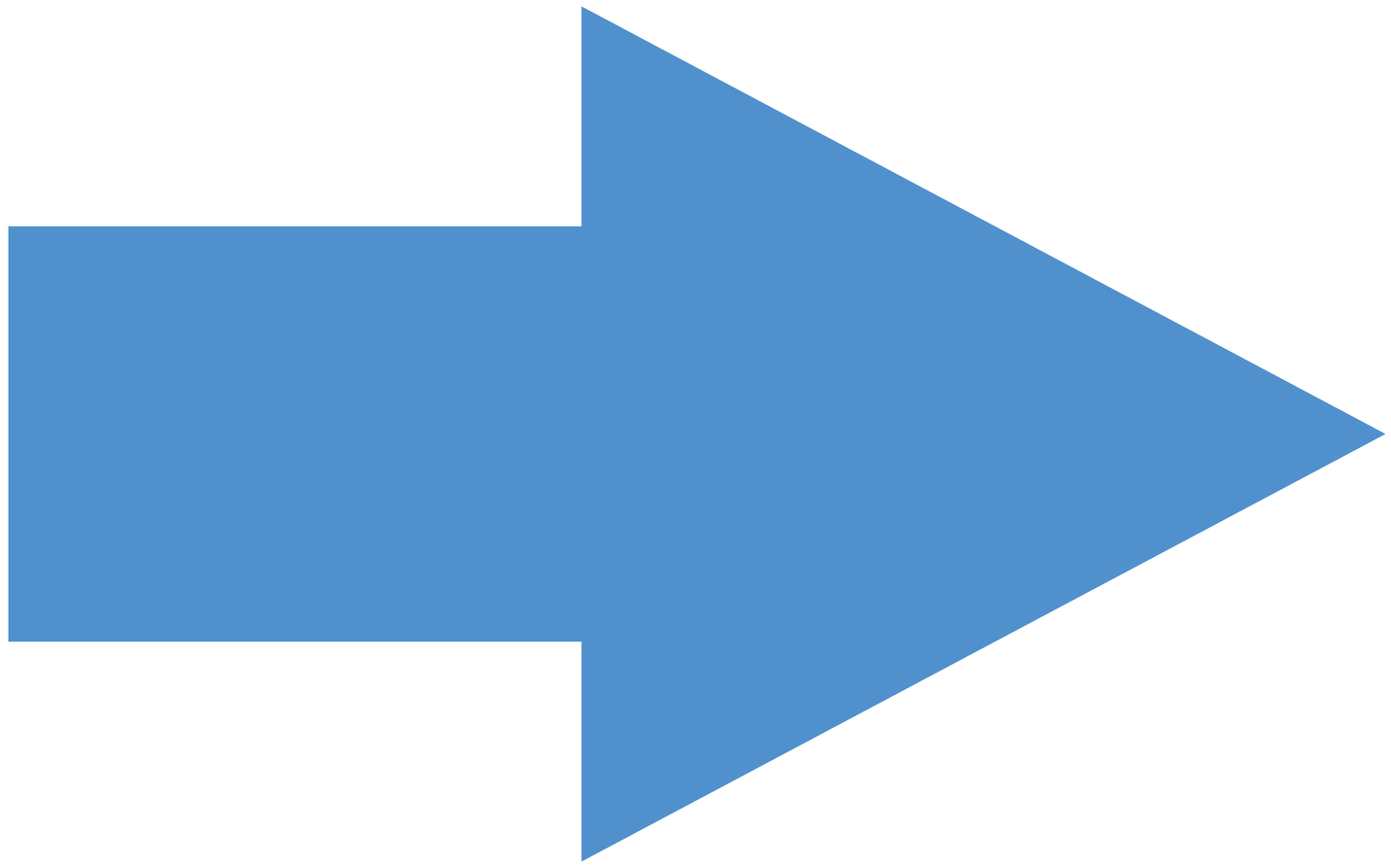
We are experts in protecting coasts. And we do this together with nature: we create natural barriers and promote local biodiversity. We are helping to build a sustainable and green future for our planet.

# DID YOU KNOW THAT...

you can spot lots of animals there today? Grey and common seals and birds such as eider ducks, avocets, ringed plovers, Kentish plovers, oystercatchers, shelducks and red knots.

# GREECE

# ELECTRIFYING CRETE WITH A 135-KM SUBMARINE CABLE



For several decades, Greece has aspired to connect its largest island Crete to the mainland's electricity grid with a submarine cable. But until recently, cable manufacturers could not produce such a long cable. The challenges were huge: bridging an immense length and depth over a rough seabed. We pulled out all the stops for this challenging cable installation project.

# 1,000 M

The cable is buried at a record depth of 1 kilometre deep. Never before has a cable been installed in such deep waters.

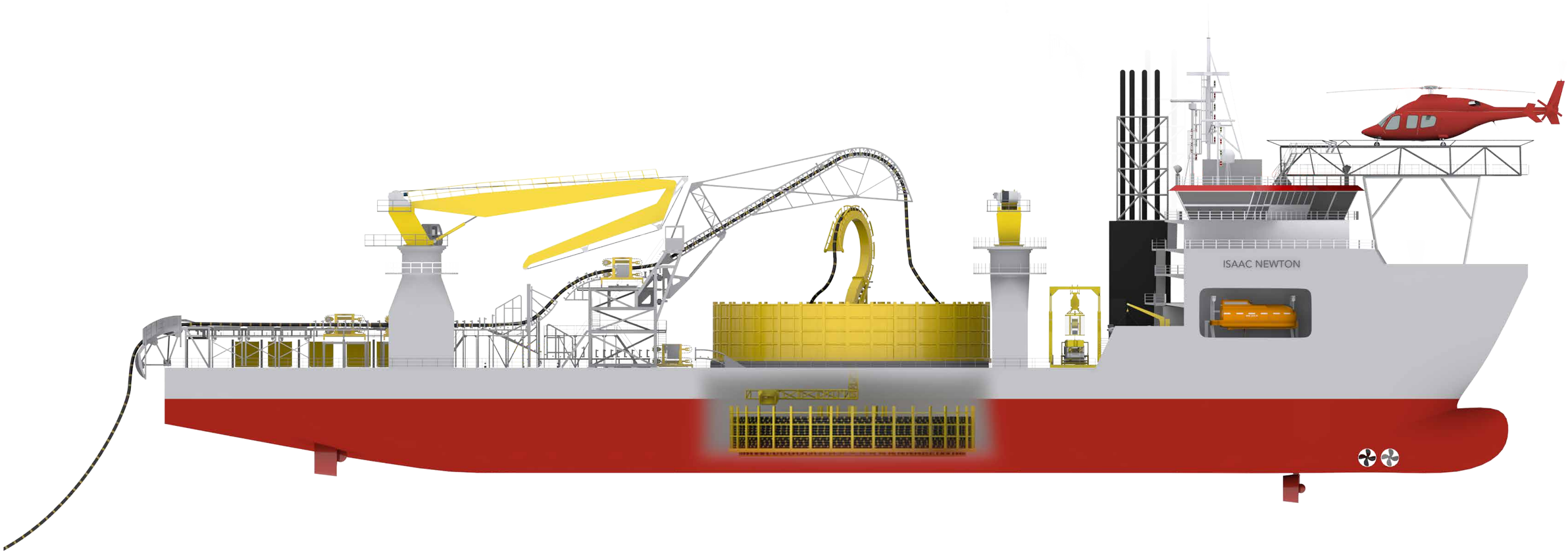
# 12,000 TONNES

Incredibly heavy! The 135-km cable weighs an impressive 12,000 tonnes.

# 135 KM

The submarine cable is 135 kilometre long. That's as the crow flies from here to Rotterdam.

# ISAAC NEWTON




# CABLE INSTALLATION VESSEL

# WHY ARE WE DOING THIS?

Globally, the demand for energy continues to grow. To compensate for differences in electricity production between countries or to bring energy generated at sea to land, cables are installed. Worldwide, we've already installed more than 2,500 kilometres of such submarine cables.

# DID YOU KNOW THAT...

due to the unseen installation depth, the voltage on the cable on board could rise enormously? For this, we had to additionally reinforce the aft deck of our Cable Installation Vessel Isaac Newton.

# DID YOU KNOW THAT...

for this high-precision project, we've worked in waves of up to 8 metres high?

# NEW OFFICE

# A PLACE WHERE CHALLENGING PROJECTS START

A healthy workplace is more than just setting the thermostat to the right temperature. It is a combination of a healthy mind in a healthy body, in a healthy building.
We translate this philosophy into our actual workplaces. A striking example is the new office building here in Aalst. Greener, healthier and flexible are the keywords of the entire construction process.

# WHY ARE WE DOING THIS?

# AN ENVIRONMENT THAT WORKS

Not only are we erecting a new office building, we are creating a whole new office site here: we are merging the existing and new buildings into one whole, united by the same vision and architecture.

# FOCUSED ON WHAT PEOPLE WANT

- a stimulating meeting place
- a flexible work environment enabling continued self-development
- a place where we feel good, both mentally and physically

- Coffee corners as central meeting places
- Silent workstations and call boxes
- Training centre
- Fitness rooms with group classes or personal coaching
- Company restaurant with sun terrace

# SUSTAINABLE TECHNOLOGIES

## SUSTAINABILITY IS AT THE CORE OF WHAT WE DO

When designing our new office building, we relied on sustainable technologies as the key to a greener building.

With **solar panels** on the roof, we generate our own electricity, both for daily consumption in the offices and for building techniques.

An underground **BEO field** provides coolness on hot days and warmth on cold days.

Combined with **electric heat pumps**, this is how we acclimatise our office spaces in a sustainable way.

The **west façade** is stepped, taking into account the 45° cast shadow principle.

**Large windows** ensure optimal light in the interior spaces at any time of day. Result: no one is more than 8 metres from the window. Daylight is a top priority.

**In the car park, we provide charging stations for electric cars.**

With **blue-green roofs**, we create a green interface between office and neighbourhood. The roofs also buffer rainwater, which is good for the plants and creates extra insulation.

**Motion sensors** activate LED lighting when detecting a presence in the office.

# FOUNDATION TECHNIQUES

# WE BUILD ON SOLID FOUNDATIONS

Such a large building needs a solid foundation. For the foundations, we could rely on the expertise of our Ostend-based subsidiary Soetaert – a top specialist in piling and foundation works.

We first built a secant pile wall, which gave structure and protection to our construction pit.

To further stabilise the construction pit, we reinforced this wall with 130 ground anchors.

And then we placed 92 micropiles, spread across the entire area within the foundation walls. These micropiles ensure that the floor slab stays in place: groundwater cannot push it up and the building cannot cause it to subside.

# 16 M

The foundation wall goes up to 16 metres deep. That is twice the depth of our underground car park.

# 560

The foundation wall required 560 secant piles.

# 33–38 M

The ground anchors, drilled at an angle of 35° across the foundation wall into the ground, are 38 metres long each.

# 92

The 92 micropiles supporting the floor slab of the lower basement floor go up to 12 metres deep.

# DID YOU KNOW THAT...

our new office building will be located where the Dender used to flow? We certainly noticed this during the foundation works!

# 50

We are 50 today to build the new office building: 2 tower crane operators, 5 masons, 25 formers and 8 iron braiders.

# 43 M

The office building that will stand on top of this foundation wall is 43 metres high.

# DID YOU KNOW THAT...

our tower crane operator has to climb 182 steps every day to get into his cabin? He is rewarded for this with a great view. In good weather, he can see the top of the Atomium in Brussels and the port of Ghent.

# SMALLEST TOWER CRANE

## >62 M

high

## 50 M

Boom length

# LARGEST TOWER CRANE

**>76 M**

high

**55 M**

Boom length

At the apex of the boom, the crane can still pick up

**4,800 KG**

# 185 KM

# 576 TONNES

In the lower floor slab, we placed 185 km of rebar. That is 576 tonnes of reinforcement.

# 45,000 $M^3$

of soil excavated to date

# 8,500 $M^3$

of concrete poured to date

# CABLES IN THE FLOOR SLAB

Thanks to this technique, our floor slab is less thick. A standard floor slab has a thickness of 45 cm. Our floor slab will be only 30 cm thick. So we gain extra free space.

# BELGIUM

# PROTECTING THE COAST WITH A STORM SURGE BARRIER

Our coast is vulnerable. One of the biggest threats to coastal ports is flooding caused by heavy storms. In Nieuwpoort, together with Herbosch-Kiere, we are building a new storm surge barrier that can close off the Yzer during high water levels and severe stormy weather.

# 90°

The storm surge barrier consists of two abutments, a concrete sill on the seabed and a metal ‘gate’ rotating 90 degrees around a horizontal axis to close off the estuary.

# 1,300 TONNES

The metal ‘gate’ weighs 1,300 tonnes and will be installed in the storm surge barrier in 2024.

# 19 M

OMG! For this storm surge barrier, we made a 19-metre-deep construction pit! You can compare that to a seven-storey apartment building.

# WHY ARE WE DOING THIS?

Our expertise in coastal protection is at the service of the whole world suffering from the effects of climate change. We are helping to build a sustainable future for our planet.

# DID YOU KNOW THAT...

we first built the 4,500-tonne concrete sill, which lies on the seabed between the abutments, in the port of Antwerp and then towed it by pontoon to Nieuwpoort? The journey took us 42 hours.

# BELGIUM

# BUILDING 12 KM OF HIGHWAY, INCLUDING BRIDGES AND TUNNELS

The A11 had long been the missing link between Bruges and Westkapelle. But we changed that together with a few other civil engineering partners. For one of the largest infrastructure projects ever in Belgium, we constructed 12 kilometres of highway, built 70 engineering structures and, today, are still keeping the whole stretch of highway in a proper state of maintenance. The entire design and financing was also in the hands of our consortium.

# 12 KM

We designed, built, financed and maintain a 12-kilometre stretch of highway between Bruges and Knokke.

# 70

We built 70 engineering structures, including as many as 11 tunnels and 13 bridges.

# 15 AND 800 M

The biggest structure on the A11 is the new viaduct near Bruges. With its 15-metre height and 800-metre length, this viaduct with its slim profile is one of the eye-catchers of the A11.

# WHY ARE WE DOING THIS?

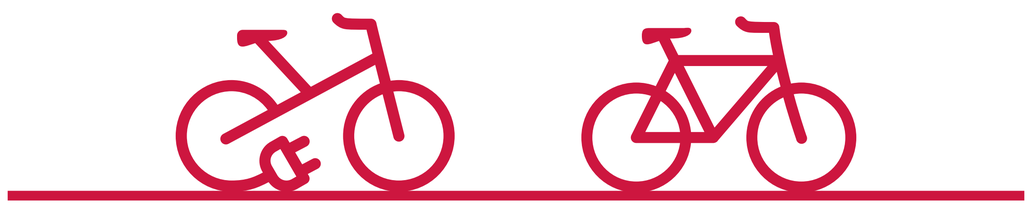
The A11 not only creates a fluent link to the port of Zeebrugge, but also relieves the polder villages from heavy and congested traffic.

At Jan De Nul, we use our civil engineering expertise to help improve mobility.

# DID YOU KNOW THAT...

we've also provided eco-passages to preserve biodiversity in the polders? This will allow animals to move under the A11.

For this project, we paid much attention to architecture and vulnerable road users. The bridges, tunnels and carriageways are designed to blend into the polder landscape, as it were.



Vulnerable road users were also a central point of attention in the design phase. Cyclists can ride around and under the A11 without having to cross road traffic.

# BELGIUM PROVIDING A SOLUTION FOR PFOS AND PFAS

Envisan is the environmental expert within our group. They invest in infrastructure and technology to solve complex environmental issues, in a context of sustainable development. Envisan manages, amongst others, a network of soil recycling centres in Belgium and France. It also performs research into possible treatments for heavy contaminants such as PFOS and PFAS.

The centre in Liege has a physical-chemical soil washing plant that is capable of removing heavy contaminants such as PFOS and PFAS from soils in phases.

# 5

Envisan has 5 soil recycling centres, 4 in Belgium and one in southern France.

# 100,000 TONNES

All centres combined have an annual processing capacity of 100,000 tonnes per year per centre.

# WHY ARE WE DOING THIS?

Flanders is densely populated. Land is scarce, house prices are soaring. This makes it all the more important to detect, remediate and revitalise contaminated sites. With Envisan, we invest in techniques to clean those sites. We invest in circular solutions for a better planet.

# DID YOU KNOW THAT...

the physical-chemical washing of contaminated soils is the most cost-effective solution for removing PFOS and PFAS from soils?

# BELGIUM

# CREATING A GREEN SPOT IN THE PORT OF ANTWERP

In the port of Antwerp, the 19th-century Fort Sint-Filips on the right bank was a dumping ground for millions of litres of oil and chemical waste. This blackspot had to be turned into a green spot: a task right up Jan De Nul's and Envisan's alley.
We encapsulated the pollution, remediated the sites and reinforced the banks. We restored nature and created a new breeding ground for birds and fish. And all that in the very heart of the port.

# 30 M

For encapsulating the old fort, we built an underground wall of 30 metres deep. This allowed us to isolate the heavy contamination from the environment.

# WHY ARE WE DOING THIS?

For this project, we are not only tackling pollution, but also restoring the natural reserve and turning it into a controlled flood plain (GOG). We are doing our bit for the Sigma Plan.

# DID YOU KNOW THAT...

Fort Sint-Filips on the right bank dates from the 16th century? The Spaniards built it together with Fort Sint-Marie on the left bank to gain better control over the river Scheldt.

# DID YOU KNOW THAT...

today, the fort itself is no longer accessible, but the contours of both forts were reconstructed above ground.

For this multi-faceted project, our civil teams built foundation walls of 30 metres deep, our environmental partner Envisan remediated the site and our dredging experts reinforced the banks and created the new breeding ground for birds and fish.

# BELGIUM

# BUILDING A WIND FARM IN THE BELGIAN NORTH SEA

Fifty kilometres off the Belgian coast lies the Northwester 2 wind farm with a total capacity of 219 MW. This is the first commercial project with V164-9.5 MW turbines, considered the best worldwide. We were responsible for the construction and installation of foundations, the transport and installation of cables and the installation of 23 wind turbines.

# 164 M

That's the rotor diameter of the installed wind turbines, corresponding with some 36 average family cars placed neatly in a row.

# WHY ARE WE DOING THIS?

The world is making a switch to green energy. Europe has a leading role in the realisation of renewable energy projects such as offshore wind farms. To meet the ambitious European targets and make a major switch to using (green) electricity, building wind farms is crucial.

# DID YOU KNOW THAT...

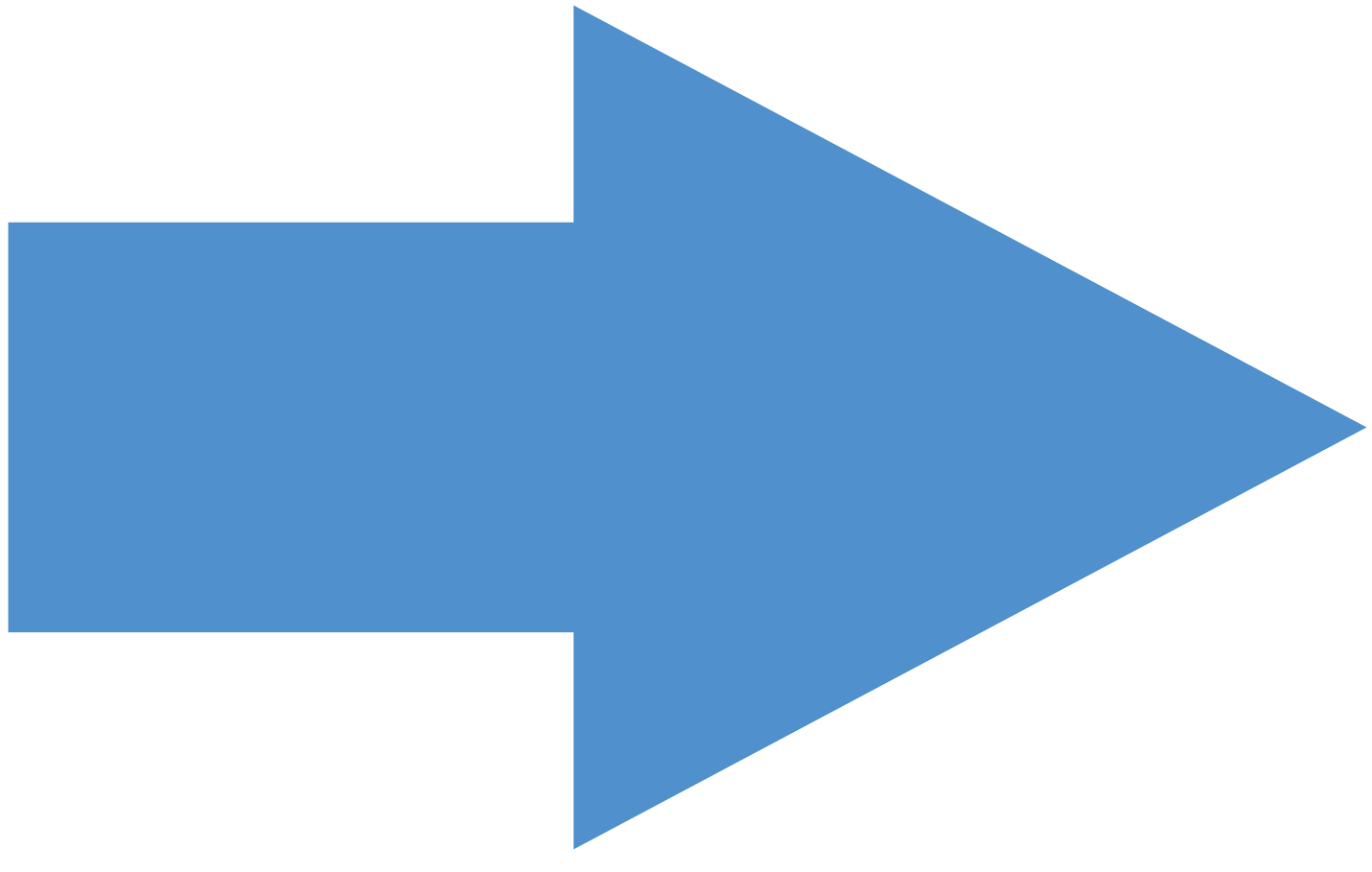
this is the seventh wind farm off the Belgian coast? With it, Belgium already supplies green energy to the equivalent of over 2.2 million families.

# 220,000

The total capacity amounts to 219 MW, which corresponds with bringing green electricity to 220,000 families.

# BELGIUM

# CONVERTING THE ALBERTPLEIN INTO A REAL 'PLACE M'AS-TU-VU'



We are breathing new life into the Albertplein (or Albert square) in Knokke-Heist. We will build an underground car park and give the public square a new look. The square, which runs from façade to façade, will become an ode to light and invite people to look, but also to ‘be seen’.  As icing on the cake, we are building a glass hospitality pavilion surrounded by water that will completely revive this place.

# 150

There will be 150 private parking spaces in the underground car park.

# 67 X 30

The square will look like a large chessboard with black and white tiles, forming a rectangular carpet of 67 m by 30 m.

# 85,000

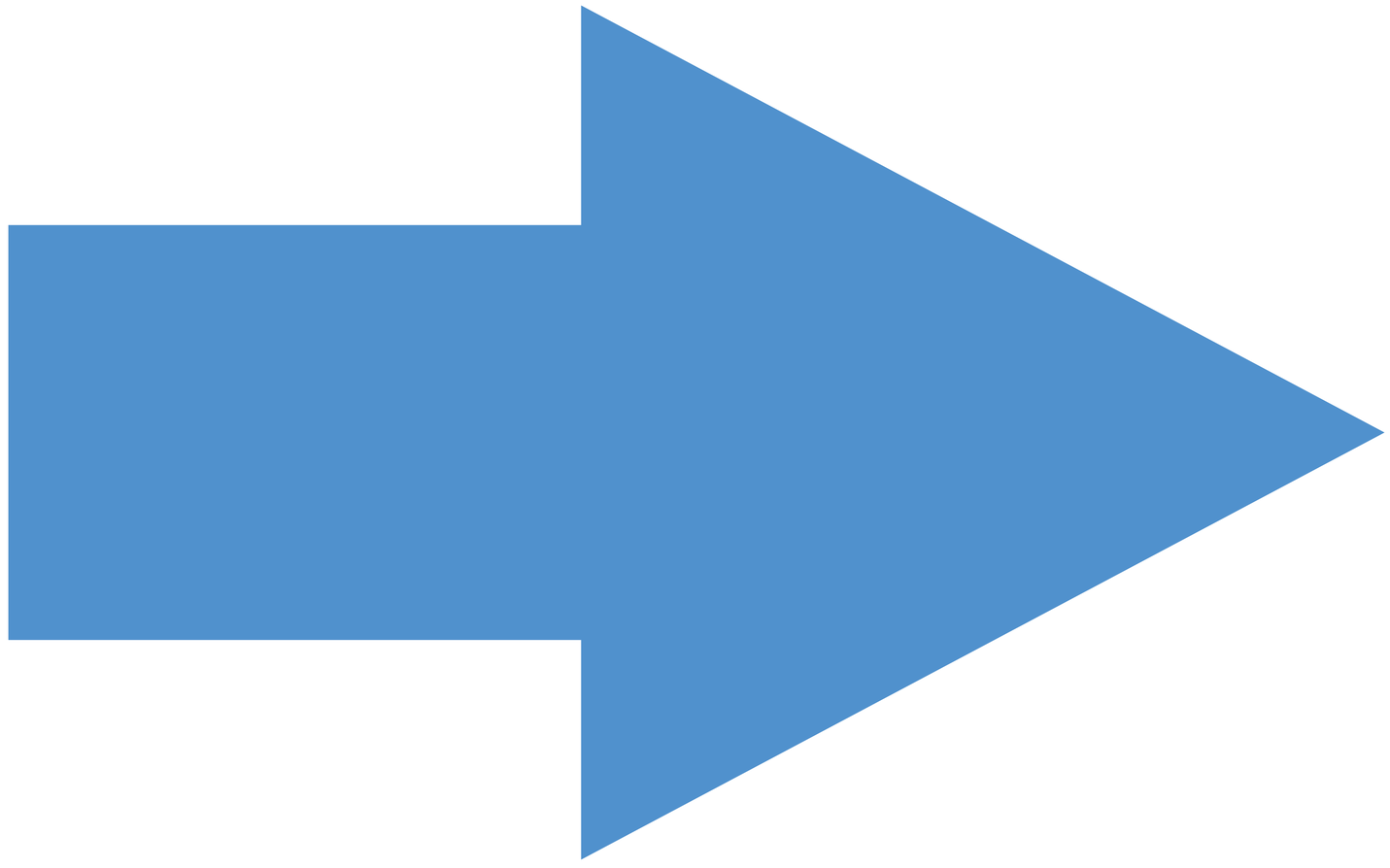
Last summer, the project team went in search of 85,000 ancient coins. They will incorporate them into the square's tiles.

# WHY ARE WE DOING THIS?

In recent years, the Albertplein alongside the sea bank has been losing a bit of its appeal along with some of the catering facilities. The coastal town knocked on our door and that of Goethals Promotor to turn this beating heart back into the ‘place to be’ of yesteryear. The underground parking spaces provide an answer to the acute shortage of parking spaces in the seaside town.

# BELGIUM

# BREATHING NEW LIFE INTO A DERELICT FURNITURE FACTORY



The iconic Meurop furniture factory has a long history and has stood derelict in the Dijle valley for years. The former industrial activities have left their marks in the soil and some spots are in need of a thorough remediation. Together with our partner, we are taking this site in hand. Our job: turning Dijledonk into an accessible rural district along the waterside, where leisure activities, living and working will go hand in hand.

# 40 JAAR

The Meurop site stood empty for more than 40 years.

# 300

The project includes the construction of a large public park and the creation of around 300 new residential units.

# 4.41 ACRES

Dijledonk has a surface area of 8.24 acres. Of this, 4.41 acres will become a vibrant green area, with private and shared gardens, and with a large park where everyone can relax and play.

# WHY ARE WE DOING THIS?

Space is scarce. This makes it all the more important to revalue un(der)used real estate heritage and create optimal new destinations for them. We safeguard, integrate and reactivate valuable relics of our past by giving them a sustainable and active role in the present.

# DID YOU KNOW THAT...

in 2020 Imaginair moved into the old furniture factory? Imaginair will set up temporary activities based on the pillars of Dijledonk: living – working – enjoyment – motion. Imaginair stands for creative entrepreneurship. It will fill the former furniture factory with new life. Think of expositions, design, co-working and workshops.