

# 2022 GIVING COLOUR TO CHANGE

ANNUAL REPORT





The offshore installation vessel Vole au vent installed France's very first turbines at sea for the Saint-Nazaire wind farm. 80 turbines, accounting for a production capacity of 480 MW.

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# WHAT DID 2022 BRING?

Dear reader,

In 2021, there was no way around it: we were living and working in a very turbulent environment. Nevertheless, thanks to our strong results and a well-stocked order book for the following years, we were confident that we would restore our profitability.

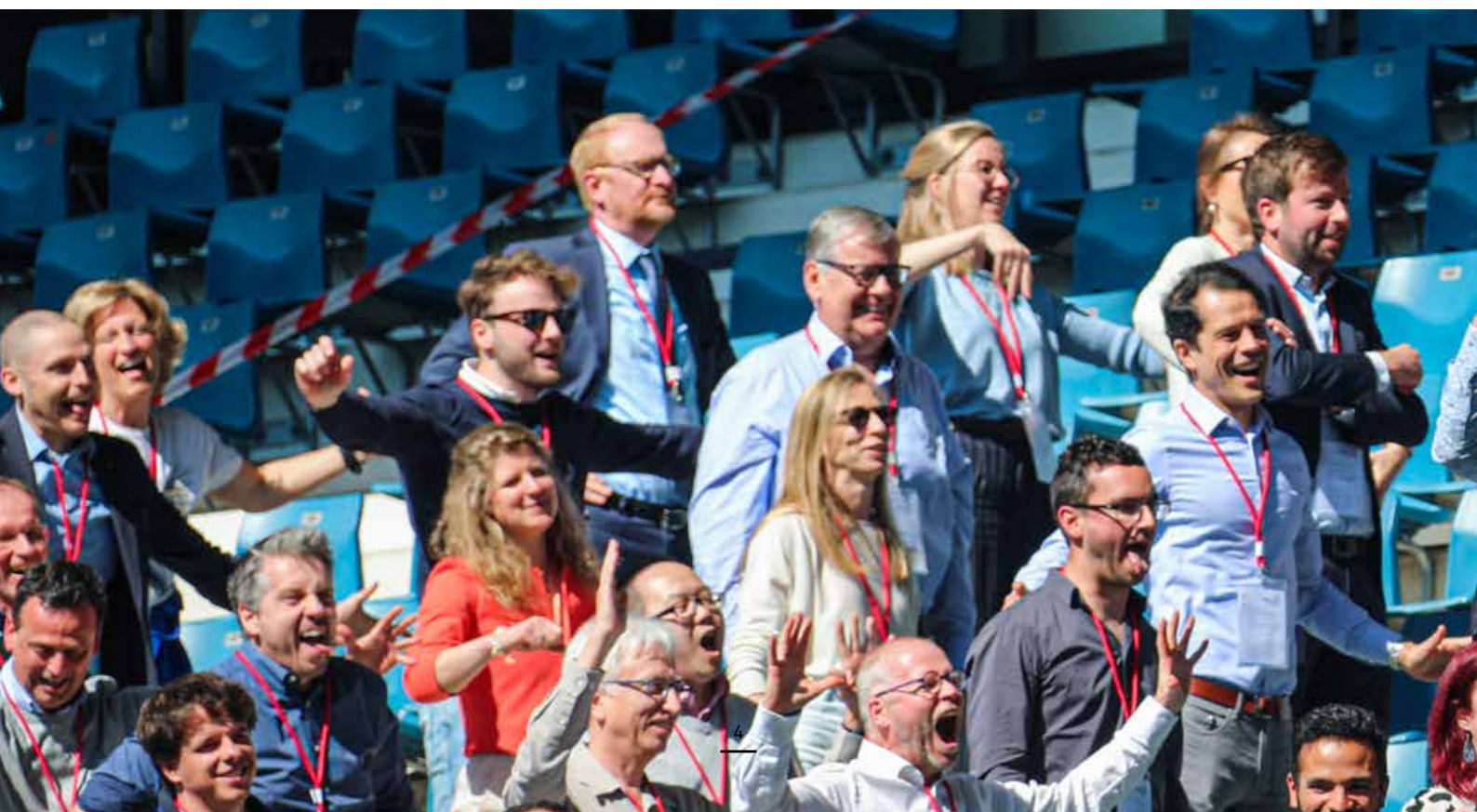
2022 brought us a lot of new knowledge. For instance, COVID-19 maintained a strong presence in Asia in the first half of the year, albeit in a less disruptive way. We managed to put our (offshore) activities, including in Taiwan, on the right operational track. This resulted in a timely high-quality delivery and ditto financial result.

2022 will also go down in history as the year of the armed conflict in Ukraine. It was the onset of major global unrest with an immediate, devastating economic impact. Skyrocketing energy prices and galloping double-digit inflation had and still have an impact on the cost levels of our ongoing projects and tenders.

Despite this turbulent context, the past year exceeded our expectations thanks to our strongly increasing tender activities. The renewable energy market, in particular, boomed due to increasing pressure from climate issues and the need for energy security.

We can therefore confirm that we managed to shift our beacons for the better:

- We successfully delivered our two next-generation offshore installation vessels, Les Alizés and Voltaire. Both vessels are now navigating to their first projects.
- We achieved record sales in 2022.
- We restored our operational excellence resulting in strong financial results.
- Our order book, which stood at €4.6 billion at the end of 2021, grew to a whopping €6.45 billion at the end of 2022. A historic ground-breaking increase of 40%.



These results are even more remarkable in light of today's continuous uncertainty. In 2022, for instance, we had to tackle the suspension of a major dredging contract. This makes the (net) growth of our order book all the more remarkable. Moreover, these trends of increased tender activities and an increasing number of orders continued unabated in the first quarter of 2023.

The main conclusion about the past year is that even in stormy periods Jan De Nul Group succeeds in holding a steady course. This is only possible thanks to the passion and commitment to deliver of all our employees, but also thanks to the shareholders' determination to continue to invest in new markets and the associated extra vessel capacity.

We look forward to a new year, in which we will jointly develop unique and innovative solutions to enhance people's quality of life, connect communities and improve infrastructure.

The Board of Directors takes this opportunity to sincerely thank all its stakeholders for their continued commitment.

Mid-April, we had a look back at a successful 2022 with our colleagues at the Ghelamco Arena in Ghent. An enthusiastic haka brought out a lot of energy and loud cheers, getting us ready for a colourful future.





# GIVING COLOUR TO 2022

More than ever, we questioned our independence and committed to maximum self-sufficiency last year. Although the COVID-19 crisis was, for many, definitively a thing of the past, China strongly maintained a zero-covid policy until the end of the year. This resulted in unprecedented disruption of the global supply chain. The energy crisis in addition brought rampant inflation. Contractual price fluctuation principles that had lost relevance over the past decades had to be revised and material prices soared.

Volatility, thus, is the new normal. It may even be exactly what we needed. The unpredictable situation urged Europe towards greater energy independence. The need for an adequate supply of basic raw materials also became apparent. Consequently, the focus on renewable energy in Europe increased immensely. The much-needed energy transition is now really taking place with priority.

To make this energy transition possible, our dredging and offshore divisions are working at full speed. We are installing wind farms and interconnectors and building the first artificial energy island at sea to supply households and industries with green energy. The uncertainty and provisional insufficiency of renewable energy is also causing a rejuvenation in the offshore oil and gas market. On top of that, we are involved in projects to upgrade, expand and adapt port infrastructure to the needs of today and tomorrow. In short, we are helping to build the energy transition.

Our environmental and civil divisions are going along on that flow, looking for sustainable alternatives. The remediation of historically polluted sites, renovations and construction projects where soft mobility and energy-friendly living take precedence are high on the priority list.

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View our  
Financial report



View our  
Sustainability Report



**7.178**

colleagues  
end 2022

**45**

countries in which  
we were active in 2022

**221**

projects  
in 2022

**39 PROJECTS IN AMERICA**  
Offshore services and dredging

**151 PROJECTS IN EUROPE**

46 Offshore services and dredging

53 Civil construction

41 Environmental remediation

11 Project development

**23 PROJECTS IN ASIA**  
Offshore services and dredging

**8 PROJECTS IN AFRICA**  
Offshore services and dredging

**92**

nationalities

An aerial photograph of an offshore wind farm at sunset. The sky is a mix of soft pinks, oranges, and blues, with scattered clouds. The sea is a deep, calm blue. Numerous wind turbines are visible, their white towers and three-bladed rotors standing out against the horizon. The perspective is from a high angle, looking across the vast expanse of the ocean towards the distant shore.

# GIVING COLOUR TO CHANGE

'Be the change you want to see yourself', 'embrace change' or 'it's time for change' – well-meaning but hollow catchphrases that we all know all too well. What exactly do organisations claiming such catchphrases really mean by 'change'?

It is five to twelve on the doomsday clock. This is precisely why more is needed than just pushing for change. We must put into words what that means in concrete terms and then live by it. No more vague ambitions. The world is crying out for visions that convince, inspire and activate.

We at Jan De Nul work on building a more sustainable society every day. That is our way of adding colour and substance to change. We also literally add colour to the following three annual reports. We highlight each story or project with a touch of blue, red or yellow. The properties and values of these three primary colours perfectly match Jan De Nul's DNA.



# 2022 WAS ...

## BLUE

A reliable, ethical, responsible and stable year. With two new flagships, we cast ourselves more than ever as a frontrunner in the offshore energy market. We also sink our teeth into projects that give local economies a huge boost, such as the redevelopment of heavily polluted sites in Belgium.

Equally, we target positive impact on the global economy. Think of the construction of Payra Port, a brand new seaport in Bangladesh. As a financially sound group, we always aim for the most feasible solutions for our clients. The concession agreement for the access channel to the port of Guayaquil in Ecuador is a textbook example of this. In short, we allow our partners and clients to excel, with a focus on operational control and solutions that tick off all their needs.

## YELLOW


Imagination, optimism, intellect and vitality, that is yellow in a nutshell. In the field, we translate this into creative solutions for sustainable housing, robust coastlines and smooth mobility, among other things. In 2022, we also reaped the benefits of our years of expertise in various markets and technologies, from undersea energy cables to PFAS remediation. Our vision and positive attitude towards the future continue to make a difference today.

## RED

For those for whom action, perseverance, passion and warmth are everyday fare, red is undoubtedly a familiar colour. It certainly is for us. Complex construction projects such as prisons or air bases? Bring it on. A first offshore wind farm in France? No problem. Installing a huge storm surge barrier or dredging bone-hard limestone? You can count on us. We make the impossible possible in view of shaping a better future.

In Taiwan, Jan De Nul was in charge of installing the foundations and cables for the Formosa 2 offshore wind farm.



An aerial photograph showing a large white and yellow dredging ship, the Jan De Nul, moving through a wide river. The ship is leaving a white wake in the water. In the background, a dense green forest lines the riverbank, and a city skyline is visible in the distance under a clear blue sky. The image is overlaid with a large, semi-transparent blue graphic on the left side.

In Ecuador, Jan De Nul is carrying out dredging works in the access channel to the port of Guayaquil under a concession agreement.

Blue stands for reliability, integrity, responsibility and stability. We cast ourselves more than ever as a frontrunner in the offshore energy market and the partner of choice for heavily contaminated site redevelopment. As a financially sound group, we always aim for the most feasible solutions for our clients, for instance by concluding concession agreements. In short, we tick all the boxes, with a focus on operational control and all-round solutions.



# DREDGING CONCESSIONS: TOWARDS COMPLETE OUTSOURCING

Canals and rivers are usually important economic lifelines. It is therefore crucial to maintain the depth and flow of these waterways by dredging accumulating sand, silt and other sediments in time. This not only allows – the ever bigger – ships to pass smoothly, it also prevents siltation and flooding. However, dredging involves high costs and not all governments are able or willing to bear them. A concession agreement then offers an interesting way out. Find out what such an agreement entails and how Jan De Nul uses this formula to create a win-win situation in countries such as Ecuador.



**Mathias Van De Vijver**, Financial Manager



**Dominic De Prins**, Project Manager in Ecuador

## **What in essence is a dredging concession and what type of concessions exist?**

**Dominic:** "Broadly speaking, it comes down to making and keeping a canal or river navigable. We do the first by deepening the waterway, and the second by keeping a vessel there for long-term maintenance works. Various financing arrangements are possible."

**Mathias:** For some projects, Jan De Nul takes on the financing. The costs for deepening the waterway and maintaining its depth are then repaid with toll fees. Each vessel passing through the waterway; for instance, has to pay an amount that depends on the size of the vessel. Alternatively, the awarding authority

may reimburse us by way of fixed, periodic payments. But intermediate forms, with a combination of fixed payments and toll fees, are also possible."

## **What advantages does this offer for your clients, and for Jan De Nul itself?**

**Mathias:** "For clients, we offer a long-term solution, without them having to fully finance the works themselves. In this way, governments with a limited budget can still meet the expectations of their population and give the local or national economy a major boost."

**Dominic:** "For us, it means giving one or more vessels a fixed base of operations over a long period of time. Their first and ►



foremost priority, obviously, will always be the concession assignment, but there can possibly be interim periods working on neighbouring projects. This is interesting for us, as it significantly decreases our mobilisation and demobilisation costs while giving us more visibility in the region."

### **So what is the other side of the coin?**

**Mathias:** "In a concession formula with toll fees only in return for full financing, there are a lot of risks to factor in. For one thing, we must not only calculate the costs for capital and maintenance dredging works, but also estimate the expected vessel traffic during the concession period and the resulting revenues. In some countries, there are also political risks and legal uncertainty to consider. And finally, tender costs are also higher due to the more complex contractual set-up."

### **Do you usually push for concession agreements yourselves for certain projects?**

**Dominic:** "Yes, we do. In countries with a proper legal framework, we may sometimes take the initiative and submit a proposal ourselves. The first step is then to carry out a pre-feasibility study, which the public authority concerned may or may not approve. If approved, we will carry out a more elaborate feasibility study, paid by the relevant public authority. If that also passes the evaluation, this will lead to a public tender in which various parties may participate, including direct competitors."

**Mathias:** "An important consideration here is that the party that originally took the initiative has an advantage in the concession tender. They know the risks and opportunities inside out, and have a price advantage in the evaluation procedure. We have already won some great projects through this method."

### **What other assets can you bring to the table in tenders for dredging concessions?**

**Mathias:** "Thanks to our extensive dredging fleet and experienced teams, we have sufficient resources to invest in a long-term concession project. In addition, our financial health inspires confidence and over the years, we have built up a strong track record when it comes to dredging concessions. That experience also appeals to clients."



In December 2018, the Guayaquil government and Jan De Nul signed a performance-based 25-year concession agreement for capital and maintenance dredging works in the 95-km access channel to the port of Guayaquil. Works started in early 2019 and barely nine months later – well ahead of the deadline – the required 12.5 metres depth was achieved.

Meanwhile, the 25-year maintenance agreement is running as planned. In exchange for guaranteeing its depth, we levy toll fees on all vessels using the access channel. The gross tonnage of the vessels determines the payment rate. The larger the vessel, the higher the fee. Whether or not the vessel is fully loaded does not matter in this regard.

***"Our people, fleet and financial health are deciding factors for this type of financing."***

**Mathias Van De Vijver**, Financial Manager





In February 2022, Pancho was launched and christened by its namesake Jan Frans (2 y.), son of Pieter Jan De Nul. Pancho is the Spanish pet name for Jan Frans.



In October 2022, Cosette Goethals (4 y.), daughter of Julie De Nul, christened the water injection dredger Cosette, thus lending her name to Pancho's sister vessel.

## DREDGING IN EVERY NOOK AND CRANNY OF PORTS AND RIVERS

**Essentially, a dredging contractor is only as strong as its fleet. Some dredging contractors settle for equipping themselves with the most impressive and powerful vessels that mainly do the bigger jobs. But we rather opt for completeness. That is why Jan De Nul invested in two new compact water injection dredgers. As such, we also are and will remain the partner of choice for smaller jobs, which usually turn a project into a real success.**

### Small, but brave

As their name suggests, water injection dredgers dredge by injecting water into the subsoil. They do this under low pressure, displacing the bottom material. They are also small, which makes them perfect for use in ports and rivers with a rather limited working area. However, from our existing fleet, 'small' still turned out to be dozens of metres long. So, it is far from obvious to reach the most difficult nooks and crannies in ports and rivers. That is why we expanded our dredging fleet with even more compact vessels. Meet Pancho and Cosette.

### Eye for innovation

The design basis for both newly built vessels is an existing ship design from Neptune Marine's portfolio. We also integrated, together with their engineering department; our in-house designed and built dredging equipment, consisting of the dredge pump and dredge pipes, winches, the hydraulic equipment and the necessary auxiliary equipment for a customised piping trajectory on the fore ship.





# A GROWING BANGLADESH DEVELOPS ITS THIRD SEAPORT

Young and subject to extremes. Bangladesh embraces the extremes that come with its young age and unique location. A good 50 years after having become independent from Pakistan, the motivation to overcome the remaining economic hurdles is greater than ever. Seaports play a key strategic role in this, because countries that have sufficiently big and deep ports can trade with the world. That is definitely something that also Bangladesh is pursuing: making and keeping Payra, the third and youngest port addition, ready for welcoming large ocean-going vessels. Jan De Nul has been a solid partner in the construction of this port since the early start, a project to which more than 400 colleagues are still contributing every day.

Open for only a few years, Payra Port is pushing import and export opportunities for Bangladesh sharply upwards. The port is located between Mongla in the West and Chittagong in the East. Those ports were buckling under the pressure and hitting their maximum capacity. A third port today not only eases that logistic bottleneck, it also offers Bangladesh new growth perspectives.



Building tomorrow's port, is building tomorrow's economy. In Bangladesh, a multi-year project is (further) shaping the third national seaport. This investment underlines that the country has clear growth ambitions in the short, medium and long term. It is typical of Jan De Nul to embrace projects of such size and lead-time and to deliver them in a sustainable and qualitative manner.



## Economic hub in the making

Development of the Payra port area is in full swing and with it all access options to it. Jan De Nul is handling sea access. Some 400 colleagues and more than 20 vessels so far are helping to deepen the access channel and the river.

Besides dredging, Jan De Nul is also responsible for creating new port grounds. For this, hopper dredgers use the sand that is dredged from the river and press it ashore. On land, the applied sand is distributed and levelled over the new port grounds. After the dredging campaign, the Payra Port Authority will thus have additional land available for the further development of the port area.

This multi-year project involves extensive local cooperation. Bengali surveyors, landfill workers and suppliers are regulars on the site. Above all, we focus on the economic boost that is slowly but surely coming with the development of this third seaport. A boost that will undoubtedly also benefit employment in Bangladesh.

## The weather gods as additional challenge

The access channel extends up to 57 kilometres offshore. Bangladesh has a mild summer season and a fierce rainy season. The weather conditions determine where we work. In calm weather, we dredge offshore in the deepest zones. In more challenging weather, we dredge upstream on the river and along the future reclaimed area in the port. That environment offers more protection against the heavy swells and sometimes even cyclones that are typical of the Bengali climate.

At sea, there are predetermined zones where hopper dredgers are allowed to dump dredged material. Cutter suction dredgers, on the other, operate stationary and press the sand through floating pipelines to the right location. The use of such pipes is not new, although the distance to be covered in Bangladesh is challenging: some dumping sites are up to 2.5 kilometres away.



Near the dumpsite for the dredged materials, we have set up a welding workshop in support of the dredging works. Here, the large pieces from mainly the cutter vessels are prepared for assembly or already used pieces from on board are repaired. This workshop enables us to respond quickly and keep the vessels operational at all times.

# OVER 100 YEARS OF CHEMICAL WASTE MAKE ROOM FOR PEOPLE AND NATURE

Belgium and the Netherlands make up the economic heart of Northwest Europe. Among others, the region is known for innovation, knowledge institutions, highly educated workforce and high-quality production facilities, but also for its heavy environmental impact. Preserving the balance between people and nature is a difficult balancing act in this densely populated region. Thus, it is essential to leave uncultivated areas – or greenfields – untouched and look towards neglected and un(der)utilised areas, so-called brownfields. A prime example is the infamous Kuhlmann site in the North Sea Port. Discover how part of the Ghent port area is being revived after 110 years.

## **Sulphuric acid factory leaves deep traces**

The site along the canal Ghent-Terneuzen has a long industrial history. The French company 'Établissements Kuhlmann' established itself here in 1912 for the production of artificial fertilisers such as superphosphate, ammonium sulphate and concentrated phosphate fertilisers. To produce these fertilisers, Kuhlmann also handled the production of phosphoric acid, sulphuric acid and ammonia. The result: mountains of chemical waste. That you can take literally, as one of the most characteristic images on the site in Ghent was a large 'white mountain' of non-reusable gypsum, a by-product of the production of phosphoric acid.

In September 2009, the company went bankrupt under the name Nilefos Chemie. The heavily contaminated site was left to the receiver, along with a huge historical liability and acute environmental and safety risks. Who would dare to take this on?




## **Joining forces for redeveloping 148 acres**

The project description fitted Envisan, the environment subsidiary of Jan De Nul Group, like a glove: taking the initiative to tackle one of the most polluted and polluting sites in Belgium and, as a responsible project developer, finding a sustainable solution for both people and nature. Together with some







The redevelopment of derelict, contaminated and underused sites is often a very complex matter. Think of legal-administrative obstacles, soil remediation, financing and challenges in terms of mobility and spatial planning.

partner companies, we took over the sites, including the soil remediation obligation.

In 2022, the remediation works were completed. The sites were again ready for development. The port area thus regained 148 acres of industrial land in one fell swoop.

### **Everyone welcome: from businesses to hikers and cyclists**

Envisan was responsible for the complete decontamination of the sites: we demolished

the existing buildings, foundations and pipes, decontaminated soil and groundwater and transported the remaining phosphate gypsum to the neighbouring gypsum dump. The site is now divided into several lots. Multiple companies will have the opportunity to settle themselves there. We as Jan De Nul and Envisan will also set up a local hub for our logistics services and environmental activities.

We have renovated the old director's house and planted a buffer forest on the north side for a better quality of life in the neighbourhood.



# TAIWAN HAS THE WIND IN ITS SAILS

More and more, people are looking for reliable sources of affordable yet renewable energy. Combine this with the global goal to limit climate warming to 1.5°C and it is clear that structural adjustments are an absolute must. To achieve this, several options exist, with offshore wind energy being a very interesting one. Systematically, more and more offshore wind farms are being built to power millions of families. Ideal locations for that technology are not always easy to exploit.

## Impossible ...

Building an offshore wind farm in an area where typhoons regularly pass through, in the middle of one of the busiest straits in the world, with cables of local fish farmers running under the shallow grounds. Surely, that is impossible? Add to that the installation of foundations at a depth of 50 metres in difficult conditions, with earthquakes and intense sand waves. In short, an almost impossible task.

## ... made possible

To us, a challenge that we are happy to take on. Previous projects in Taiwan already gave us a good idea of the environment, local regulations and possibilities. Good links with local contractors and suppliers, thorough preparation, clear communication and mutual trust all contributed to a successful completion.

## A meticulous plan

We developed the project steps down to the smallest detail so that the various phases could proceed smoothly. A strict timetable was adopted, taking every opportunity to maintain a good pace. For instance, we had to consider the tides for the installation of cables in the intertidal area, extreme weather conditions at sea and possible delays in the delivery of materials due to external factors. The pandemic also brought challenges.

Yet, we were able to install the foundations and cables on time, the last one completed in August 2022.





Formosa 2 has an installed capacity of 376 MW and generates enough energy to supply 380,000 households with green electricity. Today, we continue to operate in Taiwanese waters, among others for keeping the TPC (phase 1) wind farm in a good operational state.

### A valuable partnership

Formosa 2 is an example of good partnership for Jan De Nul. The vast intertidal area on the Taiwanese coast is unique, but the shallow water makes it extra challenging to lay export cables. We therefore consulted people with knowledge of the area: local fishermen and oyster farmers. We directly involved them in the project by using them to observe and protect the environment during the installation works.

We maintained high sustainability standards, among others by limiting underwater noise. We succeeded in keeping our environmental, health and safety record unblemished. For instance, there was not a single hour of lost time injury (LTI) recorded.





# VOLTAIRE AND LES ALIZÉS: GREEN ENERGY FOR TOMORROW TODAY

Green and affordable energy: quite rightly, the world is captivated by it. The clock is ticking to exchange traditional energy sources for more sustainable alternatives. Those who were not already doing so before were presumably caught off guard in 2022. Jan De Nul, on the other, had already anticipated, long before the energy crisis, that the energy transition would accelerate and that, as a result the need for adapted infrastructure would increase.

Les Alizés' first destination is Germany, for the construction of wind farms Gode Wind 3 and Borkum Riffgrund 3. For this project, the floating installation vessel will transport and install 107 pile foundations on behalf of Danish giant Ørsted.

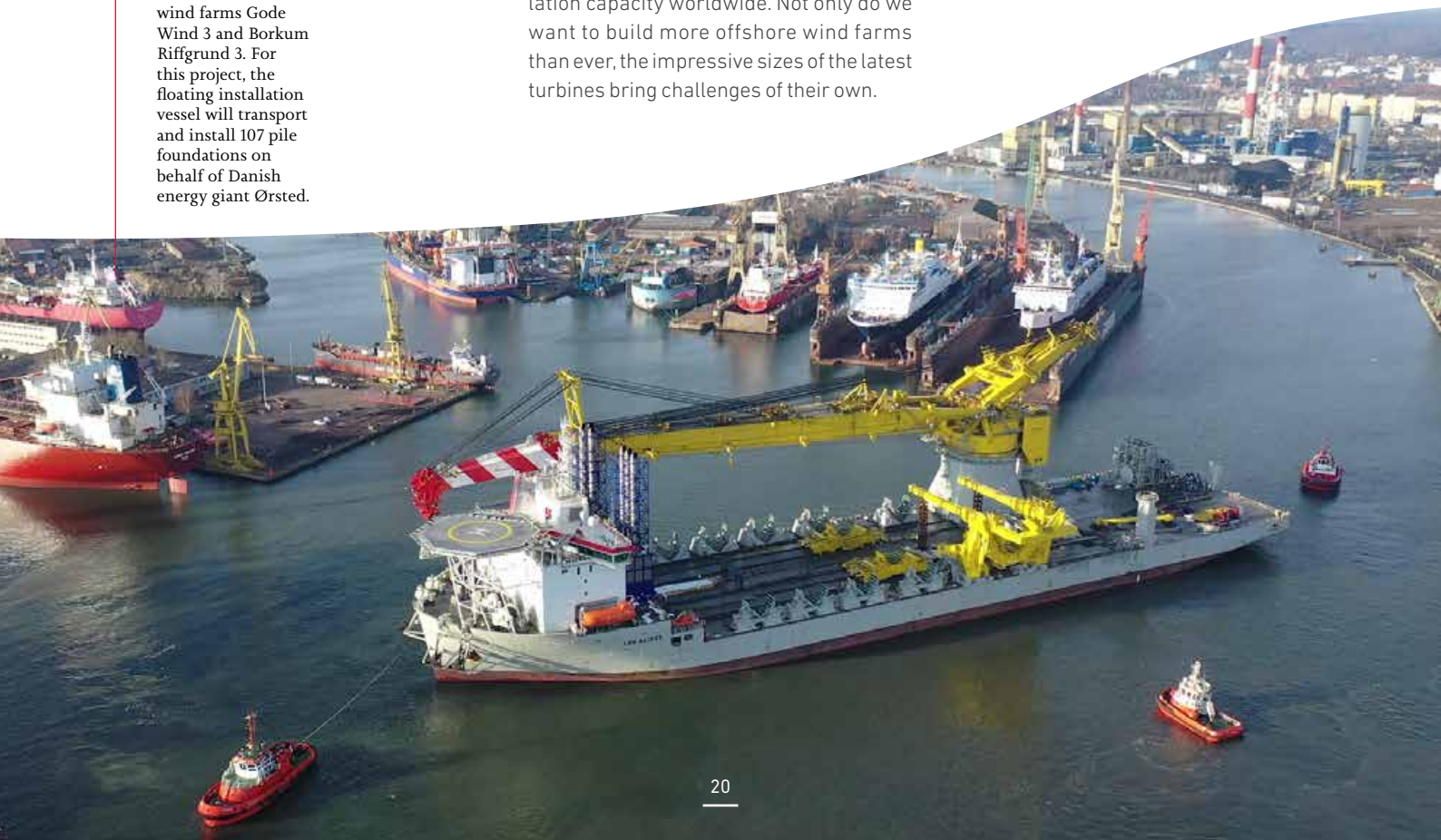
Already in 2019, we ordered two vessels to install the latest generation of offshore wind farms: the world's largest jack-up installation vessel Voltaire and the equally revolutionary floating installation vessel Les Alizés. As a result, since early 2023, we now have two of the few vessels in the world that are ready to ensure tomorrow's green energy.

## A massive increase in scale

For some time now, offshore wind turbines are no longer what they used to be. Whereas in 2015 they were usually about 150 metres high, with blades of 58 metres and foundations of 500 tonnes, today most of them already measure more than 270 metres, with blades of 120 metres and foundations weighing 2,500 tonnes. In other words, a massive increase in scale, and this in less than a decade. With the demand for decarbonisation and affordable electricity only increasing, this is no wonder. What is more difficult to keep up with is the installation capacity worldwide. Not only do we want to build more offshore wind farms than ever, the impressive sizes of the latest turbines bring challenges of their own.

## A pandemic as additional challenge

For Voltaire and Les Alizés, the latest additions to our offshore installation fleet, that challenge was overcome. With the latest market trends in mind and driven by our entrepreneurial spirit, we laid the first building blocks for these installation vessels in shipyards in China several years ago. The construction process was a challenge, which had everything to do with the pandemic dominating the world at the time. Due to China's strict quarantine rules, our teams could barely go on site, which made consultation and troubleshooting considerably more difficult. For ships of this complexity, which are also a first in our fleet, this was a major challenge. However, one that we overcame with flying colours. A finished Voltaire sailed out of the COSCO shipyard in China in December 2022, closely followed by Les Alizés at the China Merchants Heavy Industry (Jiangsu) shipyard in January 2023.





## A perfect duo for the offshore wind industry

Voltaire is a jack-up installation vessel as tall as the Eiffel Tower, Les Alizés a floating crane ship that effortlessly hoists 27 Boeing 747s out of the water in one go. They both have their own assets. What one lacks, the other perfectly complements.

For instance, thanks to its legs, a jack-up vessel is less subject to swells at sea and thus more stable for installing the higher components of wind turbines. On the other hand, the strength of its legs limits the maximum weight of the cargo. With a floating vessel like Les Alizés, the total floating capacity determines the weight of the cargo. This allows Les Alizés to transport and install more foundations in one trip. Another major asset is that the vessel does not need to lift its hull out of the water, so that once on site, it can immediately start the installation works.

In short, for one, working at heights is her cup of tea, while the other finds it easier to brave deeper waters and more difficult subsoil conditions.

## For and with green energy

Les Alizés and Voltaire not only aim to make green energy available, they have also been developed with the environment in mind. Both vessels are among the world's first seagoing installation vessels with an extremely low ecological footprint, so-called ULEVs or Ultra-Low Emission vessels. These vessels are equipped with an advanced filtration system that significantly reduces pollutants in exhaust gases and nanoparticles in emissions.

On top of that, Les Alizés has a hybrid power plant, consisting of a combination of diesel generators with battery and drive technology. This optimises the load on the engines and allows potential reuse of energy from the heavy lifting crane. Additionally, the engines can also run on second-generation biodiesel.

Voltaire's first mission is set in the United Kingdom, where it will help build the world's largest offshore wind farm, Dogger Bank. That farm will supply at least six million households a year with green power, accounting for about 5% of the country's electricity needs.



# AROUND THE CLOCK FOR SMOOTH MOBILITY

Bridges, underground garages, docks, office buildings, and so on. We have quite a few new construction projects in our order book. We do not shy away from renovation projects either. In fact, we are focusing on them more than ever. This makes sense in a world where unbuilt space is a scarce commodity. In the future, the construction sector will increasingly focus on revitalising and repurposing existing structures in a sustainable way. For instance, a lot of mobility infrastructure from the last century is in urgent need of renovation to continue to fulfil its function. For smooth mobility, we at Jan De Nul work around the clock.

There are 11 kilometres of tunnels running under Brussels. Up to 600,000 cars drive through some of them every day. These were built between 1950 and 1980 from reinforced concrete. Around 2020, due to years of exposure to traffic, air pollution and road salt, a lot of the infrastructure was in dire need of a thorough renovation.

Jan De Nul was awarded a contract for renovating six tunnels: Annie Cordy, Woluwe, Van Praet, Reyers-Centrum, Kunst-Wet,

and Leonard. We mainly carry out concrete repair works. However, depending on the nature and condition of the tunnel, we also remove asbestos, renew sheet-metallining, renew the waterproofing at the top of the tunnel and carry out works for restoring the road and its surroundings.

During the works in the tunnels, Brussels residents and commuters need not worry. Our teams only work at night. During the day, the tunnels will remain open to traffic as usual. Smooth mobility clearly is priority number one.








Over the past year, we have been carrying out thorough inspections and analyses in all tunnels to produce an adapted renovation programme for each of them. Thanks to these quality checks and detailed action plans, we know exactly what we have to do for delivering future-proof tunnels.

Together with our partners, we completed the Annie Cordy tunnel as good as new in early 2022. Works on the five other tunnels are scheduled for 2023.



We deploy advanced 3D scanners and 360° cameras. This gives us a clear picture of the infrastructure, which will facilitate future renovations, and allows us to plot everything in detail on existing plans.





This yellow cable excavator is our Moonfish, a unique and innovative concept designed and built entirely in-house. With its long metal sword and powerful water jets, the Moonfish makes a trench in the seabed into which it simultaneously lays the cable – up to 8 metres deep.

Imagination, optimism, intellect and vitality, that is yellow in a nutshell. In the field, we translate this into creative solutions for sustainable housing, robust coastlines and smooth mobility, among other things. In 2022, we also reaped the benefits of our years of expertise in various markets and technologies, from undersea energy cables to PFAS remediation. Our vision and positive attitude towards the future continue to make a difference today.

# ROLLING OUT CABLES FOR THE FUTURE

For 10 years now, Jan De Nul has been putting its full weight behind the offshore cable industry. With numerous targeted investments, even in turbulent times, we have built a leading fleet, a wide range of services, unrivalled expertise and an extensive record of accomplishment. The result: today we are the world's largest independent offshore cable installer. Dive into this booming market with two leaders of our cable team.



**Wim Dhont and Wouter Vermeersch,**  
Managers Offshore Cables

## A JUMP-START

**How did Jan De Nul, traditionally a dredging contractor and civil entrepreneur, end up in the offshore cable market?**

**Wouter:** "For that, we have to go back to the early 1990s. Back then, we deployed our dredging vessels to dredge trenches for pipelines, for instance. A first investment in our offshore fleet was the construction of two fall pipe vessels. These allowed us to install rocks for protecting underwater infrastructure.

In 2012, we were working on a project in the Far East, depositing rocks on the seabed. It turned out that the client was at a loss, as they did not yet have a party to install their umbilical cables. We then helped them out by installing the umbilicals with our fall pipe vessel. Honestly, we had a taste for it right away. There was a lot of common ground with our core business, so we were keen to further explore the possibilities."

## When did you feel 'Now we're getting somewhere'?

**Wouter:** "That actually came pretty soon. In 2013, Belgian green energy company Parkwind was looking for a partner to install a 5,200-tonnes export cable for Northwind, a wind farm in the Belgian North Sea. We signed on and immediately converted our side stone vessel Willem de Vlamingh into a cable-laying vessel. Incidentally, even before we had completed the project, we took the decision to invest in a second cable-laying vessel. That became the Isaac Newton, completely designed and built in-house, and delivered in 2015."

## OUR VISION BEARS FRUIT

**Over the years, Jan De Nul has been gradually expanding systematically. What does the offer consist of today?**

**Wim:** We explicitly want to be an all-round partner. This means that we must be able to do more than just flawlessly install cables. Today, we have the ►





## TEAM OF EXPERTS AND UNIQUE FLEET MAKE ALL THE DIFFERENCE

### Who are the competitors in this market and how does Jan De Nul differentiate itself?

expertise and the equipment to bring cables safely on land and protect them over their entire length under water. Clients who come to us can rest assured. We take care of everything. The only thing we don't do ourselves is manufacturing the cables."

**These visionary decisions have served the group well. The offshore energy market is flourishing like never before. What are the ambitions?**

**Wouter:** "Over the next two decades, offshore renewable energy projects will remain high on the agenda. The connection to land is crucial to get the extracted energy to the end user. However, long undersea cables called interconnectors are also connecting countries. While we thought at first the gas and oil markets would die out, nothing could be further from the truth. Those players are also playing the green card, so orders keep coming in from that corner too. So there is no shortage of cable projects."

**Wim:** "Above all, we want to remain trend-setters. As the world's largest independent offshore cable installer, we are constantly pushing our own boundaries. By way of illustration, in 2022 we embarked on a prestige project in Abu Dhabi. There, we are installing and protecting 1,000 km of cables to supply offshore oil installations with renewable power from the mainland and reduce their impact on the environment."

**Wouter:** "Meanwhile, our main competitors from the dredging sector have also invested in their own cable-laying vessels. There are cable manufacturers who install their own cables, but they have less supporting capacity to protect the cables. We have as many as three full-fledged cable-laying vessels and an extensive dredging and rock installation fleet to do that."

***"The media often highlights our ability to install offshore wind turbines. But that activity started only years after our first cable-laying projects."***

**Wouter Vermeersch, Manager Offshore Cables**

**Wim:** "It is not just size, but also quality and versatility that set us apart and thus make us unique. Besides the three complementary cable-laying vessels, our fleet consists of innovative cable excavators and amphibious cranes. In 2022, we also added an offshore support vessel: the Symphony. The latter will be the mother ship of the Swordfish, our new subsea trencher. Our fleet is unique, allows us to operate all year round, also in adverse weather conditions, and thus ensures that we can respect tight schedules."

**Wouter:** "We even go so far as to develop and market new equipment for some of our projects. Think of our Moonfish, a trencher that we designed and built in-house to be able to bury cables up to 8 m deep for the Hollandse Kust Noord and West Alpha project – a strict prerequisite from the local government to ensure a long service life. The knowledge our experts gain with such undertakings is also a huge asset. Clients know that we start from their needs and wishes, not from our offer."

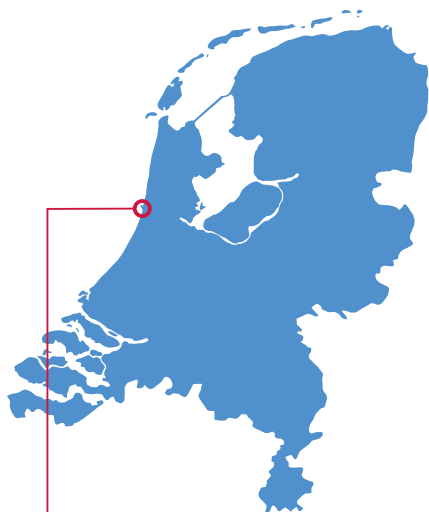
While working on the Hollandse Kust Noord and West Alpha project, the team unexpectedly encountered a bone-hard peat layer at barely 100 metres from the beach. Our trencher Moonfish did not get past it without a struggle, but we persevered and were able to cut through the layer four times. We dare say that no other party could have overcome this obstacle more smoothly.



The cable installation vessel Connector connected the cables to substation 'Noord', about 34 km off the coast.

***“Protecting and burying the cables is the most difficult part. But just because seabed manipulation is so close to our core, we excel at it.”***

**Wim Dhont**, Manager Offshore Cables



The Netherlands are fully committed to the energy transition. Wind energy plays a major role in this. Among the flagship projects are the offshore wind farms Hollandse Kust Noord and Hollandse Kust West Alpha. As from 2023, these wind farms will provide green power to as many as 1.4 million households a year.



## OUR CABLE EXPERTISE IN PRACTICE

### Hollandse Kust Noord and West Alpha Project


On behalf of TenneT, Jan De Nul is transporting, installing and protecting the high-voltage cables connecting the transformer stations of the offshore wind farms with the onshore electricity grid. We did this in three phases, the first of which completed in 2022. In all, we are talking about four cable systems (220 kV) with a combined length of 230 km. On the beach and near the coast, these will be buried by the trencher Moonfish at a depth of 8 m, further out at sea our cable excavator UTV1200 will take over the job and bury the cables at a depth of 3 m. We also cover junctions on the cable route with stones and expertly remove sand waves and banks.

## INTERESTING PROJECTS IN THE PIPELINE

- **Greenlink Interconnector:**  
Installation of two high-voltage cables and a fibre-optic cable to connect the Irish and British power grid with one another.
- **Vineyard Project:**  
Supply and installation of 210 km of 66kV cables to connect GE Haliade-X turbines in the United States.
- **Lightning Project:**  
Design, installation and protection of some 1,000 km of cables between Abu Dhabi and the islands of Al Ghallan and Das.



# LEADER IN NEAR-EMISSION-FREE COASTAL PROTECTION



There is no getting around it: our climate is changing. Summers are getting drier, storms are becoming more intense and certain types of weather sometimes linger for weeks due to a slower moving jet stream. That combined with rising sea levels is putting pressure on the coasts of low-lying countries. Belgium is definitely one of them. Its beaches are vulnerable and lose a significant amount of sand to the sea every year.

## **Wanted (and found): minimal environmental impact**

A sustainable method implemented in a sustainable way. Because specifically for this contract, the environmental impact was an important award criterion, in line with the long-term coastal protection vision of our client, the Maritime Services & Coast (MDK) agency of the Flemish government: we must prepare today for the consequences of climate change by strengthening the coasts while reducing the causes to a maximum. Jan De Nul's clear commitment to emit less CO<sub>2</sub> during the execution of the beach replenishment works made us the most suitable party.

"As a public authority, we choose a contractor for each project based on the established criteria", explains Elias Van Quickenborne. As MDK's project manager, he is at the heart of selection procedures. "In this way, we guarantee a level playing field for all bidders. For the beach replenishment works in Ostend, out of the five contractors selected within the scope of the framework agreement, we again chose Jan De Nul because it best met all the specific criteria for this project, including sustainability."

## **Sustainable choices**

Trailing suction hopper dredger Alexander von Humboldt pumped the dredged sand from the North Sea through a floating pipeline onto the beach of Ostend. It did this while operating on 100% sustainable drop-in biofuel, which reduced CO<sub>2</sub> emissions by around 90%. This focus on CO<sub>2</sub>-conscious operations and CO<sub>2</sub> reduction is nothing new for Jan De Nul. Our many years of efforts in this area have already been rewarded with the highest-level possible CO<sub>2</sub> performance ladder certification 5.

In the Netherlands, this sustainability index is systematically used in companies, for projects and during tenders. "In Belgium, this wasn't yet the case, but this is gradually changing", says Elias. "The projects in Raversijde in 2021 and in Ostend in 2022 count as pilot projects for integrating the CO<sub>2</sub> performance ladder in our tendering procedures. For projects along the coast, we are also including other criteria such as noise pollution, air pollution and emissions of particulates and nitrogen."

To reduce fine dust and nitrogen emissions by 80% is precisely why Jan De Nul deployed bulldozers and excavators on the Ostend beach that are equipped with advanced exhaust filter systems. We saved energy consumption with our latest-generation site offices, equipped with properly insulated materials as well as a heat pump.

600,000 cubic metre of sand. Our Alexander von Humboldt (inset) brought that volume to the Ostend beach in the spring of 2022. Result: a reinforced beach that is now armed to withstand the impact of the North Sea. Beach nourishment is a soft form of coastal defence. Using natural elements, we lend nature a hand to restore itself.



### **An example for the whole sector**

Ostend was not a first for Jan De Nul. In 2021, we had already carried out similar works on the beaches of Raversijde and Knokke. In 2019, we were another pioneer within the sector by pushing for the inclusion of a minimum mandatory 15% CO<sub>2</sub> reduction in Flemish dredging contracts by 2022. "And that certainly set things in motion", says Elias. "The exemplary role of contractors at project level cannot be underestimated. They prove that a sustainable working method is possible. Meanwhile, we are integrating this CO<sub>2</sub> reduction into almost all dredging projects we put out to tender. As a result, maintenance dredging is executed more sustainably. That is definitely a step forward."

Jan De Nul already carried out similar maintenance dredging works as well, in Nieuwpoort and on the river Scheldt. "We can certainly confirm that the dredging sector has great ambitions in terms of sustainability", Elias notes. "Everyone is aiming for level 5 of the CO<sub>2</sub> performance ladder, which makes the ambitious CO<sub>2</sub> level criterion less and less distinctive. It also challenges us to evolve further and also pay more attention to other types of emissions."

***"The dredging sector has great ambitions in terms of sustainability."***

**Elias Van Quickelborne**, Project Manager MDK

### **Stricter criteria call for new solutions**

Sustainability is gaining importance in all tenders of the Flemish Government. Are we moving towards mandatory reductions in emissions? "That will not happen overnight", says Elias. "Not all companies in the construction sector are equally advanced today in terms of a sustainable approach. So we will systematically introduce stricter criteria to enable everyone to get on board." Currently, guidelines for setting the criteria are being determined. A climate plan that commits to a substantial CO<sub>2</sub> reduction and defines actions to achieve that goal.



# ENVISAN PROTECTS HUMANS AND NATURE FROM FOREVER CHEMICALS

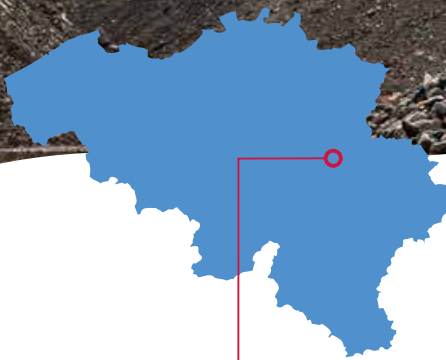
PFAS is the collective noun for over 6,000 substances that because of their chemical properties repel dirt, moisture, and grease very well and are heat-resistant. Wonder substances, so to speak. They can be found in a wide range of products: paint, tents, carpets, packaging materials, cooking utensils, etc. The other side of the coin, however, is that PFAS are hardly biodegradable. That is why they remain in the environment for a very long time and have the unflattering nickname 'forever chemicals'. Today, that problem turns out to be much bigger than first thought.

## Impossible ...

From drinking water in the US to snow in Antarctica, PFAS substances are literally everywhere. They are often in high concentrations, posing a threat to both the environment and ourselves. By eating PFAS-contaminated food, for instance, people face serious health risks. No wonder then that the use of PFAS has been restricted in recent decades. However, the harm was already done. A world free of forever chemicals is unimaginable today and we best learn to live with it.

## ... made possible

One of the consequences of widespread PFAS contamination is that many civil and maritime projects are becoming risky ventures. How do you handle huge volumes of contaminated soil without endangering public health? Envisan, the environment subsidiary of Jan De Nul Group, came up with an effective circular technology.



Since 2016, Envisan's R&D department has been testing various techniques to neutralise PFAS. Soil washing appears to offer the best solution, at least for now. Envisan owns mobile plants for doing the job.

### 30 years of innovation in our backpack

As a specialist in soil and groundwater contamination, Envisan has been studying new types of contamination since its establishment in 1992. To this end, we have our own R&D department, but also regularly join forces with universities and other institutions. Therefore, PFAS has been in our sights for quite a while already. Since 2016, for instance, we have been testing various innovative and more traditional techniques to clean PFAS. For now, everything points in the same direction: soil washing.

### Circular technology bears fruit

Today, soil washing or physicochemistry is the preferred option to remediate PFAS-contaminated sites. The technique consists of a series of washing and separation processes. It converts on average more than 80% of the contaminated soil into coarse sand that is free of PFAS. This fraction can also be used in new civil engineering applications. What about the water? That is reused in the process, after which it is purified. Only

the contaminated fine fraction, less than 20% of the original volume, requires further processing.

### Driven by continuous improvement

There are other techniques for combating PFAS, but these are generally still in their research phase and are not deployable on a large scale today. Therefore, soil washing is currently the technique of choice to remediate PFAS soils. Our own R&D team drastically improved the efficiency of installations in France and Belgium. By way of illustration, we can now remove 95 to 99% of all PFAS from the coarse fraction.

### Biopiling: letting nature do its work

PFAS is, of course, not the only source of water and soil pollution. In addition, there are many other possible types of pollutants such as all sorts of organic compounds. In such cases, and when the soil structure is favourable, Envisan prefers on-site biopiling.

Biopiling involves laying out the contaminated soil in heaps – or biopiles – which are then sealed for treatment. Subsequently, microorganisms set to work and break down the contaminated soil. We capture the air released from the biopiles and purify it via a biofilter. Envisan captures the heat released during this process to raise the temperature in the biopiles.

Our soil washing plants are mobile, so we can remediate the soil on site. In this way, we avoid heavy transportation and therefore CO<sub>2</sub> emissions.





# A METROPOLIS WHERE VULNERABLE ROAD USERS PREVAIL

You can live, work, eat, drink, play sports, take in a dash of art and, above all, enjoy green spaces in the midst of a bustling metropolis. There is plenty to do at the Tour & Taxis site in the heart of Brussels. The estate is a popular attraction, and not just for residents of Brussels. So it is important that people can get there smoothly from all corners of the capital and the country. While in the past that meant using major motorways with little or no questions asked, today cyclists, walkers and public transport come first. This approach is precisely what has made the Suzan Daniel Bridge a success.

## **Solely for vulnerable road users and public transport**

The new bridge over the Antwerp-Brussels-Charleroi canal that Jan De Nul built on behalf of the federal public service Beliris is an important link for traffic between the Brussels North railway station and the Tour & Taxis site. However, not for all traffic, because although King Car is still often in charge, he is not welcome on this new access road. Only pedestrians, cyclists and public transport can enjoy the increased accessibility that comes with the bridge. The maximum gradient of 4% ensures easy access, even for people with disabilities.

## **A striking piece of steelwork**

Besides being another step in sustainable mobility, the new structure is also an engineering feat. The steel bridge measures 200 metres in total and is of the bowstring type. In figurative terms, such a bridge is like an inverted bow and arrow, with the bow absorbing the compressive forces and the bridge deck absorbing the tensile forces. Width-wise, the Suzan Daniel Bridge consists of two parts: a 6-metre-wide bicycle and pedestrian zone that is segregated from the 7-metre-wide asphalt road for public transport.

A bridge of this size, not surprisingly, also called for an impressive installation procedure. The 1,200-tonne central bridge section was first fully assembled at the Materialenkaai next to the canal. Once assembled, the bridge section, be it without side spans, was driven onto a pontoon that sailed to the actual installation site. For this, the canal was closed to port traffic for several days.

The Suzan Daniel Bridge, formerly known as the Picard Bridge, is an important link for vulnerable road users and public transport between the Brussels North railway station and the Tour & Taxis site.





Seen from above, there are quite a few holes visible in the bridge. These are there quite deliberately to let light through and avoid dark corners on the quay.



***“The bridge has really revitalised the neighbourhood.”***

**Marnix**, neighbourhood resident

“I live right by the Suzan Daniel Bridge in one of the new flat blocks along the waterfront. Before the construction of the bridge, my flat was in a dead-end street. As a result, the place was rather deserted; hardly anyone walked alongside the quay. Now with the bridge in place, the neighbourhood has been opened up with a link to the other side of the canal. Now, it is a dynamic and beautiful neighbourhood, as the bridge is not only practical but also an architectural gem. That’s really nice. Besides, the bridge is only accessible to pedestrians and public transport, so it is not too crowded either. Truly ideal!”



# A MAKEOVER FOR UNDERRATED SITES

For several years now, housing prices in Flanders, and by extension Europe, have been soaring. There are long waiting lists for social housing and people are fighting for properties that they used to ignore. Especially in and around large cities. Liveable, affordable and sustainable residential areas are becoming increasingly scarce. Our property developer PSR is breaking this negative spiral and breathing new life into two underused sites.

## RIVES ARDENTES: FROM WORLD EXHIBITION TO FUTURE ECO-DISTRICT

More than 17 football pitches, that's how big the Liège district of Coronmeuse is. In 1930 and 1939, the district still hosted the World Exhibitions. In 2018, the city of Liège chose to collaborate with NEO-LEGIA, a consortium of developers Jan De Nul Group, Willemen Group and CIT Blaton, to convert this historic part of the city into a new eco-district. In 2022, Liège's mayor laid the foundation stone for the Rives Ardentes project.

### A new residential area with all amenities

This new way of living in the city is a model for the future. The Rives Ardentes neighbourhood brings housing, working and living together in one place. There will be 1,325 different houses and flats in various typologies, as well as space for offices, local shops, restaurants and services, two crèches, sports facilities, and so much more.

### Optimal enjoyment in green surroundings, without traffic

80% of the total area will remain open space and soft mobility will be given priority in this project. Cars will disappear immediately into an underground car park, with up to 1,000 parking spaces, when they arrive in the new district. Moreover, a new extended tramline will serve this eco-district. Rives Ardentes will thus become a car-free district with respect for nature and primary attention given to liveability.

### A carbon footprint that is (almost) zero

Rives Ardentes aims for the lowest possible carbon footprint. That is why we resolutely opted for the construction of a local heat network where the entire eco-neighbourhood is heated with residual heat from the Intradel incinerator in Herstal. An urban heat network will bring the heat on site, with minimal CO<sub>2</sub> production or other waste on the site.

In Liège, the new Rives Ardentes neighbourhood brings housing, working and living together in one place.



## DIJLEDONK: FROM FURNITURE FACTORY TO 15-MINUTE NEIGHBOURHOOD

In the Kempen region of Brabant, the old, iconic Meurop furniture factory has decayed for years. The factory was a household name far beyond Rijen for its beautiful and affordable interiors. However, it left its marks in the soil, so some parts of the site are in dire need of remediation. Together with project developer COGIVA, we will turn Meurop into a rural and lively neighbourhood in the Dijle valley: Dijledonk.

In contrast to the scarcity of suitable, affordable housing or residential areas, there are a huge amount of vacant and polluted sites that almost everyone else avoids. These are exactly the kind of sites that draw our attention.

### A new way of life at Dijledonk

The site will feature a mix of villas, houses and high-quality flats with shared spaces, offices and neighbourhood support facilities for young families, start-ups and local retailers.

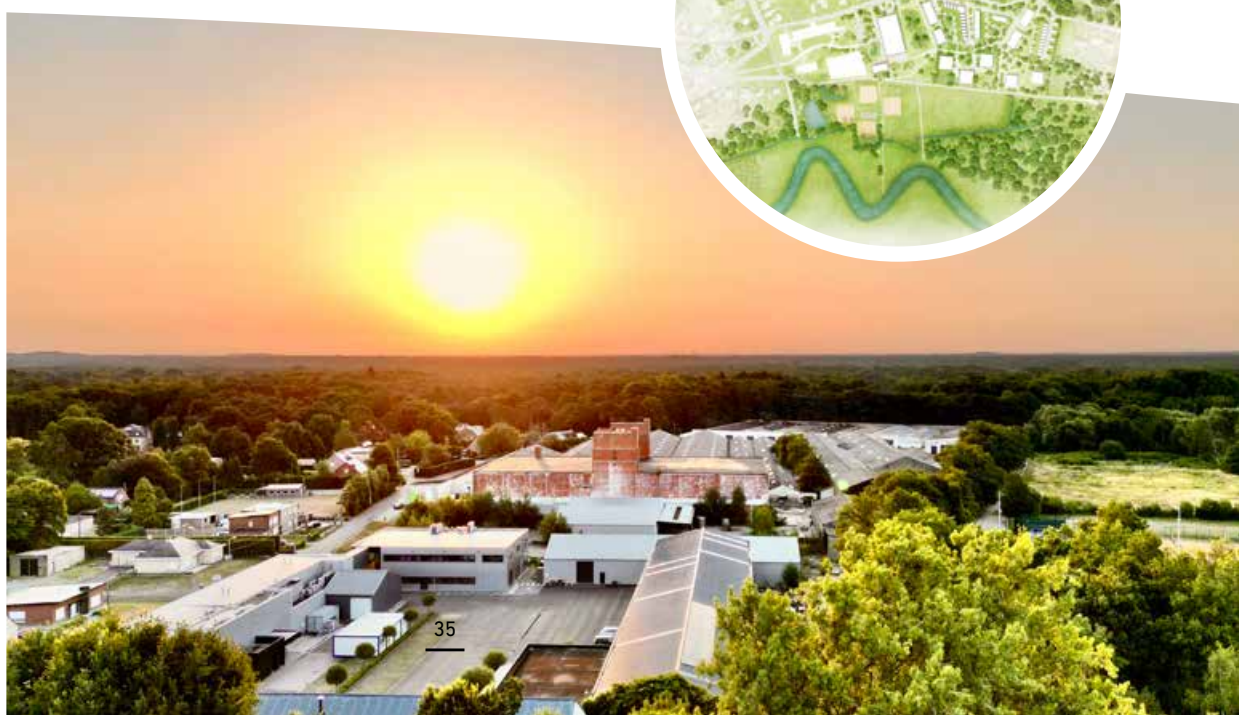
All of this with a strong eye for nature. Almost 80% of the area will remain undeveloped. Concrete disappears and will be replaced by green areas. There will be numerous squares, private and public gardens and flowerbeds, forming one big park.

We are also investing in sustainable architecture and infrastructure: Nearly Energy Neutral is the ambition, CO<sub>2</sub> neutral the ideal. As for the buildings, the old industrial warehouses will disappear but we will retain the solid structure of the main building. This will form the basis for a renovation project. From the buildings that will disappear, we aim to recover as much materials as possible to maximise circularity.


### A 15-minute neighbourhood

Dijledonk will be a 15-minute neighbourhood where all essential facilities for residents and neighbouring residents are accessible within a 15 minutes' walk or bike ride at the most. People are central and this vision leads to efficient mobility solutions. Finally, with its new offices and neighbourhood support facilities, the district invites local entrepreneurs and retailers to settle and grow there.

In Dijledonk, the focus is primarily on nature conservation: 80% of the area will remain undeveloped.







In Dendermonde,  
Jan De Nul built a brand  
new fire station with  
double access.

For those for whom action, perseverance, passion and warmth are everyday fare, red is undoubtedly a familiar colour. It certainly is for us. Complex construction projects such as prisons or air bases? Bring it on. A first offshore wind farm in France? No problem. Installing a huge storm surge barrier or dredging bone-hard limestone? You can count on us. We make the impossible possible in view of shaping a better future.

# ONE-STOP SHOP FOR SUSTAINABLE, HIGH QUALITY AND CREATIVE CONSTRUCTION PROJECTS

Flashback to 1938. The newly established 'company for all public and private works', run by civil engineer Jan De Nul and his father, immediately wins a major project: the construction of a hospital and convent in Ninove. With the emphasis on offering an all-in service, the team concludes this litmus test. The rest is history. Today, 85 years later, we are still the same civil contractor we were then: with a distinct no-nonsense approach and we-can-do-this mentality, we ensure that clients can rest easy.

## THE MORE CHALLENGING, THE HIGHER THE ADDED VALUE

**For what type of civil engineering projects is Jan De Nul the ideal partner?**

**John:** "We excel especially in large, rather complex construction and infrastructure projects. These often involve challenges in terms of energy, financing, design, sustainability, safety and maintenance, to name but a few. That is exactly where the experience and expertise of our teams come into play, seasoned as they are in finding creative solutions. Give our engineers a white sheet and the rest will follow."

**Nelson:** "And we can also do it all by ourselves, from start to finish. Design, remediation, construction, financing, maintenance, energy management... We have a specialist in-house team for each phase. Think of the foundation expertise of our subsidiary Soetaert or the soil expertise of our environment department Envisan. To make it more concrete: we can completely transform a heavily contaminated site into a sustainable, low-energy project within a relatively short period of time."

**Do you also explicitly seek out those large all-in projects?**

**Nelson:** "In a way, yes. As an individual, people usually grow faster by executing smaller projects, but to move forward as an organisation, it's better to push one's boundaries with larger projects. Today, for instance, we are building a prison for the first time, as well as air bases for F-35 fighter jets – things we weren't yet ready for five years ago. The fact that we are now is because as a team we have worked towards it step by step by deliberately expanding our comfort zone."

**John:** "Being proficient in several fields also inspires confidence among clients, one of the many reasons why our civil activities are still on the rise. We are known as ►



**John Van Vooren**, Head of the Buildings Department  
**Nelson Moors**, Buildings Production Manager



reliable doers. However vague that may sound, at the end of the day that is often what matters to clients. Construction has become more versatile, with several boxes that must be ticked: from fire safety and EPB requirements to modularity. Both private and public parties therefore want to outsource the whole package to one contractor, and we can offer that."

***"We have everything it takes to completely transform a heavily contaminated site into a sustainable, low-energy project within a short period of time."***

Nelson Moors, Buildings Production Manager



## SURFING ALONG ON THE LATEST CONSTRUCTION TRENDS

**The construction industry is facing increasing pressure. How are you handling the shortage of suitable workers in the labour market?**

**John:** "We are fortunate that, as an established player, we can still count on an extensive team. Moreover, people stay with Jan De Nul for a long time, keeping expertise largely in-house. However, we cannot deny that we too have many vacancies. We must find solutions for this without compromising on the quality or speed of projects."

**Nelson:** "This means, for instance, that we are looking more and more towards modular and prefabricated systems. Digitalisation and robotics are also playing an increasingly important role. For instance, masonry robots can partly compensate for the shortage of bricklayers and we are relying even more than ever on techniques such as BIM modelling to make construction sites as efficient as possible. In short, we keep a close eye on the market and

maintain our position at the forefront of the civil construction industry with targeted investments."

**Are there any other trends that you are helping to shape?**

**Nelson:** "It is no secret that sustainability and energy are two top priorities for any new project. Obviously, we closely monitor those areas to find the right match for each project. This includes next-gen solar panels for green energy, heat recovery from sewage water, blue-green roofs for a cooling effect, heat-as-a-service to reduce investments, etc."

**John:** "In doing so, we are also mindful of the surrounding area. For instance, how can we use residual heat from a nearby company or share our power and heat surpluses with local residents? With the construction of our new office building in Aalst, we're already targeting more than just our own consumption with an extensive solar panel farm."

**Finally, which three words could sum up best Jan De Nul's strength as a civil contractor?**

**John:** "Sustainable, high-quality and creative. But those three words are backed by a number of preconditions that make such a combination possible, such as our financial stability and a multidisciplinary team."

**Nelson:** "Let me add customer satisfaction to that. We always do what we promise. It is no coincidence that in most cases clients come to us, and not the other way around."

### Fire station in Dendermonde

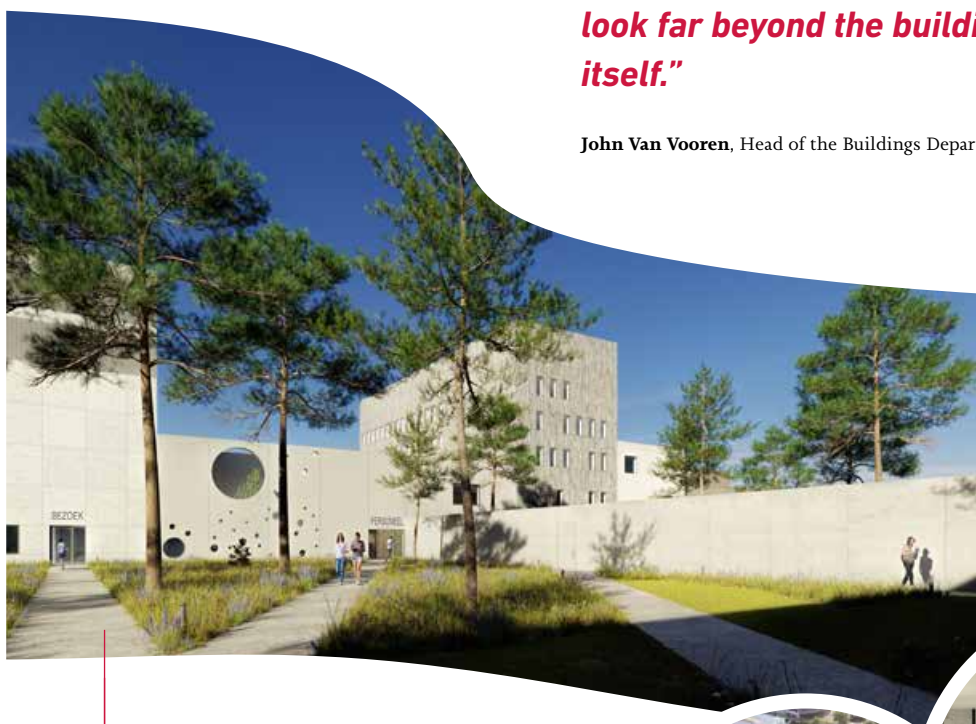
This brand new fire station with double access merges effortlessly into the street scene thanks to its façade in natural stone and brick. The total interior surface area amounts to 3,650 m<sup>2</sup> and, in addition to operational areas, houses a crisis centre, two multi-purpose rooms and a cafeteria. On top are green roofs, interrupted by heat pumps and solar panels. To meet the 500-day deadline, flawless preparation was crucial and we worked with a full-fledged prefabricated solution.

***"In every project, we try to minimise our ecological impact. And for that, we look far beyond the building itself."***

John Van Vooren, Head of the Buildings Department

### Apartment building 'Nieuw Zuid' in Antwerp

Two magnificent buildings along the Scheldt, the tallest of which has 23 floors, ensure exceptional living quality. The layout of the 287 flats is particularly well thought-through, the living spaces are extra high, and there is a semi-public inner garden in the centre as well as a spacious collective roof terrace. The pristine vistas complete the picture. This design by award-winning architects gives us another opportunity to demonstrate our expertise in the housing market.



### Prison in Antwerp

Jan De Nul is part of the Hortus Conclusus consortium, which is responsible for the design, construction, financing and maintenance of Antwerp's new prison. When completed at the end of 2025, the 40,000 m<sup>2</sup> building must accommodate 440 prisoners, both men and women. There will also be a section for those in need of care, including a psychiatric ward. The project is part of the federal government's master plan and focuses on humane detention and internment. In 2022, we continued fine-tuning and finalising the design.



### Own office building in Aalst

In Aalst, we are developing our own new office site. An important part of this is a completely new building with 10,000 m<sup>2</sup> of office space spread over seven aboveground levels. Targeted design choices ensure that the building fits in perfectly with its surroundings. Think of the 45° rule, which makes the building look less tall and reduces cast shadow. Sustainable techniques such as blue-green roofs, an underground Borehole Thermal Energy Storage (BTES) system and solar panels on the roof underline our ambition to build with respect for the future.

### Air bases in Florennes and Kleine Brogel

In 2025, Belgian Defence expects a first delivery of brand new F-35A fighter jets. These will be accommodated in two identical, functional air bases. An important consideration for this project was minimising the carbon footprint, both in the design of the bases and during their construction. For instance, the buildings will be 100% sustainably heated and cooled. Solar panels will provide electricity. Jan De Nul will also be responsible for the maintenance of both air bases until 2037.



# STORM SURGE BARRIER PROTECTS BELGIUM FROM NATURAL DISASTERS

Some 3 billion people worldwide live within 200 kilometres of a coastline. This makes them extremely vulnerable to the effects of climate change. In other words, rising sea levels and heavy storm surges threaten almost half the world's population. Let that sink in for a moment. Europe's coasts are among the most vulnerable. In Belgium, the Flemish government is working with private partners to protect its 67 km of coastline and hinterland. A storm surge barrier in Nieuwpoort is one of the masterpieces.

The storm surge barrier in Nieuwpoort protects Belgium's coastline from severe storms that occur every 10 years. More than that, it can withstand a 1000-year storm with waves of up to 8 metres high. This ingenious structure is located in the access channel to the Nieuwpoort marina. Two abutments on both banks are connected underwater by a concrete sill and retaining wall. In 2022, the concrete structure was already put in place.

## 100-YEAR WARRANTY

The concrete sill design is to remain on the seabed of the channel for at least 100 years. In 2024, our teams will install the 1,300-tonnes steel retaining wall. By 2025, the storm surge barrier will be ready to protect the coastline from the forces of nature.

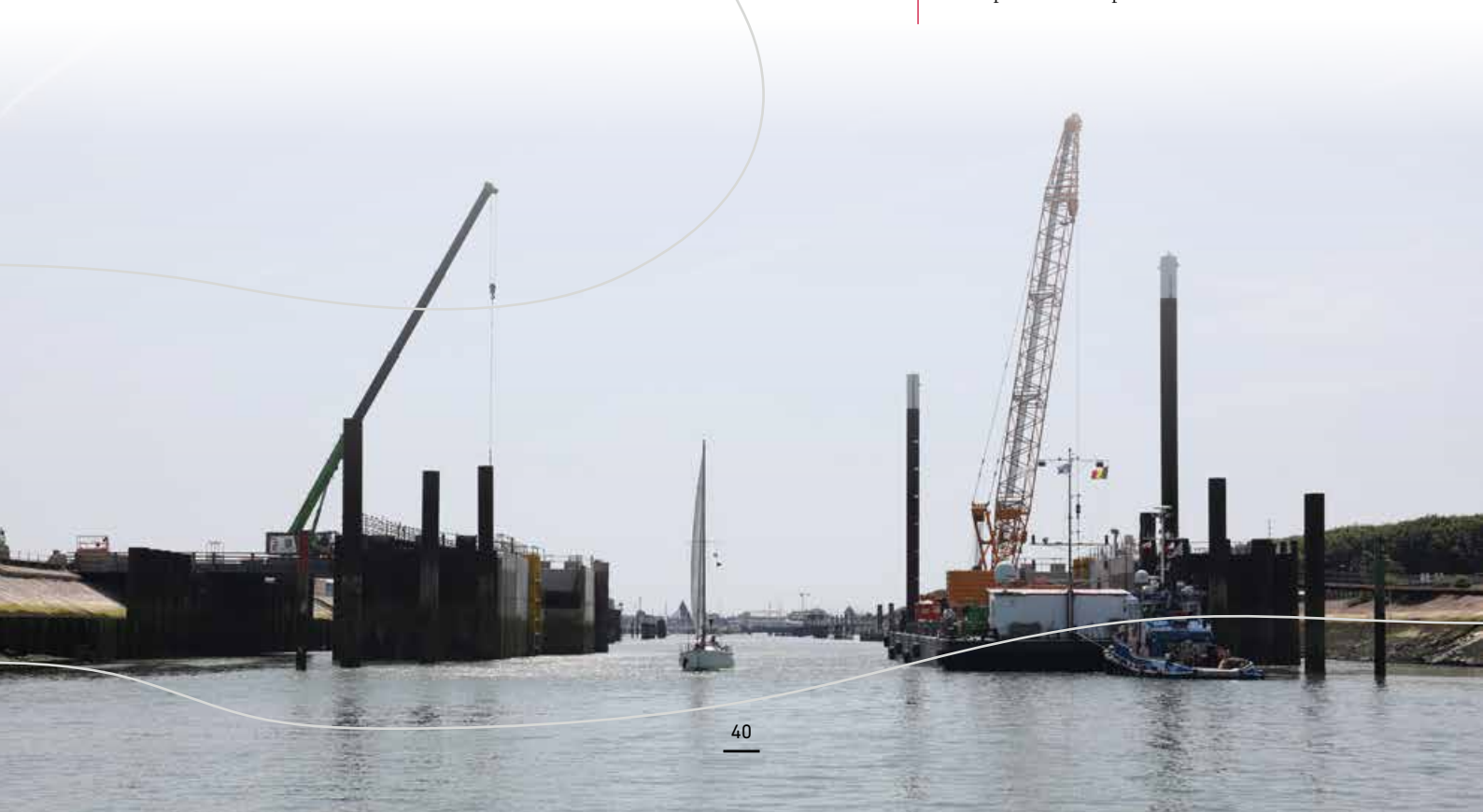
## Impossible ...

To avoid disturbing shipping and port activities in Nieuwpoort, we built the sill in the port of Antwerp, 105 km away, together with our partner Herbosch-Kiere. This presented us with another major challenge: the heavy structure had to be brought to Nieuwpoort. No truck so big or crane so powerful to move this colossal structure.

## ... made possible

Our engineers worked out a solution to make the seemingly impossible possible. They proposed to build the sill on a floating pontoon that can be submerged for transport. Thanks to the benefit of water buoyancy, the sill weight is effectively reduced from 4,500 to 1,200 tonnes. Archimedes' law applied in practice.

The storm surge barrier provides access to and protects Nieuwpoort's marina.



## A 42-HOUR JOURNEY

### Port of Antwerp (1)

In three months' time, we built the sill on a floating pontoon in the port of Antwerp. The result: a 4,500-tonnes structure made of reinforced concrete and stainless steel plates. In April 2022, we were able to cast off and depart for Nieuwpoort.

### A 12-hour journey to Ostend (2)

Two tugboats took care of this, with an initial stop in Ostend, where we submerged the pontoon and sill. By doing so, we were able to reduce the weight to 1,200 tonnes. A floating lifting barge then lifted the submerged sill off the pontoon.

### A 6-hour journey to Nieuwpoort (3)

The lifting barge sailed with the immersed sill to Nieuwpoort.

This journey was not without risks. Per tidal cycle, we had but a limited time to reach our final destination. Only between three hours before high tide and three hours after, the channel was deep enough to submerge the sill in the access channel. We also needed favourable weather conditions: no too strong winds, no too high waves. We prepared a detailed tide schedule for a safe and efficient trip.

### Installation in one day

In Nieuwpoort, our team faced the final challenge: installing the sill on the seabed with a tolerance of just one centimetre. Two cranes on shore, several divers and several teams inside the sill and on both abutments assisted the crane vessel.

After some fine-tuning with a set of hydraulic jacks, water pressure pushed the sill to shore, creating a solid connection between the two abutments.



### Soft coastal protection

A storm surge barrier is just one solution for protecting our coasts. There are other – softer – options, such as building with natural materials. That way, we enable nature to develop and sustain itself. A textbook example is Texel, where we created a three-kilometre-long dune with mud flats and salt marshes instead of building a concrete dike. Beach nourishment is another example. Higher and wider beaches can more easily break the force of the waves. In 2022, we widened the beaches of Camboriú in Brazil from 25 to 70 metres over a distance of 5.5 kilometres.



# RAPID REMEDIATION WITH MINIMAL ECOLOGICAL FOOTPRINT TO ENSURE UNINTERRUPTED ENERGY SUPPLY

Barely 3,000 people inhabit the Liège village of Awirs near Flémalle. Soon, however, it will also house a brand new combined-cycle gas turbine (CCGT) that will supply electricity to more than 700,000 families. Energy Company ENGIE is building this new power plant on the site of the former coal-fired power plant Les Awirs, that is now being decommissioned.

Due to years of industrial activity, glass processing until 1949 and then coal storage for the old power plant, the site's soil was heavily contaminated. So before the construction of the new power plant could start, thorough remediation work was needed. Now, let that just be one of the specialisms of Jan De Nul and its environment division Envisan.

## Race against the clock

We started the remediation works in January 2022 and completed them barely three months later. A record time, in which we moved a total of 220,000 tonnes of soil. That short deadline has been set for a reason, explains Benoit Liégeois, Project Manager at ENGIE: "Belgium is currently facing huge energy challenges. Some nuclear reactors, which in the past provided about half of our electricity, will have to close by 2025. We must be able to compensate for that loss in a very short time. And gas power plants will play an important role in this."

As Belgium's historical power producer, ENGIE is co-investing in that substitute production capacity. One such example is the construction of the high-tech CCGT power plant in Flémalle. Benoit: "The plant must be fully operational by 1 November 2025 to ensure our country's energy supply. This short deadline obviously has an impact on all construction phases. Therefore, a tight timing of only three months was set for the remediation works. And Jan De Nul and Envisan meticulously respected that."

## Responsiveness and transparency

The short deadline was not the only challenge. When starting the works, the amount of contaminated soil turned out to be much higher than anticipated. "Not only did we have to remediate much more soil than we thought, we also encountered large stones and a lot of glass during the works", explains Benoit. "Fortunately, this did not affect the deadline. In fact, Jan De Nul responded quickly and always involved us in full transparency in every decision. Thanks to that swift response, we were able to process a larger amount of soil within the pre-imposed time frame."



## Water transport and circularity

Throughout the operation, attention to the environment was central. We avoided truck transports and let four of our vessels carry out synchronised transports over inland waterways.

"Sustainability was a very important criterion in our search for a partner for the remediation works", says Benoit. "ENGIE always pushes hard to keep its impact on the environment as low as possible. Also for this project. The fact that Jan De Nul could transport such huge quantities of soil by water was a decisive factor for us."

The transport by water allowed us to convey up to 7,000 tonnes of soil per day, without creating mobility problems in Liège. We saved our roads almost 8,500 truck trips with trailers and emitted 3.5 times less CO<sub>2</sub>. We also included circularity in our approach. Using the first physicochemical washing plant within the Walloon Region, Envisan converted a significant amount of the contaminated soil into washed sand and granulates, which in turn were sold on the local construction market.

## Supplementing irregular renewable energy

For ENGIE, the remediation works were just the beginning. The combined-cycle gas turbine in Flémalle is a crucial project for both the energy company and the Belgian state. "It may come a bit as a surprise that we are banking on gas today. Yet, it is a step

we cannot avoid, as long as we cannot yet rely 100% on renewable energy", Benoit explains. "On the one hand, we still don't have sufficient solar and wind energy capacity to ensure powering the whole country. On the other hand, the sun does not shine, nor does the wind blow every day. In this sense, renewable energy has not stolen its name: it is not constant. As long as these renewable energy sources cannot fully meet our energy needs, we must try to adapt to their rhythm as much as possible."

That is exactly what ENGIE aims to do with its new CCGT power plant: creating a flexible energy source that complements its – for the time being – irregular renewable counterparts. 'For the time being' is the operative word here, because we will do everything, we can to maximise the share of renewable energy in the future. As the production of renewable energy sources increases, that of the power plant can decrease.

"The Flémalle plant will have an impressive capacity of 875 MW, almost as much as a nuclear power plant. Moreover, it has a very high efficiency of 63% that used flexibly

compensates for any lack of renewable energy on those days without much sun or wind. In the long run, the plant could even run on hydrogen, biogas or synthetic methane instead of fossil gas and thus become carbon-neutral", Benoit concludes. Bottom line? There are many ways to a sustainable future. Jan De Nul and ENGIE are very happy to unlock them.

120,000 tonnes of contaminated soil were excavated from the site of the former coal-fired power plant and transported by water to our processing centre at Ile Monsin in the port of Liège (inset). We then brought 100,000 tonnes of clean soil back to the site.



***"Thanks to the swift response and transparency of Jan De Nul, we were able to process a larger amount of soil within the pre-imposed time frame."***

**Benoit Liégeois**, Project Manager ENGIE



# ROCK-SOLID DREDGING IN BARI, ITALY

The port of Bari is one of the most important economic hubs of the Italian southern mainland. The Italian government decided it was time to facilitate the region's further growth by investing in the expansion of the port of Bari. With the beautiful old city centre as its skyline, Jan De Nul did its bit. For the construction of the new port terminal, we removed 586,000 m<sup>3</sup> of limestone.



The city of Bari is the main economic centre of southern Italy. Bari's location along the Adriatic coast is ideal for docking large cruise and container ships and provides a direct connection for ferry services to other southeastern European countries such as Croatia, Montenegro and Albania.

The typical limestone from the Calcare di Bari formation is extremely hard. Until the arrival of our cutter suction dredger Willem van Rubroek, this layer of soil was very difficult to remove. The dredged material is pumped ashore using a floating pipeline of about 900 metres.





To make sure we would have enough spare parts on site, we pre-mobilised 15,000 cutter teeth and 13 cutter heads. We also set up two mobile welding stations on shore for servicing and repairing the cutter teeth.

This cutter dredger is extremely powerful and therefore capable of cutting through very hard rock. The vessel gets its extra power from the combination of its larger electric drives on the cutter and on the side winches. This allowed us to increase the size of the cutter head and its tractive power.



On land, the new site for the future terminal is taking shape. Here, new quays will be built where container ships, cruise ships and ferries can moor.







# PUTTING NADOR ON THE MAP AS AN ECONOMIC HOTSPOT

Morocco is ready to repeat Tangier's success story, this time in northeastern Nador. The city is located along important shipping routes in the Mediterranean, so the construction of a new deep-water port is a logical step for the region's development. A maritime project with great potential for society: exactly what we at Jan De Nul like to sink our teeth into.

## A brand new port from scratch

What is now still a city from which residents are leaving for lack of jobs should in but a few years' time become a vibrant economic centre. An impressive ambition that calls for impressive projects. The construction of the Nador West Med port complex certainly is impressive. Built completely from scratch, the future complex will consist of a deep-water port and an integrated industrial port platform with free trade zone. The deep-water port will have the necessary infrastructure to develop an energy pool, tranship containers and process bulk products. The free trade zone, in turn, is to attract and accommodate investors and international companies.

The port city of Nador is situated in northeastern Morocco, near the Spanish enclave of Melilla. The name of this city may not immediately ring a bell. Tangier, on the other hand, already sounds more familiar to many of us. That's because at the beginning of this century, the country invested heavily to turn the Tangier-Tetouan region – where the Mediterranean Sea and Atlantic Ocean meet – into its economic hub. With success. With the construction of a new port along one of the busiest shipping routes in the world, a new football stadium and an airport, the number of jobs as well as the population grew rapidly. Furthermore, the tourism industry flourished.

## More than six times the Wembley stadium

The construction of this new port involves extensive dredging works that Jan De Nul is happy to undertake. Since 2016, our dredgers have already moved more than 25 million m<sup>3</sup> of soil to build two breakwaters, two container terminals and a terminal for petroleum, bulk products and several other goods. Enough soil to fill more than six times the Wembley stadium. To this end, we are working closely together with Turkey's STFA Group and Morocco's SGTM, both of which are undertaking the civil construction activities. The planning of the dredging works and the mobilisation of our dredging vessels run parallel with the various construction phases of the port. Since the start of the project, two of our cutter suction dredgers, five trailing suction hopper dredgers and eight split barges already went on site to ensure the necessary port depths.

# NEW TERRITORY FOR WIND POWER IN FRANCE

For more than 20 years, France has been betting on onshore wind power. With a production capacity of almost 19 GW, covering about 8% of its national electricity demand, the country is at the top of Europe's largest wind energy producers. Yet there is still huge growth potential: on land, but especially offshore. The ambitions are high: President Macron's government wants to double its output on land by 2050 and create an additional 40 GW of capacity at sea, which it must build from scratch.



**Pierre-Emmanuel Guillot,**  
Manager Asset Operation  
at EDF Renewables

With 11 million km<sup>2</sup> of sea area, France has the second largest sea area in the world after the United States. A unique opportunity to address the much-needed energy transition. Although France had placed offshore wind energy high on its agenda for years, the fishing community, environmental organisations and local political interests put a brake on the dossier. Open discussions with all parties around the table have now resulted in an energy pact in which France and the energy market commit to installing a total offshore wind energy capacity of 40 GW by 2050, with due consideration for marine ecosystems.

## Late-bloomer with strong ambitions

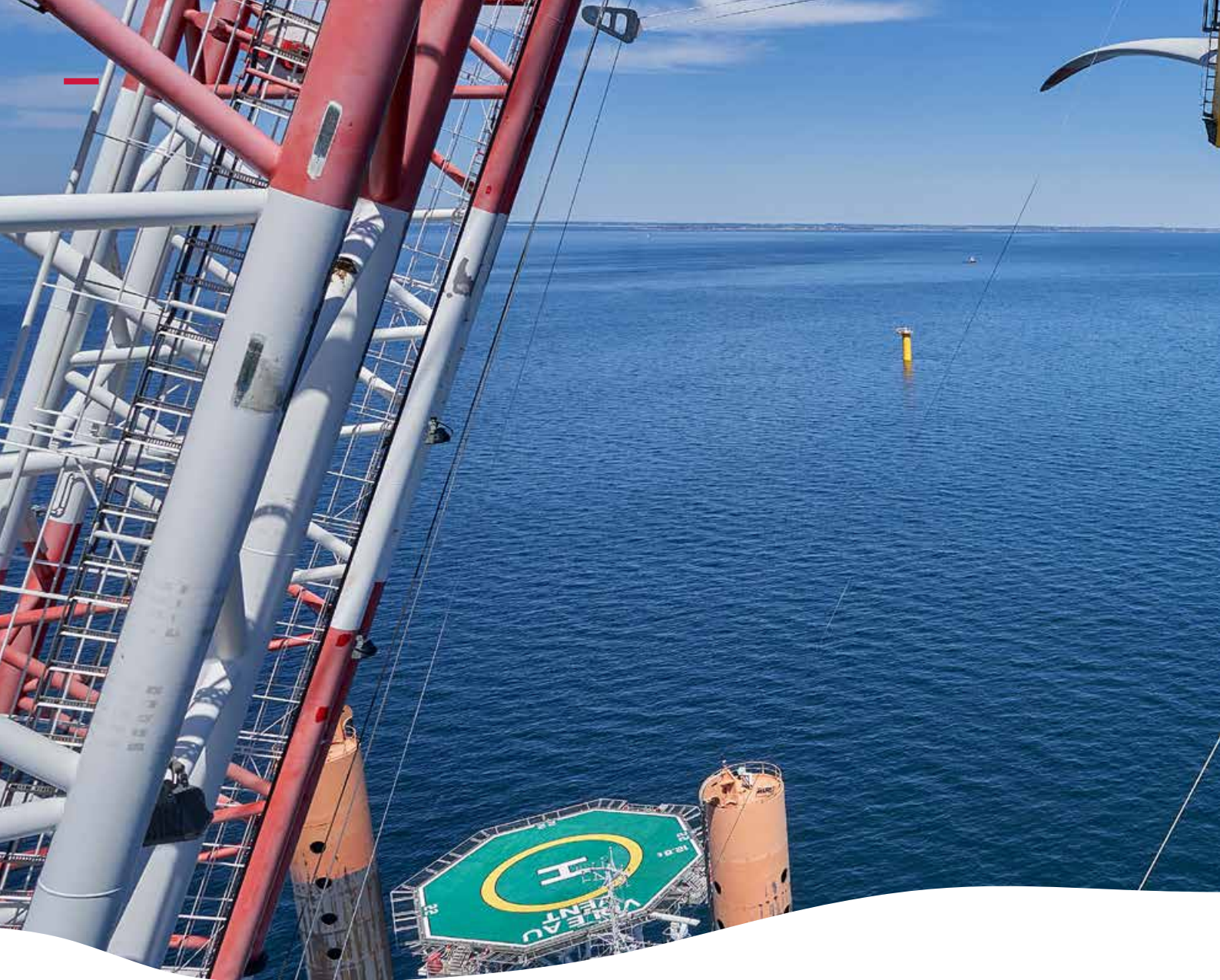
"Compared to other European countries, France adopted offshore wind energy rather late", states Pierre-Emmanuel Guillot, Manager Asset Operation at EDF Renewables and responsible for operating the Saint-Nazaire wind farm. "The Saint-Nazaire wind farm was therefore a very positive signal for the French energy market. It symbolises our country's ambitions to shift up a gear in offshore wind power."

Since the end of November 2022, the Saint-Nazaire offshore wind farm connected to the French grid. The first of 50 French wind farms by 2050. "The annual production amounts to 1.7 TWh, which corresponds with the energy demand of 700,000 people. By way of clarification, this corresponds with 50% of the residential energy demand of the Loire-Atlantique department, and with 20% of the total energy demand." ►

The offshore installation vessel *Vole au vent* installed France's very first turbines for the Saint-Nazaire wind farm, some 12 km off the coast of France's Loire-Atlantique department. 80 turbines, accounting for a production capacity of 480 MW.







### Transparency above all

To build the Saint-Nazaire wind farm, the teams of EDF Renewables and Jan De Nul worked intensively together for three years. "Even before the first on-site activities took place, we regularly went on site", explains Guillaume Gourdet, the EDF Renewables manager responsible for installing the turbines at the Saint-Nazaire wind farm. "Together, we scheduled consultation moments with all project stakeholders so that we could identify all action points."

Guillaume looks back positively on the journey he made with Jan De Nul. "This project was completed successfully. I characterise our cooperation as very efficient and transparent. Yes, we experienced technical problems, but we could always fall back on a very competent and solution-oriented team."

### Foundations on hard rock

The project team soon faced its first challenge. The seabed off the French coast is particularly rocky and rugged, which is quite a challenge for the legs of a jack-up installation vessel such as the Vole au vent. "In the first year, we focused mainly on seabed preparation", Guillaume continues. "Never before had a jack-up installation vessel 'jacked up' on such a surface. We needed a specific working method. We developed it together and defended it before our stakeholders, from port authorities to engineers. In the end, we were able to demonstrate that our approach was environmentally sound."

So what was the solution? Pre-cutting. We decided to cut the seabed locally first at 75 out of 80 positions to provide a stable work platform for the Vole au vent. A job made to measure for Jan De Nul's cutter suction dredger Fernão de Magalhães.

### Historic moment

In the second year, the design took further shape and the project team made sure all parties were on the same page. The installation itself started in April 2022 and the very first French offshore turbine was in place on 13 April. Finally, on 22 September, the last of 80 turbines connected to the French grid – well within the pre-set target dates. A historic moment that the French press and politicians watched with great interest. Even President Macron mentioned it on his personal Twitter account: "The Saint-Nazaire wind farm is finally operational. It took 10 years to see the light of day. All turbines are installed and the first electricity is coming ashore. It will be necessary for the coming winter. This wind farm contributes to our energy transition."





EDF Renewables currently has five offshore wind projects ongoing in France: in Dunkirk (1), Fécamp (2), Courseulles-sur-Mer (3), Saint-Nazaire (4) and one floating wind farm near Fos-sur-Mer (5). In all, these wind farms will supply the equivalent of the energy demand of nearly 3 million people.

***“Jan De Nul understood very well what the project entailed. Not only technically, but also in terms of environmental requirements. Their proactive and pragmatic approach was decisive in our selection process.”***

**Guillaume Gourdet,**  
EDF Renewables Manager Asset Operation



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We do our bit for an ecological world, which is why this annual report  
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