

ANNUAL REPORT



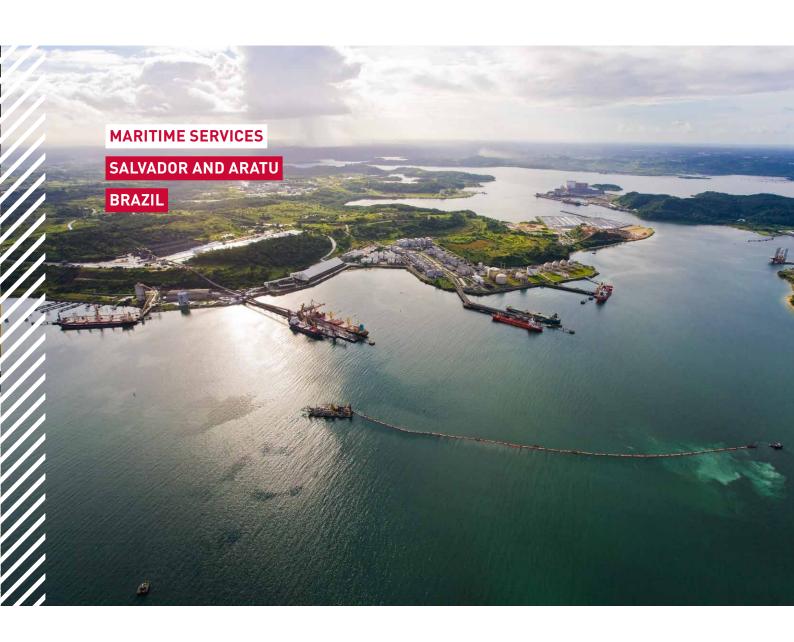


## JAN DE NUL IS A VIBRANT, MODERN COMPANY TACKLING TODAY'S COMPLEX CHALLENGES IN A SUSTAINABLE WAY.

Our talented people develop socially responsible solutions that contribute to the global energy transition and secure the next generation's future in the face of the world's challenges.

Our expertise lies in five main activities: offshore energy, maritime services, civil construction, environmental projects and project development. We facilitate the production and export of offshore energy and contribute to the electrification and interconnectivity of society. We maintain the depth of waterways and protect coasts from the effects of climate change. We build new ports and create extra land. We realise complex infrastructure works and erect any type of building. We tackle pollution in all its forms. From design and engineering up to execution and maintenance, we unburden our clients with total solutions that combine one, several or even all activities.





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For six generations now, the De Nul family has been passing on their passion for entrepreneurship. The result: solid, well-considered investments in a company that resolutely opts for growth. The family draw inspiration from their other great passion: art. In the offices in Aalst, you will not only find scale models of the imposing fleet, but the walls also display a wealth of artworks. Like the entrepreneurial blood, the love of art also finds its way throughout the generations.

# THE ART OF ENTREPRENEURSHIP

#### IR. JAN PIETER DE NUL AND DIRK DE NUL

#### ART CONNECTS PEOPLE

We have been brought up on the love of art. Especially through our grandmother, but also our father had, next to the business, a true passion for art. He regularly took us to an art gallery or studio, which, from time to time, also resulted in the purchase of a new work of art. Always driven by the heart. Meanwhile, we have built up a nice collection; the common thread being things that we like to look at.

Our family collection spans a long history and shows an artistic versatility. This versatility is also reflected in our company. We are active in the offshore energy and maritime services sectors, but also in the civil and environmental sectors and even as a project developer. Like artists, we continuously switch between what is possible and what we want to achieve. In doing so, we constantly try to push our boundaries. Art makes you look beyond what you can see. It offers an unexpected perspective on things and allows you to connect with other people. This makes it even more interesting to show art in a business environment. Art on the wall provides a starting point, encourages a conversation or discussion. That creates huge added value!

#### **JULIE DE NUL**

HET IS DE TAAL DIE SPREEKT. IK HEB NIETS TE ZEGGEN It's the language that speaks. I have nothing to tell

#### FRED EERDEKENS (2012)

At first glance, you see a tangle of iron wires, but when you look closer, you see what lies behind them. An intriguing play between light and shadow projects the words behind the work of art:



"It's the language that speaks. I have nothing to tell." To me, these words perfectly capture the culture within Jan De Nul. Our company is home to a diverse range of activities, nationalities and personalities. Each link in the greater whole has its own language and its own way of communicating.

And yet, sometimes silence says it all. You just have to look at each other, say half a word and know that they all understand you. I see this magic every day in so many colleagues: they are immediately on the same wavelength and complement one another. That is also the entrepreneurial spirit within our family. None of us feels the need to talk at length, but we share the same vision and understand one another. In some companies, taking certain decisions requires many hours of discussions and meetings and extensive correspondence. At Jan De Nul, we critically evaluate our decisions and jointly try to come up with a better solution. Together, we are always stronger!

#### PIETER JAN DE NUL

RAKET NAAR DE MAAN ROCKET TO THE MOON

#### HERGÉ (1953)

Since childhood, I have been a big fan of Tintin and all his adventures. I even remember my grandmother keeping some authentic albums in the attic. Tintin and his spiritual father Hergé have never left me.



Tintin is so much more than just a comic strip. It is a work of art created by a genius who strove for perfection in everything he did. Hergé wanted to draw a rocket that would really be able to fly to the moon. He spoke with various experts to get all the details as correct as possible. As a child, I felt that same drive in my father. Something that as a business manager he passed on to the rest of Jan De Nul. Our equipment, our projects, our innovations: we want to approach perfection in everything we do. For us, a new cutter suction dredger like the Willem van Rubroeck is not just another vessel. It must outperform existing technology to enable us to carry out projects more successfully. With the Voltaire and Les Alizés, we have set the bar very high for the entire sector.

Like Tintin, we too constantly explore new horizons. We are very versatile and want to discover more and more of the world. We are, as it were, the explorers of the 21st century.

# AWORLD IN TRANSITION

"More than ever, we are committed to finding and offering the best socially responsible solutions."

Board of Directors Jan De Nul Group

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

The corona pandemic has set a lot of things in motion and the resulting changes forced us to shift up a gear. We have all had to be very flexible to cope with a virus that has dictated our lives for two years.

This flexibility has also ensured that climate change and energy transition have risen to the top of the agenda and everything is gathering pace.

Our sector is also riding this wave and is therefore more than ever committed to finding and offering the best possible socially responsible solutions. For example, we ensure that all employees can work in optimal conditions and with great ambition using equipment that is constantly being fine-tuned to the needs of a very dynamic market.

This market is dictated by the growing world population, most of whom live in coastal areas, and by the resulting increasing thirst for (preferably green) energy and the need for more and better marine and domestic infrastructure.

Our dredging and offshore divisions are contributing to reducing the impact of climate change by addressing both its causes and consequences. The acceleration of the energy transition will lead to an accelerated reduction of  $\mathrm{CO}_2$  emissions and therefore to a slower rise in average temperatures. The installation of wind farms and interconnectors and the hydrogen projects carried out by Jan De Nul all fit into this framework.

Coastal protection and beach replenishment projects address the consequences. We are also involved in various projects to upgrade existing and outdated port infrastructure to the needs of today and tomorrow.

Our civil and environmental departments help public and private clients in their search for sustainable alternatives and clean up historically polluted sites.



6,644 157 PROJECTS IN EUROPE 43 Offshore services and dredging colleagues 57 Civil construction in 2021 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 VISIT WWW.JANDENUL.COM 52 223 109 Offshore services and dredging FINANCIAL REPORT 2021 57 Civil construction projects 44 Environmental remediation in 2021 13 Project development

# 2021 WAS....

# CREATIVE p. 12

The world is changing at lightning speed. What was innovative yesterday may already appear outdated today. But how do you keep your equipment innovative and your solutions ingenious? By looking at things with an open and creative mind, we can identify more possibilities. And that produces impressive results. A new generation of vessels, innovative technology or complex challenges? Our solutions help our customers to build the world of tomorrow.

# RESPONSIBLE p. 24

Today, our society is facing some major challenges. Climate change is felt in ever more places and global electrification requires an unprecedented network of cables. Jan De Nul takes its responsibility and plays a decisive role in these issues. We use our knowledge, expertise and equipment to tackle these problems together with our customers.

# AMBITIOUS p. 36

If you want to help shape the future, you have to set ambitious goals. What are our ambitions? Improving people's lives by tackling societal problems. Mobility, alternative fuels plus an office adapted to the new way of working. We at Jan De Nul believe in the future. Consequently, we aim high. This is not only for our customers, but also for ourselves.





2021 ANNUAL REPORT.

Much that only yesterday seemed impossible is a reality today. All over the world, ground-breaking projects are paving the way for the next generation. What is the secret ingredient to bring all these challenging exploits to a successful conclusion? Innovative equipment that provides sustainable solutions for the most complex challenges and preferably advance even further.

The offshore jack-up installation vessel Voltaire under construction.

AL INFILITY

CREATIVE.

# A NEW GENERATION OF VESSELS

One vessel is almost as tall as the Eiffel Tower and has a deck as big as a football field. The other can hoist 27 Boeing 747s in one go. Our latest-generation vessels Voltaire and Les Alizés appeal to the imagination. Behind these innovative vessels is a strong team, from designers and naval engineers to commercial experts. But how do you build such state-of-the-art vessels? We spoke with Jan Van de Velde, Head Fleet Construction at Jan De Nul.



"With these vessels we show our clients that we invest in the future."

Jan Van de Velde, Head Fleet Construction

# What do the Voltaire and Les Alizés mean for the future of the offshore wind sector?

Jan: "The offshore wind industry has been evolving rapidly in Europe for a number of years. Due to an enormous increase in scale, the current installation vessels are no longer able to install the latest components. Jan De Nul was therefore the first contractor in the world to order a new generation of these vessels: the jack-up installation vessel Voltaire and the heavy lift vessel Les Alizés. This was a calculated risk – both on a technical and commercial level – that we assessed correctly. With the investments in the Voltaire and Les Alizés, we show our clients that we mean business. That we are not temporarily active in the offshore wind sector but invest in its future!"

### Surely that requires close consultation with the sector?

Jan: "Absolutely. We regularly consult with various stakeholders in the offshore wind sector. They determine to a significant extent which developments will take place in the coming years. Conversely, it is also important for them to know that our vessels are able to execute their projects. That is why the Voltaire has already been engaged



The offshore jack-up installation vessel Voltaire has a crane capacity of over 3,000 tonnes. The jack-up system can lift 16,000 tonnes out of the water.

for some major projects, such as Dogger Bank in the UK, once delivered the largest wind farm in the world. Also our heavy lift vessel Les Alizés has already received her first orders: she will contribute to the installation of the Borkum Riffgrund 3 and Godewind 3 wind farms."

### Does Jan De Nul surpass its own innovative limits here?

Jan: "We have a lot of experience with dredging vessels, but we had never built a jack-up installation vessel ourselves and what a vessel at that! The Voltaire has a crane capacity of over 3,000 tonnes and the jack-up system can lift as much as 16,000 tonnes out of the water. The challenge was to integrate these legs into the vessel, taking into account all operational aspects. Fortunately, we learned a lot from the two jack-ups we had already been working with. Les Alizés has a crane capacity of over 5,000 tonnes. This vessel is constantly working in a dynamic environment and is able to

install while floating. Lifting such a huge load under these conditions is unprecedented in the world."

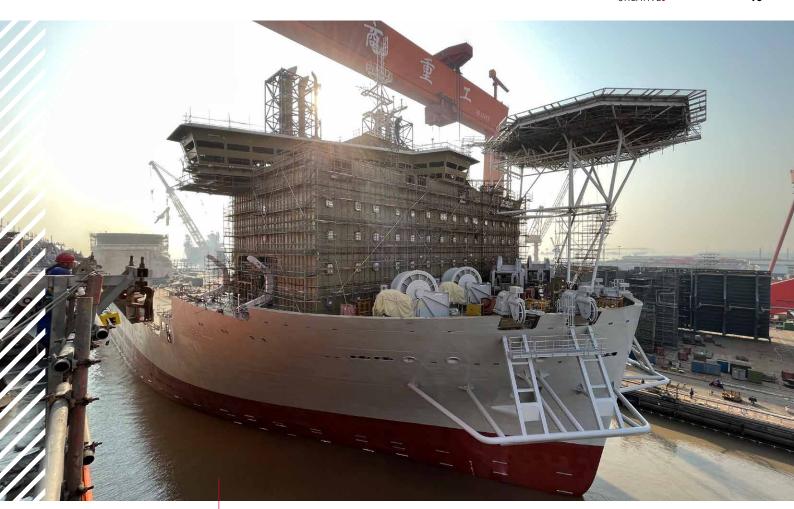
### How sustainable are these installation vessels?

Jan: "Both vessels have been designed to have minimal impact on the environment. An exhaust gas treatment system drastically reduces our emissions. Currently, such Ultra-Low Emission vessels by far exceed current regulations at sea. Better still: we even meet the regulations for inland waterways. And it is our ambition to move towards standards that apply in city centres. We are ready for the increasingly stringent sustainability requirements."

#### How long do you work on such a vessel?

**Jan:** "The first drawings of the Voltaire already date from 2017. This was followed by an internal consultation and interaction process that easily took a year. In close cooperation with our commercial

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The heavy lift vessel Les Alizés is constantly working in a dynamic environment and is able to install while floating. Lifting a load of more than 5,000 tonnes under such conditions is unprecedented.

people, we carefully examined what we as a technical department could do ourselves and what the sector needs. We entrusted the further development to a smaller team bursting with knowledge and experience. This close-knit team ensured that nothing could escape our attention."

### What technical choices did you face during the construction of the vessels?

Jan: "With a jack-up installation vessel such as the Voltaire, everything is very closely linked to each other: the strength of the crane, the weight of the vessel, the strength of the legs. It was our job to find the ideal balance to get the most out of all these factors. Some choices depended on the best available option on the market at the time, such as the jacking system. It contains, for example, a plate of a certain thickness. We chose the strongest and best quality available worldwide. The most important choices had to do with the increase in scale: crane size, deck size, operational depth and workability.

This resulted in very strict design requirements for the vessel to deliver on all promises, not only on paper, but also in practice."

### What were your biggest challenges while constructing both vessels?

Jan: "The biggest challenge on a human and technical level was, without a doubt, the pandemic. The team working on these vessels has never seen them in reality. That is very exceptional. Normally, we would visit the shipyard in China every month, together with internal and external experts. Fortunately, we have our own people on the spot, who always stay there for a few months. Also in the coming months, this will continue to be the biggest challenge."

# INNOVATIVE TRENCHERS TAILORED TO EVERY PROJECT

Jan De Nul's trenchers offer customers the best solution for their cable projects. These in-house designed machines can be customised for any project. Also in 2021, our Sunfish and Moonfish continued to play an essential role in the execution of our projects. And they got a little brother: the Swordfish!

#### SWORDFISH - BURYING CABLES IN CHALLENGING CONDITIONS

The Swordfish can bury cables up to 3.5 metres deep in challenging soil conditions. The machine can work in hard clay as well as in softer soil conditions. It has been built in such a way that cables can be immediately buried at the right depth with only minimal handling required. In 2023, the Swordfish will participate in the installation of the **Greenlink Interconnector**: a 160 km cable between Ireland and the UK.

#### **SUNFISH - BURYING CABLES IN TIDAL AREAS**

For the Dutch offshore wind farm **Luchterduinen**, part of an existing export cable had to be reburied. Operator Eneco asked Jan De Nul to rebury the nearshore part of the cable at least 2.5 metres below the seabed. Jan De Nul worked out a customised solution with the intertidal cable excavator Sunfish. Specifically for this project, we adapted the machine to rebury the cable up to 1 kilometre off the coast at a water depth of 8.5 metres.

#### MOONFISH - BURYING CABLES CLOSE TO THE COAST

In the Netherlands, TenneT is building two major offshore wind farms: **Hollandse Kust (north) and (west Alpha)**. These wind farms have a capacity of 1,400 MW and provide energy for 1 million Dutch households. Jan De Nul is responsible for the design, delivery, installation, protection and testing of 210 km of submarine power cables. Our cable-laying vessel Isaac Newton will lay the cables on the seabed. However, how do you bury the cables close to the shore? Our own tracked vertical injector Moonfish has been specifically designed to install cables up to 8 metres below the seabed.









# ENVIRONMENTAL SOLUTIONS WITH A MINIMAL ECOLOGICAL FOOTPRINT

The closure of the Renault factory in 1997 was a social and economic tragedy for the local community. For decades, the 150-acre site in Vilvoorde was left desolate and unused. Today, Jan De Nul is tackling the pollution of the industrial past on behalf of a project developer. A complex project, for which our environmental works division Envisan developed a sustainable solution. How? By being creative with land, water and air. With high-tech on-site treatment processes and the reuse of contaminated sites, we provide a circular response to the increasing scarcity of land. All this with a minimal ecological footprint. At the same time, we are helping to write a new page for the local community, creating space for housing, businesses, recreation and nature.



On the CAT site in Vilvoorde, we work with bio-piles, thereby saving about 5,400 truck transports.

#### CREATIVE WITH LAND: ON-SITE REMEDIATION AND SUSTAINABLE REUSE OF UNDERUTILISED LAND

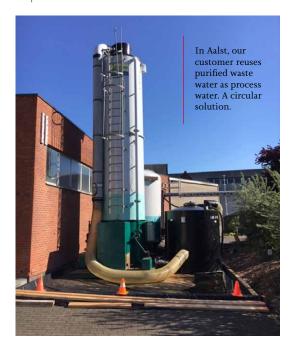
The former Renault factory in Vilvoorde is known today as the CAT site. Two large contaminated areas were identified on this site: one linked to a historical household waste dump and one of unknown origin with high concentrations of benzene. Up to a depth of four metres, we excavate 90,000 m³ of contaminated soil, which we store, analyse and remediate as much as possible on site, next to the excavation area. In doing so, we save around 5,400 truck transports, minimise our impact on mobility and reduce our CO₂ emissions by 1,195 tonnes.

We remediate the contaminated soil on site using the biological technique of bio-piles, with micro-organisms breaking down the contamination into less harmful forms. The air that is extracted from the bio-piles is collected and purified through a filter, combined with a catalytic afterburner. The heat released in this process is recovered to raise the temperature in the bio-piles. Clearly a solution based on maximum circularity.

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### CREATIVE WITH WATER: 4 CIRCULAR SOLUTIONS FOR REUSING WATER

Water is a natural resource that Jan De Nul wants to safeguard for future generations. When executing environmental projects, we avoid using tap water by providing circular alternatives. This requires a unique approach, tailored to the specific project requirements.



- On the CAT site in Vilvoorde, we deploy a temporary mobile water treatment plant to purify contaminated drainage water.
- On the asbestos-contaminated Modernite site in Hofstade, automatically controlled atomisation systems prevent the dispersion of asbestos fibres on and next to the site. The atomisation systems are fed with water from the Dender.
- During the groundwater remediation on the VOPAK site (storage and transhipment of chemical and petrochemical products in the port of Antwerp), we reuse the purified process water to wash the air contaminated with volatile organic compounds.
- In Gijzegem near Aalst, we remediate groundwater contaminated with chlorinated solvents for a textile company. The purified waste water is reused by the customer as process water in its production plant.

#### CREATIVE WITH AIR: CLEAN AIR AND A STRONG CO, REDUCTION

The remediation activities of Jan De Nul make contaminated land liveable again. Not only land and water, but also air is essential for this. We do this by controlling and monitoring our emissions to the maximum extent possible. Our on-site biological remediation operations drastically reduce our  ${\rm CO_2}$  emissions. On the CAT site, we save an additional 13 tonnes of  ${\rm CO_2}$  by using 100% green energy of local origin. We also deliberately use an electric atomiser instead of a diesel-powered device.

With its on-site remediation activities, Jan De Nul meets the high-tech requirements set by customers for complex projects. By simultaneously reducing our ecological footprint, we can even exceed our customers' expectations. Our environment division Envisan aims to expand this successful approach, both on a national and international scale. In Wallonia, we have now put our first mobile physicochemical washing plant into operation. A quick solution for the remediation of heavily contaminated sites, such as soils contaminated with PFOS. A promising evolution for the future.



On the Modernite site in Hofstade, we use an atomisation system to prevent the dispersion of asbestos.

# A RECYCLING CENTRE TAILORED TO A WASTE SORTING MACHINE

Better sorting is a prerequisite for more efficient recycling. To be able to process even more plastic waste, the public-private partnership Val'Up wanted to build a brand new sorting centre in Mons. A centre processing 5,000 bags of plastic waste per hour and sorting 14 different types of plastic. Within the scope of a Design and Build project, the Temporary Partnership Jan De Nul-Vauché worked out an overall package: from the design and realisation of an innovative sorting plant to the entire centre around it.





Our technical department supplied electric cranes to sort the waste.

### 20 OPTICAL TECHNIQUES AND A SAFE APPROACH

Recently, the sorting standards in Belgium have changed, which means that more material may be thrown into the plastic waste bag. In order to meet the new standards, sorting centres have made adjustments or even reconversions. Val'Up went even further: it immediately built a brand new, state-of-the-art plant full of technical gadgets. "20 optical techniques can recognise and sort 14 different types of plastic waste", explains Nathalie Halbot, director of Val'Up. "If in the future other types of plastic waste were to be added, we could simply add the corresponding optical technique. We really wanted a flexible installation."

In most centres, bulldozers transport the waste from large collection basins to the conveyor belt. Val'Up prefers to avoid these bulldozers. "We prefer to work with electric cranes – supplied by the technical department of Jan De Nul – on rails mounted above huge storage pits", says Nathalie. "This is a lot safer and more efficient and less waste is flying about."

#### **BUILDING AROUND A MACHINE**

Jan De Nul had never built a recycling centre before. "We had to come up with ingenious ideas and inventive

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solutions", says Project Manager Luc Deroche. "In only one year, we built a completely new sorting centre. To be able to realise this, we had days when up to 200 people were working on the site at the same time."

The central starting point for this project was the sorting plant. We meticulously aligned all construction plans with those of the machine builder. Luc: "We met regularly, together with our partners, to compare our design with the machine prototype. Every adjustment to the sorting machine had an impact on our plans. We first erected the entire building, after which our partner assembled the sorting machine. So we had to install the sprinkler system and all lighting beforehand. Quite a challenge."

#### **FOUR HALLS**

In addition to the halls for the sorting process, we built three other halls: one for storage and two for processing the waste. Here, the waste is pressed into bales and transported to a recycling company. "This innovative sorting centre enables us to sort and recycle even more plastic packaging than before", says Nathalie. "And the waste stays in Belgium. By doing so, we reduce our impact on the environment, save more resources and contribute to the local economy with 68 new jobs."

Val'Up can sort 5,000 blue bags per hour. This corresponds with 50,000 tonnes of plastic waste per year.





# "We meticulously aligned all construction plans with those of the machine builder."

Luc Deroche, Project Manager

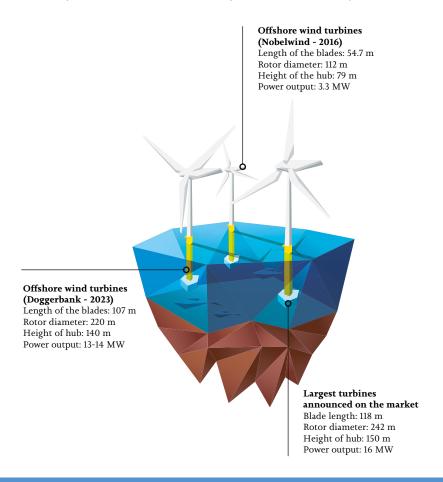
#### **ABOUT WASTE MOUNTAINS AND PLASTIC SOUP**

While you were reading this article, no fewer than 1 million plastic bottles were being sold all over the world. From 1950 to 2017, an estimated 9.2 billion tonnes of plastic were produced. Of this huge amount, just over a quarter is still in use and only 600 million tonnes have been recycled. More than half of all plastic produced so far has been dumped in landfills or simply released into the environment. Every year, 5 to 13 million tonnes of plastic flow into the great oceans. The solution? Use less plastic and also recycle.



# THE WORLD IS ELECTRIFYING, AND WE ARE LAYING THE CABLES

A bicycle, a car, heating or even the operation of a gas plant. We are increasingly pulling the electric card, which increases demand worldwide. Nuclear and gas power plants get support from solar panels on land and wind turbines at sea. The result: our electricity supply is extremely fragmented. How do we get all that energy to as many users as possible? With an enormous network of export cables. Jan De Nul helps countries and companies to meet their electricity needs. Both in Europe, in Asia and in the Middle East.



#### **BIG, BIGGER, BIGGEST**

The large-scale electrification of the world goes hand in hand with a boost in renewable energy. More and more coal-fired power stations are closing down and substantial investments are being made in offshore wind farms. This production of green energy will become even more important in the coming years.

To meet the high demand for electricity, not only the number of offshore wind farms is increasing, also the dimensions of foundations and turbines are rising rapidly. Within a time span of five years, the physical dimensions doubled and production capacity increased fivefold. An evolution that Jan De Nul already anticipated correctly in 2019 by ordering two giant offshore installation vessels, the Voltaire and Les Alizés. These vessels are ready to install the offshore wind farms of the future.

#### INTERCONNECTIVITY

The objective is clear: to make electricity more widely available. This requires interconnectivity. With cables we can connect offshore structures, possibly from different countries, to each other or to the electricity grid. But a large cable network also offers solutions to cope with peaks and troughs in electricity production. In the event of overproduction, electricity can be diverted to other areas where there is greater demand at that time. That electricity runs through cables on land, and increasingly across the sea. Complex projects in which the cable-laying vessels of Jan De Nul can demonstrate their expertise.



#### PARTNER IN ELECTRIFICATION

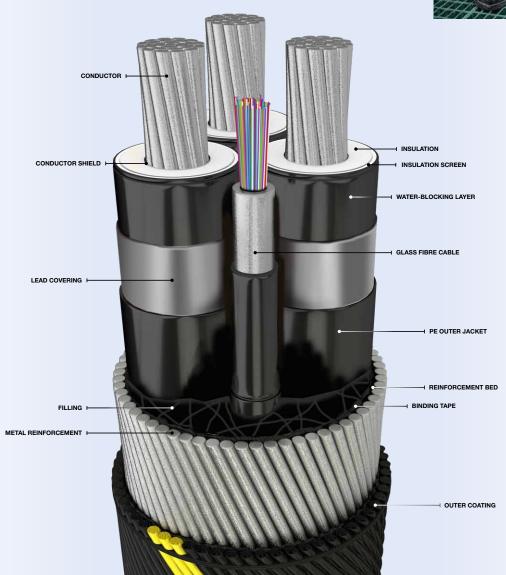
Today, electricity is produced at various locations. This requires a substantial reinforcement and adaptation of existing electricity networks. And to get the electricity from offshore wind farms to land, the cable networks must be able to connect perfectly to the national grids as they all work with their own grid codes and specifications. Using a state-of-the-art network of cables, we can provide the right connection.

European companies such as Jan De Nul perform activities that increase the availability of electricity. Dredging, rock installation and cable-laying works or the construction of offshore wind farms. All over the world, we are helping to build the world of tomorrow. And that's something we also want to prepare our employees for. Every wind turbine is connected to the cable network via the transition piece (TP), which is part of the foundation. In order to carry out such complex cable installation works safely and efficiently, we provide our employees with training sessions using a TP simulator. With this, we want to further expand our expertise in designing foundations and installing cables.

With our TP simulator, our employees expand their expertise even further.



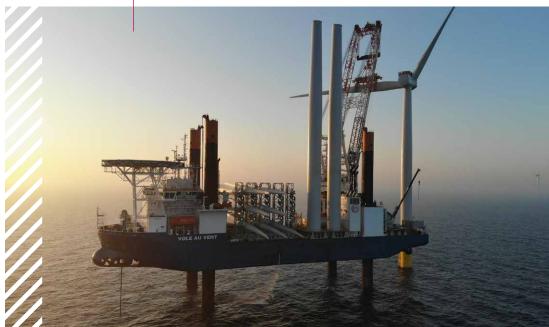
### WHAT DOES AN EXPORT CABLE LOOK LIKE?





Our jack-up installation vessel Vole au vent installed 72 wind turbines for the





#### **EUROPE: A 430 GW PRODUCTION CAPACITY BY 2050**

Europe is a pioneer in the construction of wind farms and currently has a production capacity of 28 GW. By 2050, this capacity is expected to increase tenfold to 430 GW. A huge effort that Jan De Nul is happy to contribute to. For example, we are helping to build wind farms for the European frontrunners: in the United Kingdom we are working for Dogger Bank and in Germany the Borkum Riffgrund 3 and Godewind 3 projects are on our planning. We are also helping Denmark and France to realise their ambitions in offshore wind energy.

In 1991, the Danes made history by building the world's first offshore wind farm, Vindeby. By 2030 they want to increase the national share of offshore wind energy to 72%. In 2021, the country took a giant leap forward with the completion of its largest offshore wind farm, Kriegers Flak. This wind farm increases Denmark's wind power production by 16% and brings its share in the electricity supply to 46.8%. A milestone in the Danish energy transition.

Jan De Nul installed 72 wind turbines with the jack-up installation vessel Vole au vent. With a total production capacity of 604 MW, these wind turbines will provide electricity to some 600,000 families every year. Kriegers Flak is also the world's first hybrid offshore wind project. It not only supplies energy to Denmark, but is also connected to Germany.

France is also counting on offshore wind power to increase its supply of renewable energy. In Saint-Nazaire, it is building its first commercial offshore wind farm. Here as well, Jan De Nul is applying its expertise. We are installing 80 wind turbines 12 km off the coast, in the northern part of the Bay of Biscay. With a total capacity of 480 MW, this wind farm will meet the electricity needs of 20% of the Loire-Atlantique region.

## ASIA: 20% MORE OFFSHORE WIND ENERGY IN TAIWAN

Asia is also finding its way to offshore wind energy. Their transition is proceeding at lightning speed, with an estimated capacity of 442 GW by 2050. It is therefore expected that Asia will soon overtake Europe as leader in the offshore wind sector. Great powers China, Japan and South Korea are the driving forces behind this transition. But also Taiwan is playing a prominent role and setting ambitious targets: a 20% increase in offshore wind capacity to 5.7 GW by 2025, followed by an additional 15 GW in the following decade. To this end, Taiwan is building several offshore wind farms with Jan De Nul as partner.

of 21 wind turbines for the Taiwan Power Company Offshore Wind Farm, off the coast of Fangyuan Township. In addition to the installation of the offshore cables, we also carried out onshore cable installation works to connect the existing onshore substation

with the nearshore cable interface. Together with consortium partner Hitachi, we will remain responsible for the operation and maintenance of the wind farm until 2026

About a hundred kilometres further, off the coast of Miaoli County, our cable-laying vessel Willem de Vlamingh installed four export cables for the Formosa 2 wind farm. Next to the cable works, we were also responsible for the design, production and installation of the foundations. Upon completion, Formosa 2 will be one of Taiwan's largest offshore wind farms, with 47 turbines of 8 MW each, capable of providing green energy to 380,000 families.



We also carried out onshore cable installation works for the Taiwan Power Company Offshore Wind Farm.

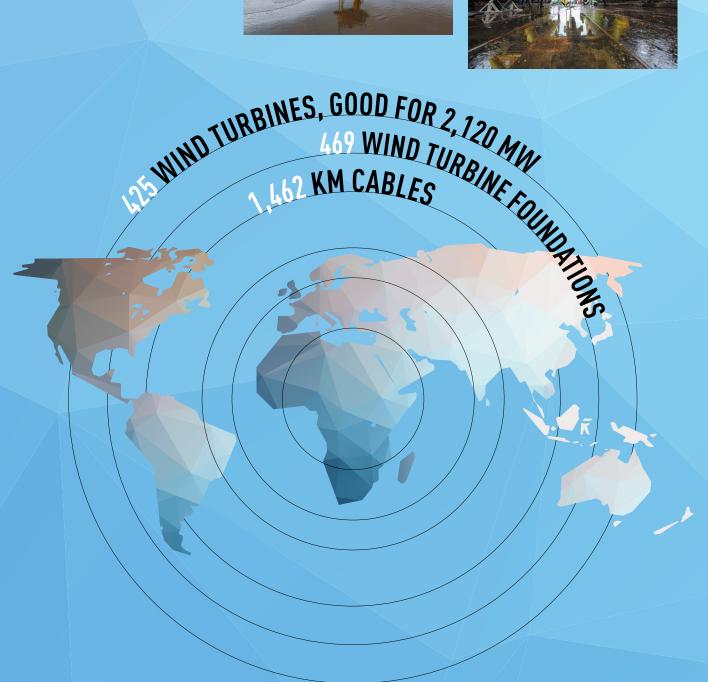


# JAN DE NUL INSTALLED SINCE 2012

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# THE COUNTER KEEPS ON RUNNING









#### 2018 - 2025 / Taiwan

Offshore Wind Farm Taiwan Power Company Fase 1

#### 2019 - 2021 / Denmark

Installation of turbines for the Kriegers Flak Offshore Wind

#### 2019 - 2022 / Taiwan

Foundations and cable installation for the Formosa 2 Offshore Wind Farm

#### 2019 - 2022 / Germany

Service level agreement for offshore cable reparations

#### 2020 - 2021 / Greece

Cable installation between Crete and the Greek mainland

#### 2020 - 2021 / Norway-China

Transport of 7 umbilicals for the Lingshui offshore energy project

#### 2020 - 2023 / The Netherlands

Cable installation for the Offshore Wind Farm Hollandse Kust (Noord) and (west Alpha)

#### 2021 / The Netherlands

Cable installation for the Prinses Amalia Offshore Wind Farm

#### 2021 / The Netherlands

Cable installation for the Luchterduinen Offshore Wind Farm

#### 2021 / Taiwan

Transport of 6 cables for the Greater Changhua 1 en 2 Offshore Wind Farms

#### 2021 / Germany

Cable reparation between Trianel Borkum and DolWin alpha offshore stations

#### 2021 / Taiwan

Cable installation for the Yunlin Offshore Wind Farm

#### 2021 - 2022 / Denmark-Belgium-The Netherlands

Service level agreement for the maintenance of Vestas turbines

#### 2021 - 2022 / France

Installation of turbines for the Saint-Nazaire Offshore Wind Farm

#### 2021 - 2022 / Korea-Bahrain

Cable transport for the Havar Island energy project

#### 2021-2023 / Germany

Installation of foundations and offshore substation for the Gode Wind 3 and Borkum Riffgrund 3 Offshore Wind Farms

#### 2022 - 2025 / Abu Dhabi

Cable installation for the ADNOC Lightning Project

#### 2023 / United States of America

Cable installation for the Vineyard Wind 1 Offshore Wind Farm

#### 2023 - 2026 / United Kingdom

Installation of turbines for the Dogger Bank A, B en C Offshore Wind Farms

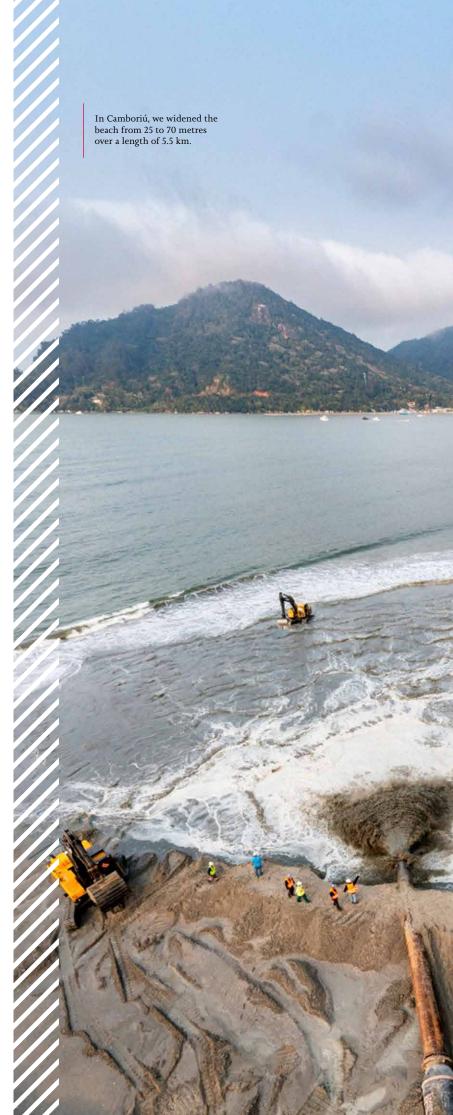
# RESTORING VULNERABLE LAND IN BRAZIL

Coastal regions in Latin America are increasingly being confronted with brutal natural disasters and severe tropical storms. The result? Coastal erosion affecting the beaches as well as the nearby roads. In order to restore these vital connecting roads for the community and the economy, Brazil worked out a maritime solution together with Jan De Nul. A successful formula that would soon be copied.

#### 45 METRES OF BEACH ADDED IN ONLY 9 WEEKS

Beach replenishment works in Fortaleza in 2019 kicked off a whole series of such works in Brazil. At that time, we reclaimed approximately 1.4 million m³ of sand over a coastline length of 2 km. In 2021, we added another 2.2 million m³ in the municipality of Camboriú, widening the beach from 25 to 70 metres over a length of 5.5 km. All this in barely 9 weeks' time. A technical masterpiece the local community had been waiting for a long time: the beach was in dire need of repair due to the strong tides.

The beach replenishment project in Camboriú was the first project for our new trailing suction hopper dredger Galileo Galilei. This vessel dredged sand at 15 km off the coast, brought it to the bay and pumped it ashore through an underwater pipeline. This vessel with a hopper capacity of 18,000 m³ has two separate hoppers on board. A unique asset: by distributing the dredged material evenly over both hoppers, we can optimally control the load and draught.



#### **FOCUS ON MOBILITY**

By taking a maritime approach to coastal erosion, Jan De Nul avoids transporting heavy cargoes on crucial connecting roads. These roads often suffer from erosion and are therefore in a bad state. That is why in Meaipe we do not only spray sand but also repair and protect the most important coastal road. A newly constructed rock berm and the widening of the beach protect this thoroughfare against violent storms and tides. Further south, in Mathinos, we've also started beach replenishment works.

This simulation of the former coastline shows the big difference.



The connecting roads in Brazil also suffer from erosion.

#### **AN ECONOMIC BOOST**

Wider and more resistant beaches not only offer protection against the tides and extreme natural phenomena. They are also an attraction for growing tourism. Employment opportunities within the local communities are increasing, and tourists are more and more easily finding their way to these trendy coastal towns. "That gives a lot of satisfaction to the work we do here", says Steven De Baets, Project Manager. "The whole community was closely following our works. In Camboriú, two YouTubers even broadcasted the progress on our site day and night, with thousands of interested reactions. Afterwards, I saw on Google Earth how much difference we literally made to this community. That makes me very proud of what we have achieved."

Jan De Nul is a reliable partner for Brazil in their future-oriented approach to coastal erosion. With a series of beach replenishment projects in progress, in our portfolio and in the tender phase, we are making a substantial difference to the local communities.

"Brazil is increasingly protecting its coastline through beach replenishment projects and expects transparency on its environmental impact."

Koen Robijns, Area Manager Americas





Former coastline

# PROTECTING VULNERABLE LAND IN FLANDERS

It is not only the sea that poses a threat to the land. Under the influence of extreme weather conditions, rivers can also overflow and cause serious damage. That is why the Flemish government launched the Sigma Plan in 1977: a programme for the large-scale strengthening of dikes to protect the hinterland from flooding by the Scheldt. By 2030, as much as 260 km of river land will benefit from this protection.



For the Hedwige-Prosper polder we are unlocking an area of 465 hectares.

#### A VALUABLE ECOSYSTEM

"The Scheldt is a tidal river, which makes it sensitive to flooding", explains Hans Quaeyhaeghens. As project engineer for Vlaamse Waterweg, the public Flemish waterways authority, he is monitoring the execution of various dike strengthening works. "The years of land reclamation works in the area alongside this river have increased the risk of flooding. We are now giving that land back to the river, allowing it to flood again at the rhythm of the tide."

This approach keeps the water out and at the same time promotes the creation of a valuable ecosystem, with different types of plants and organisms. "Natural floodplains with mudflats and salt marshes are the organs of the river", says Hans. "They filter nitrogen and phosphorus from the water and supply silicon and oxygen."

#### HEDWIGE-PROSPER POLDER: A FERTILE BIOTOPE OF 1,150 ACRES

Along the border between Belgium and the Netherlands, Jan De Nul is working on a crucial link in the realisation of the Sigma Plan. In the Hedwige-Prosper polder we are unlocking an area of 1,150 acres. For this, we built a ring dike of 4.8 kilometres long and 9 metres high. "For the construction of that dike, we used soil that we had previously excavated to allow for the natural development of floodplains", says Project Manager Geert Vanwesenbeeck.

"Soon we will break open the existing dike so that the water can flow into the polder."

By 2024, the Hedwige-Prosper polder will be ready to protect man and nature even better. Before that happens, we are carrying out tests with some European partners to put the strength of the dike to the test. "By simulating a breach in the dike, we find out what our dikes can handle during storms", explains Geert.



The Hedwige-Prosper polder is not the only place where Jan De Nul is realising the ambitions of the Sigma Plan. As a committed partner, we achieved several milestones in this large-scale conservation plan. Always with the same objective: restoring the relationship between man and nature.



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During beach replenishment work on the Belgian coast, our trailing suction hopper dredger Pedro Ályares Cabral ran on 100% sustainable biofuel.

AMBITIOUS.

# OUR SEARCH FOR ALTERNATIVE ENERGY

The Paris climate agreement sets the world a clear goal: to limit climate warming to less than 2° Celsius, and preferably to 1.5° Celsius. To be able to achieve this, private companies are taking the initiative themselves and are starting research into renewable energy sources. Jan De Nul, which sees many opportunities in the use of biofuels, green methanol and hydrogen, is a pioneer in this field. In combination with electrification and ultra-low emission vessels, these new technologies offer interesting opportunities for the future.

On our site in Coo, Belgium's first electric

# **ULTRA-LOW EMISSION VESSELS**

For some years now, Jan De Nul has been equipping its new vessels as a standard with the ULEv exhaust gas treatment system, which meets EU legislation STAGE V. A catalyst makes nitrogen oxides harmless, whereas a soot filter blocks even the finest particles. In this way, we extract up to 99% of the number of dust particles from the soot and exhaust gases. A sustainable story that our customers are becoming increasingly aware of. Recently, the Flemish government awarded us the contract for 'Sustainable maintenance dredging works in the maritime access channels to Antwerp'. With our ultra-low emission vessels, we will only emit a minimum of nitrogen.



# **BIOFUEL AND METHANOL**

Today, we are going one step further: by using methanol, we want our vessels to comply with Euronorm 6 for freight transport. This is remarkably better than the existing regulations. In combination with post-treatment by our ULEv filter system, our vessels would reduce their greenhouse gas emissions by 90% and generate extremely low  $NO_x$  and particulate emissions. Our new vessels are designed in such a way that they can use both biodiesel and alternative fuels such as methanol. Of course, this requires quite a few changes, such as a larger tank capacity, gas detection systems and explosion-proof electrical equipment.

### **ELECTRIFICATION**

There are also interesting opportunities in further electrification. According to our calculations, a 'hybrid' trailing suction hopper dredger could in sensitive natural habitats or populated areas run on batteries for a few hours and thus generate no emissions. And also on board, batteries can reuse

released energy to work more efficiently and economically, a technique that we already used for the construction of our heavy lift vessel Les Alizés.

# **HYDROGEN**

In Terranova, one of the largest solar parks in the Benelux, Jan De Nul is working on a pilot project to produce green hydrogen. Due to the large size of the hydrogen tanks, we cannot yet use this energy source on board of our vessels. But we can use it to power some of our machinery.

And we are taking it even further. We are currently investigating whether our vessels can become climate-positive. This would enable us to remove  $\mathrm{CO}_2$  from the energy chain and store it before the greenhouse effect of  $\mathrm{CO}_2$  emissions into the air can take place.

# A WORLD FIRST ON THE BELGIAN COAST

Renewable fuels allow to create extremely sustainable sites. Jan De Nul was the first dredging company in the world to carry out reclamation works in the Belgian coastal municipalities of Knokke and Raversijde on fully sustainable biofuel. A total of 1,400,000 cubic metres of sand protect the municipalities from flooding. During the works, the trailing suction hopper Pedro Álvares Cabral used 100% sustainable biofuel, which reduces the  ${\rm CO_2}$  emissions in the biofuel lifecycle by 90%.



# STATE-OF-THE-ART HEAVY EQUIPMENT AND ECOLOGICAL SITE OFFICES

Not only at sea, but also on land we managed to keep our emissions as low as possible. We equipped our bulldozers and excavators with an advanced exhaust gas filter system. This reduced NO $_{\rm x}$  and particulate emissions by more than 80%. And it doesn't stop there: well insulated materials, LED lighting and a heat pump save 80% of the energy in our site offices.

# **CONTRIBUTING TO FLEMISH OBJECTIVES**

Environmental criteria play an increasingly important role in the awarding of contracts. Also in Flanders, which by 2050 wants to reduce greenhouse gas emissions by 85% compared to 2005. The maritime sector is taking its responsibility, with Jan De Nul acting as a pioneer. In 2019, we already proposed that a mandatory CO<sub>2</sub> reduction of at least 15% would be included in all Flemish maintenance dredging contracts. In the meantime, the Flemish Government and the Public Maritime and Coastal Services Agency are also including the  $CO_2$  performance ladder as one of the award criteria. This programme stimulates and helps companies to reduce their CO, emissions. The dredging, civil and environmental activities of Jan De Nul all achieve level 5 on this ladder, which is the highest level.



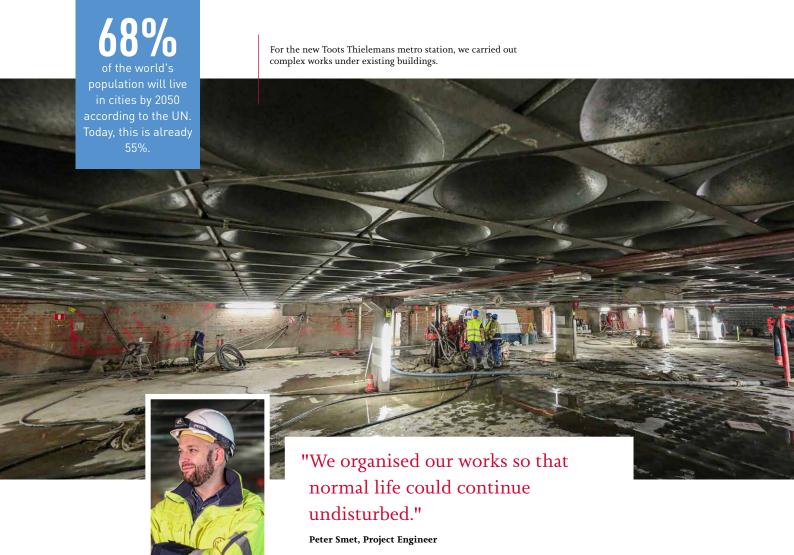
# AN ANSWER FOR EVERY MOBILITY ISSUE

It is no secret: the omnipresent car still rules from Sydney to Chicago. Just about every (world) city is therefore struggling with the same problems. Think of air pollution, traffic jams, noise pollution, traffic accidents and poor accessibility. Belgian cities are no exception to this rule. But changes are possible. More than that, changes are mandatory, because our cities continue to expand. And that is a challenge in which we are happy to take the lead.

# **INCREASE SUPPLY VS. REDUCE DEMAND**

The main reasons for our mobility problem are not far-fetched. It starts with ourselves. There are simply so much more of us, the population continues to increase dramatically just about everywhere. In addition, we see the car as a easy mobility choice. Many people can afford one (or two) and it is simply what we are used to. Going to work, visiting family or an evening at the cinema? We do it by car.

The result: the roads are congested. Increasing the capacity of our urban planning is not a good idea, because it is immediately filled with extra traffic. So what does work? Making the alternatives more attractive, and thus reducing the demand for car infrastructure. For slightly longer journeys, public transport is the answer.



# HOW WE SUPPORT CITIES – BIG AND SMALL – IN THEIR AMBITIONS

Whatever plans cities may have for sustainable mobility, chances are we can be a valuable partner. Of course, that is easy for us to say. So, to prove our point, here are some projects that we executed in 2021:

### **Better connections**

In Brussels, a new metro line should somewhat relieve the busiest traffic arteries. The north-south line will take travellers from one end of the city to the other in only 20 minutes. The missing links were an 800-metre-long tunnel and the new Toots Thielemans metro station. For this, we had to carry out extremely complex works under existing buildings. To illustrate this: at certain locations we had to freeze the groundwater so as to be able to continue working. But yet again, we made the impossible possible.

### Better integration with other means of transport

Travelling by train is a good start, but you also have to get (from) there easily. The option chosen by Kortrijk was a bus and bicycle tunnel weighing over 1,500 tonnes in the station area. This will allow public buses and cyclists to take a shortcut from the south side to the centre of the station. We pushed the entire tunnel (35 metres) into place during an operation that lasted about eight hours, which meant that train traffic was only stopped for a short time. We then connected the tunnel to a new underground car park. With this project, Kortrijk underlines its sustainability ambitions.





In 8 hours, we pushed a 1,500-tonnes, 35-metres-long bus and bicycle tunnel into place in Kortrijk.





# Better parking facilities

As from 2021, cyclists and car drivers can park their vehicles in the new car park building at the railway station in Aalst. The car park provides space for 700 bicycles and 900 cars – a blessing for the more than 35,000 train passengers every week. Important: this renovation is part of the overall strategic project 'De Kaaien'. Plans for further upgrading the vacant site of the former commuter car park are being prepared. The objective: reconverting a site that has been underused for years into an active part of the urban fabric.

### Better locations for workplaces

In Mechelen, PSR is converting the former Inofer site, located at the railway station and the Leuven-Dijle canal, into an area with 4,000  $\text{m}^2$  of living space and 19,000  $\text{m}^2$  of new and renovated offices. The industrial look of the site will be retained, while we ensure that the new district will have a succession of walking and cycling paths, vertical and horizontal green areas, green roofs and numerous cosy little squares. As a result of this project, the Mechelen station district will be close to these new workplaces, which creates options for sustainable mobility.



"In one year, we ordered 105 fully electric vehicles, accounting for about 10% of our fleet."

Christof De Waele, Fleet Manager

# Our employees also opt for sustainable mobility!

Jan De Nul does not only help to make sustainable mobility possible. It is also our ambition to organise our own mobility flows as sustainably as possible. In our offices in Aalst, 215 employees are leasing a bicycle. And since September 2021, we offer fully electric company cars. Also for site

vehicles, we are looking at more sustainable options, such as hybrid cars. Meanwhile, we provide sufficient charging points on our premises to enable efficient commuting. And on our sites, we will soon start using electric charging containers with solar panels.

# HOW WE HELP SHAPE PUBLIC SPACE

Focus on people, nature and efficiency. In public or private projects, clients are often faced with complex challenges. As from the project design phase, Jan De Nul searches for solutions that benefit both the user and the environment.





# **ANTWERP PRISON**

Antwerp's current prison is hopelessly outdated. In 2025, the Flemish government wants to open a new and modern prison: a 40,000 m² site with room for 440 detainees. The central theme in the design, construction and use of the prison: a human-centred, high-quality living environment, focussing on reintegration.

Together with our partners, we developed a design that fits in perfectly with the larger renewal plans for this urban environment. And the bar has been set high: we are aiming for the 'Excellent' label in the BREEAM sustainability model, which objectively assesses 9 categories.

The optimal integration in the landscape creates a green and liveable environment with gardens, a forest and ponds that regulate the water balance. Renewable energy facilities minimise the carbon footprint, using photovoltaic panels on the roof and a green heat network, amongst other things. A prison that with a green landscape also offers ecological and visual added value.

# MEDIA HOUSE OF PUBLIC BROADCASTER

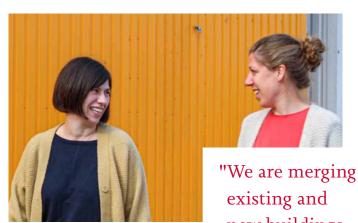
The media landscape is evolving rapidly, and the infrastructure is growing along with it. That is why in the summer of 2026 the Flemish Radio and Television Broadcaster (VRT) wants to move into a modern and sustainable building. Jan De Nul will help to build this media temple of 65,000 m², where flexibility and cooperation are central. Every floor will consist of spacious work areas where VRT staff can make creative radio and television. A pleasant, inspiring and green work environment.

The new VRT house will be a compact building on the current Reyers site, integrated in a natural environment and with a limited ecological footprint. Five green courtyard gardens are embedded into the core of the building, retaining as many existing trees as possible. The energy supply is completely free of fossil fuels, the building is heated by recovered heat and heat pumps. 2,300 m² of solar panels on the roof generate renewable energy. A green and creative house, tailored to the latest developments in the media landscape.

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# A PLACE WHERE CHALLENGING PROJECTS START



Although teleworking will never be a thing of the past, we are happy that we can welcome many colleagues back to the office. And this definitely has its benefits. It allows people to plan their day better, work together, know what is going on and keep both motivation and productivity high. That is why we are investing ambitiously in the workplace of tomorrow, which promotes creativity, social contact, movement and flexibility. The ideal space to take on the world's most challenging projects with gusto.

existing and new buildings into one whole, united by the same vision and architecture."

Liesbeth Schollaert, architect

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. Not only does this sound good, we also invariably translate this philosophy into our actual workplaces. A striking example is the new office building for our colleagues in Aalst. Greener, healthier and flexible are the keywords of the entire construction process.

# **ACTIVITY-BASED WORKING**

On each floor, we take into account the departments that will be moving in. What do they do? What do they need to perform well? And how do we bring them together in the best possible way with other teams for internal consultation? We make choices to create a workplace that is as flexible as possible, taking into account changing project teams. The basis is identical for everyone, but we leave sufficient room for everyone's own identity.

# SHARING LIFE'S UPS AND DOWNS AT THE COFFEE MACHINE

Every department is given its own meeting place. A cosy seating area, some standing tables, the necessary electrical equipment and good coffee invite employees to a good conversation, a team meeting or even a small presentation. Quiet workstations and call boxes will provide fall-back options for those in need of focussed work and seclusion.

We are building an office that is entirely geared towards what people want: a stimulating meeting place, a flexible working environment for self-development and, above all, a place where we feel good – both mentally and physically.

# A COMPACT AND OPEN BASIS

On the first and second floor, we bring people together in fitness rooms, the company restaurant, the auditorium and the training centre.

A healthy mind in a healthy body: that's what we've been aiming for a long time. For years, we have been inviting our colleagues to sports, creative and healthy initiatives through our internal FIT programme. Group classes or personal coaching give colleagues the time and space to let off steam and clear their heads before, during and after a busy working day.

The second floor will accommodate our training centre. Small and larger classrooms bring together starters and experienced colleagues to share and further develop their knowledge.

The company restaurant will offer a varied and healthy range of hot and cold dishes. The large terrace facing south-west offers space for lunch and outdoor meetings.



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

Annelies Verwaeren, Project Manager

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We do our bit for an ecological world, which is why this annual report is published on recycled paper (Nautilus - Super White).

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