

JDN

2017

annual report



Jan De Nul
GROUP

344

projects

45

countries

6,546

employees

1.8

turnover (billion Euro)

2.6

order book (billion Euro)

JDN 

annual report

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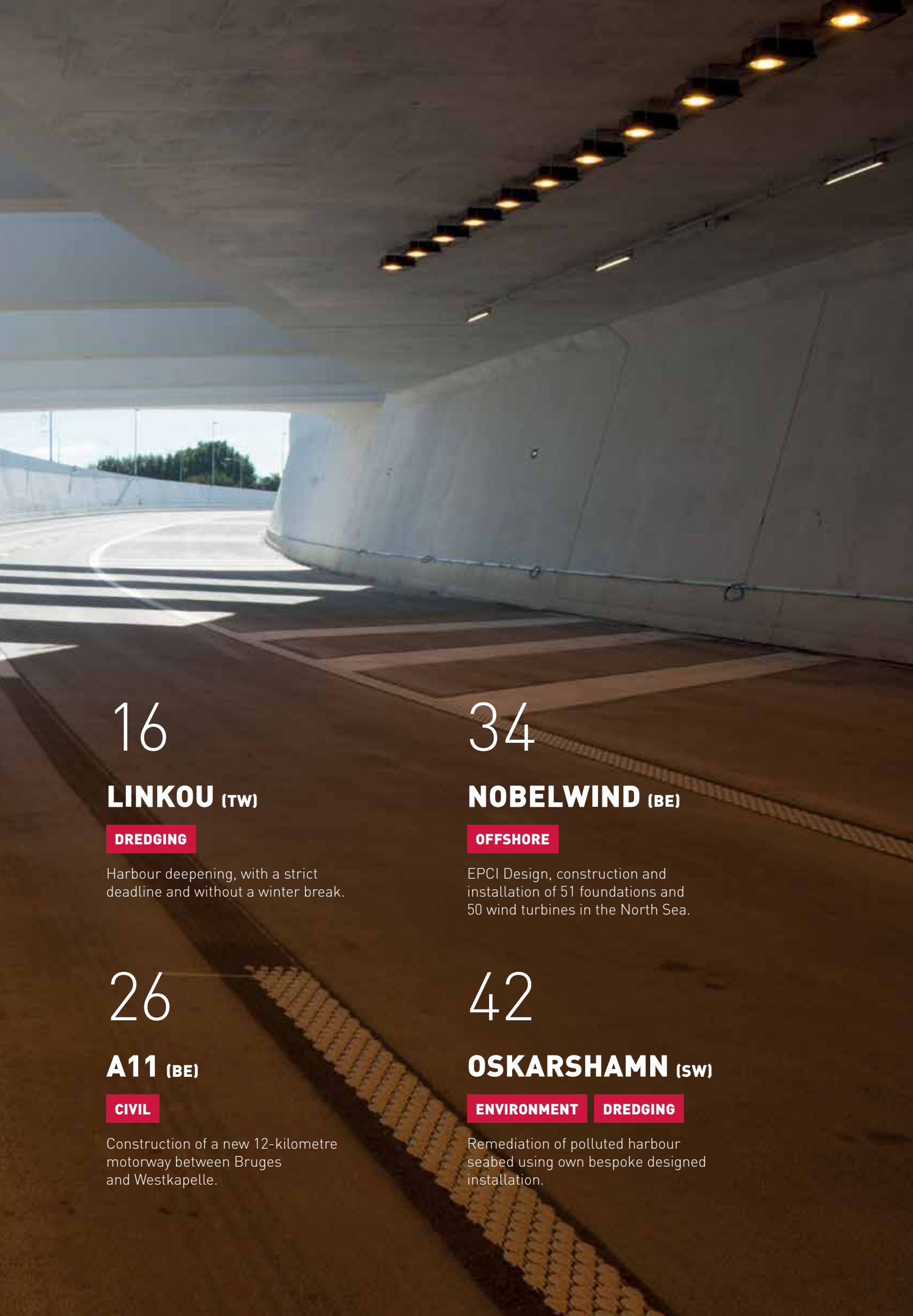
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A CONFIDENT OUTLOOK

“In a changing global economy JDN Group shows sufficient strength, flexibility and resilience to adapt and thrive.”

2017 has been another challenging year where lower oil prices kept the oil & gas sector subdued and even the dredging market showed a contraction.

The market turnaround that we had all hoped for still proves elusive. With smaller capital expenditures in these core markets, and declining project scope, has directly resulted in lower margins and higher costs given the increased management costs of a multitude of smaller projects.

With increasing pressure and awareness of climate change and the need for an energy transition, a brighter picture is emerging in our business activities within the Offshore Renewables market, where we continue to see growth and business is no longer restricted to Europe. JDN Group continues to focus and make progress, in a targeted manner, on the civil engineering and environmental market, both with 'autonomous' projects and through an integrated approach together with our other business divisions.

As a result, the overall figures for 2017 show a mixed picture. On one hand, a tight and competitive market leading to a decrease in annual turnover, but on the other hand, our financial performances remain strong, and even stronger than in 2016, including:

- an unprecedented solvency ratio: 75% of our balance sheet is carried by our own assets;
- a net liquidity position of 345 million euro;
- an EBITDA-ratio on our turnover of over 20%, a leading figure in our markets.

This financial performance confirms that in a changing global economy, with a weak recovery; simultaneously threatened by a dominant tendency towards protectionism between the superpowers, JDN Group shows sufficient strength, flexibility and resilience to adapt and thrive.

During its past exponential growth phase, Jan De Nul Group has always succeeded in capitalising on its core competences. Now our business model shows resilience in a downturn, thanks largely to our flexibility and product mix, as well as our technical capabilities, supported by targeted investments, training and a permanent search

for talent. During 2017, we had two new additions to our fleet and we currently have vessels under construction for an overall value of over 380 million euro.

More than ever, the projects described in this annual report demonstrate the cross-pollination and co-operation between our various business divisions:

- multi-disciplinary projects in Monaco and Oskarshamn
- comprehensive turnkey EPC-contracts and PPP-projects with the A11 and Nobelwind.

While across the group, the focus on keeping safety our top priority and improving safety performance and the wellbeing of our employees, often using state-of-the-art equipment, continues unchanged.

It remains unclear what 2018 and the short-term future will bring. Still, as a global player we will continue to work from a long-term perspective, both in talent development and in the modernisation of our fleet across our many different activities.

Our market confidence is supported by our order book, which at the end of 2017 – in spite of a declining market – remained stable at 2.6 billion euro, with contracts under consideration for the first quarter of 2018 looking very promising and confirming a rising trend.

This strong financial performance has, without doubt, been made possible by the confidence of our clients and stakeholders, whom for many decades and across the different economic cycles have always enabled the company to re-invest every penny earned and, as such, continue to serve customers and develop this silent JDN-resilience in the best possible way.

FIELD OF ACTIVITY

Dredging / Offshore /
Environment

LOCATION

Municipality of Monaco.

CLIENT

Bouygues Travaux Publics,
commissioned by the
government of Monaco.

ASSIGNMENT

Reclaiming a plot of land
from the sea for a new
eco-friendly residential area.

NOTABLE

The project combines three
fields of activity: dredging,
offshore and environmental
works. All works must be
executed within a very limited
area, off the Monaco marina,
paying particular attention
to the surrounding nature
reserves.

1,600,000

tonnes of rock

60,000

m³ of polluted sediments

9

vessels are active
within the project area

MONACO

In the shadow of the Monaco casino, a new plot of land of 14.36 acres is being created. Jan De Nul dredges and treats sediments, builds the rock foundation for the dyke of the caissons and fills the area behind the caissons with sand.

The Principality expands at sea

With a surface area of just 2.02 km² and containing 18,775 inhabitants, Monaco is the world's most densely populated state. So, it should be no surprise that the Principality decided to expand its territory by reclaiming over 14 acres from the sea, while paying due consideration to the nearby nature reserves. The project includes both dredging, rock installation, land reclamation and environmental remediation works: a job fitting Jan De Nul like a glove.

DREDGING | **OFFSHORE** | **ENVIRONMENT**

For the next three years (2017 - 2020), the vessels of Jan De Nul will be active off the coast of Monaco, in between pleasure yachts and the project site. The project consists of three stages: dredging, rock installation and land reclamation. During the dredging stage, which lasted from April to November 2017, the Envisan centre in Toulon played an important role as it had to process all polluted sediments.

Senior Project Manager Tom Van Slambrouck explains: "In a first phase, we removed an upper layer of 60,000 m³ (about 100,000 tonnes) of polluted sediments. Obviously, the fact that we could immediately process these sediments in our specialised Envisan soil treatment centre nearby was a bonus to the client. We also removed 30,000 tonnes of the existing shore protection, 120,000 m³ of *remblai anthropique* (construction waste dumped at sea) and 400,000 m³ of ordinary sediments."





The crane pontoon *Mimar Sinan* and the split barge *Le Sphinx* work together to dredge contaminated sediments.

“We converted several vessels because of the small area on which we were working.”

Tom Van Slambrouck
Senior Project Manager

Vessel conversions

For this first stage, several vessels have been converted. Tom: “One of the reasons for this is that we are working on a very small surface area. For instance, on the backhoe dredger *Mimar Sinan* we installed a special gripper arm to be able to reach very far and deep and remove the shore protection without having to come too close to the shore ourselves.”

Particular attention was paid to two nature reserves surrounding the work area. Both the *Mimar Sinan* and the *Tiger* were equipped with special, closed eco-friendly grippers for dredging polluted sediments. Such a gripper, installed at the outer end of a crane, prevents dredged polluted sediments from leaking and falling back into the sea. Jan van Vijven, captain of the *Tiger*, a multipurpose vessel that has already been converted for several specific projects in the past, gives us a word of explanation: “For us, working with such an eco-friendly gripper was a new experience. All works were successfully executed. We were given the order to deliver a flat seabed and cause as little turbidity in the water as possible (cf. box text). So, I had to make sure the vessel wouldn’t swing back and forth too much and that the crane team operated carefully.”

Once the layer of polluted sediments had been removed, it was up to the *Francis Beaufort* to dredge 400,000 m³ of seabed. Tom Van Slambrouck: “This vessel was also adjusted, among others, by extending the suction pipe. We were allowed to release the dredged sediments into sea but solely within a predefined area in Monegasque waters.”



Rodolphe Dienst, Jan van Vijven, Tom Van Slambrouck and Delphine Prat

“We had to make sure the material wouldn’t flow beyond the country’s borders or into the nature reserves next to our work area.” To this end, the dredge pipe of the trailing suction hopper dredger *Francis Beaufort* was adjusted to enable the same dredge pipe to pump the dredged materials back into sea in a controlled way, down to a depth of 75 metres.

Creating land

The second stage of the project started in December 2017. The final goal is to install 1,600,000 tonnes of rock, which will serve as foundation for the dyke around the actual land expansion. Tom: “These rocks are loaded onto our fallpipe vessel *Simon Stevin* in the port of Fos, near Marseille, in batches of 30,000 tonnes. With these rocks, the *Simon Stevin* builds the foundation very accurately. When all material is in place, our client, Bouygues Travaux Publics, installs a belt of *caissons* or huge concrete blocks on top of it, behind where the new plot of land will be created.”

Giant muscles and red corals

Next to the project site in Monaco, there are two nature reserves with red corals, giant muscles and sea grasses, that cannot be damaged or disturbed under any circumstances. That is why, before the start of the project, a team of Jan De Nul's environment department Mared has been permanently on site to closely monitor the strict environmental conditions.

"We have four persons of Mared permanently working here", says Delphine Praet, who is a member of the team in Monaco herself. On one side of the project site, there is a nature reserve of sea grasses, and on the other side, you find protected red corals. Therefore, the department installed a total of six measuring buoys, three along each side, to measure the impact of the works on the reserves.

Delphine explains: "Prior to the start of the project, a number of thresholds in terms of turbidity, light and sedimentation were established. Turbidity refers to the cloudiness of the water and is caused by dredging works as during these works the seabed and the material to be dredged are stirred into the sea water. Sedimentation is a direct consequence of this turbidity as the stirred material swirls down onto the sea grasses. For these sea grasses, it is very important that their leaves are able to absorb sufficient light to ensure that the photosynthesis process can take place. As soon as certain turbidity thresholds are exceeded, we enter an alarm phase and adjust the working method or even suspend the works should this be necessary."

Delphine continues: "The elaborate early study phase was mainly used to simulate the impact of the works on the environment. Obviously, we always have the intention to work without interruptions. Additionally, we include a test period prior to the start of every activity, during which we sit together with all teams and the client on a daily basis. In this way, everyone knows exactly what to do and not to do, so we can achieve acceptable production levels without causing negative effects on the environment."

All data measured by the measuring buoys can be consulted continuously and in real time on a special website that is accessible to all parties concerned, including the Principality. Delphine: "We go the extra mile to protect the environment. For instance, in the work area we found *grands nacles*, a protected species of giant muscles that can measure up to 1 metre. Before we started working, divers manually moved them as well as 500 m² of sea grasses to an area outside the project site. We also have divers working all the time to manually clean corals and remove sediments."



Envisan Toulon treats polluted dredged sediments from Monaco

In 2015, Envisan opened a soil and sediment treatment centre in La Seyne-sur-Mer, near Toulon (France). Here, polluted sediments from Monaco are remediated ready for reuse.

Hannes Van den Berghe coordinated the activities between Envisan and the teams that were working in Monaco: “Overall we handled about 100,000 tonnes of sediments that were removed from the site and were treated here. In a first step, the sediment is pumped in a big lagoon where we let the material drain, a process called *lagooning*. Then we subdivide the material in different partial fractions: sand on the one hand and very fine clay on the other. The sediment is passed through hydrocyclones so that the sand can be filtered out and re-used. Pollution (PCBs, heavy metals, oil) tends to adhere to the finer fraction only. After having separated the fine clay, we continue dewatering it through chamber filter presses. After this process, we are left with a fraction of dry substance that cannot be purified any further and is sent to a land fill. The main part, i.e. the remaining sand, is purified and re-used, for instance for road construction works. The water is treated in our own plant and discharged back into

the sea, for which we obviously have a permit.” As such, Envisan does not only treat the main part of the influx of polluted material but also remediates it, ready to be used again, and contributing to the circular economy.

According to Hannes, the challenge in this project was that we immediately had to process large quantities of sediments to create new capacity in the centre. “Our lagoon isn’t big enough to simultaneously store 100,000 tonnes, and as we didn’t want to slow down the dredging works, as soon as sediments arrived, we immediately dewatered part of the load to create new capacity.”

Given the potential for further treatment with hydrocyclones and chamber filter presses, Jan De Nul itself plans to invest in a brand new plant for Envisan. “As such, we will become the first centre in southern France giving soils and sediments a second life.”



The contaminated sediments are sorted into sand and fine clay. The sand fraction is decontaminated and re-used.

“We work to the limits of our vessels. It is therefore very satisfactory when we bring our tasks to a successful end.”

Rodolphe Dienst
Superintendent Dredging Works



The project is an organizational challenge requiring continuous coordination within the team.

Working within a very small area

It is not just the environmental requirements that turned this project into quite a challenge. Captain Jan van Vijven explains: “We are continuously working next to Monaco’s marina. To begin with, this marina is much more compact than an ordinary port. We must continually consider yachts sailing in and out as well as the fact that there are apartment blocks and hotels very close to our work area. You can imagine that tourists and residents who want to enjoy the peace and quiet and the lovely sights at sea don’t want to be disturbed too much. That is why we can only work between 6 am and 10 pm, which makes our planning even more restricted than usual.”

Another challenge is that the various large vessels of Jan De Nul are not the only vessels that are active in the work area. Survey boats are going back and forth, the environment department Mared is at sea with a boat, our client Bouygues is working on different

locations and so are other contractors that also send divers into the water on regular occasions. Jan tells us that this considerably increases the complexity of the project and requires extreme flexibility from our side: “Still, I kind of like such challenges. I must say we have a top crew on board and a very fine team working on land. The mutual consultations are going really smoothly, which is crucial for such a project.”

Superintendent Dredging Works Rodolphe Dienst can confirm: “This is my first project for Jan De Nul and from an organisational point of view it has been a complex challenge from the beginning. We are really exploring the limits in terms of planning and the capacity of our vessels, so it gives great satisfaction when tasks are completed successfully.”



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DOING MORE WITH LESS SPACE: NOT JUST IN MONACO!

Diegem - the old sand extraction site Desmedt

Diegem, in the Flemish periphery around Brussels, and on the Brussels – Antwerp axis, is near the national airport of Zaventem. It goes without saying that, in an area of such national and international economic importance, space is scarce and demand is growing. What can be done when you run out of space? In Monaco, Jan De Nul Group started dredging and depositing soil to create usable space. In Flanders, landfills get a new destination. Doing more with less space: reallocating and recycling a site, the circular economy, that is a skill that PSR Brownfield Developers truly master.

For the Desmedt site in Diegem, a former sand extraction site that was used as a landfill for years afterwards, PSR even goes a step further. "Residentially redeveloping a landfill site has never been done before", says Johan Geeroms, Director at PSR. "We are bringing a site that had been left fallow for forty years back on the market. What a result! A mix of affordable houses, apartments and urban villas in a green, sloping residential park. Car-free, underground

parking and green energy. We take care of it all." Johan is rightly proud of the pioneering role that they are fulfilling – again.

The purchase and ongoing redevelopment of this brownfield site is a textbook example of an infill project. This seamlessly links to the municipality's masterplan and the approved "Diegem Centre" spatial plan, which aim at the qualitative 'filling' and knitting together of open inner areas and existing residential fabric. "The role of pacesetter is best suited to PSR and we are happy to include it within the 'redevelopment of landfills' working group at the recently established Brownfield Foundation. Here we share our expertise to enable the development of a transparent legal framework and the inventory of landfill sites in Flanders", explains Johan.

The collaborations, synergies within Jan De Nul Group have been an asset for years. For this project, with the development and upgrade of a well-opened brownfield to become an enjoyable residential area, PSR is joining forces with the civil department and sister



Director PSR Johan Geeroms and Environmental Expert Soil & Groundwater Pieter Beel.



company Envisan, who together are true circular economy masters. In addition to soil remediation, they also take care of the rubble recycling. Envisan also studied the potential of the landfill together with PSR. Pieter Beel, Environmental Expert Soil & Groundwater within the environmental division, clarifies: "In recent years, Envisan has participated in two pilot projects for the development of landfill material (the so-called enhanced landfill mining), commissioned by OVAM, the public waste company of the Flemish region. We also look at the temporary use of landfill sites through, for example, the installation of solar panels as in the Terranova project. These two possibilities, namely mining on the one hand or the temporary use in anticipation of future mining, were evaluated for the landfill here in Diegem. Because full mining is not profitable, neither in the short nor in the long run, PSR filed an application under the brownfield agreement for the sustainable, definitive redevelopment of the landfill. Several criteria were successfully tested. Pieter continues with great enthusiasm: "The dumping material mainly consists of construction rubble

and is therefore easy to sieve. Where possible, the sieved rubble will be used as a foundation material for roads and buildings. In addition to the obvious 'waste to land' criterion, PSR also meets the 'waste to materials' criterion." Once again, the circle is complete.

This circular reallocation of the Desmedt site will not only bring a new dynamic, but new life into Diegem. When it comes to the environment, remediating the soil will provide this underutilized site and its surroundings with oxygen, giving it a second breath.

"In collaboration with Envisan, we also recycle the space itself, including the present waste materials and the construction rubble. How is that for recycling and circular economy? And if you know that landfills occupy about 88 square kilometres in Flanders - even more than a Belgian provincial town like Aalst - it opens up perspectives", says Johan with a smile.



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FIELD OF ACTIVITY

Dredging

LOCATION

Linkou Port, Taiwan.

CLIENT

Hung Hua Construction Ltd.,
itself being a contractor of
Taiwan Power Company.

ASSIGNMENT

Deepening the port of Linkou
so that larger vessels can
moor for supplying coal.

NOTABLE

This project would be
expected to be interrupted
for a few months in the
winter period due to bad
weather. But thanks to some
ingenious measures taken by
Jan De Nul, the vessels can
continue to work in winter.
As a result, the project will
be completed six months
earlier than scheduled.

2,000,000
m³ of sand

4,000,000
m³ of rock

LINKOU

In the Taiwanese town Linkou, Jan De Nul is deepening the access channel and basin of the port to enable larger coal vessels to moor. Power supply is a major problem on the island, so the supply of coal – one of the main energy sources – is of critical importance. The dredged material from Linkou Port is immediately re-used for expanding Taipei Port.



A large cutter dredger was required to dredge the hard stone subsurface of 4 million cubic metres of boulders and mudstone.



More capacity for Taiwanese ports

Taiwan has been struggling for years to provide its inhabitants and industry with a stable power supply. To have sufficient coal to be able to operate the power plants at their full capacity, it is of vital importance that larger amounts of coal can be supplied from overseas. To enable more coal unloading, the port of Linkou must be deepened. Jan De Nul immediately re-uses the dredged material from Linkou to create additional land in the nearby Port of Taipei.

DREDGING

Initially, the completion of this project was scheduled for the autumn of 2018. But the need for more coal was so high that in October 2017 the client, Taiwan Power Company, instructed Jan De Nul to shorten the execution period by half a year. "We had to search for a solution within a very short period of time because normally we would have had a winter break from November. That didn't give us much time to think. But we do like this kind of challenges", explains Project Manager Harold Heffer.

“We are very proud to have completed this project six months earlier than planned for our client.”

Harold Heeffter
Project Manager



Test in record time

“During October 2017, we had already dredged a layer of 2 million cubic metre of sand and we were just about to start with the difficult layer of 4 million cubic metres of boulders and mudstone.”

Together with the direct client, Hung Hua Construction, and the production department at the office, Jan De Nul conceived a few possible solutions. “We got the idea to test whether a large hopper dredger could suck up the material that had been pre-cut by the cutter dredger and pump it ashore in Taipei Port. Such a vessel is much larger than a split barge and can cope with much more severe weather conditions.” Jan De Nul used the *J.F.J. De Nul*, the largest cutter dredger from its fleet, but one, to carry out the test together with its trailing suction hopper dredger *Charles Darwin*.

Harold: “We had only a few months to solve this challenge that needed both vessels to be synchronised with one another to enable joint production optimisation.”

Working near the limit

Superintendent Dredging Works Karel Foré led the test for the cutter dredger *J.F.J. De Nul*. “We started on the spot with the hardest sub-soil. If the test was successful, we knew that the rest would be feasible as well. Initially, we

decided to cut the hard mudstone into very fine pieces with the *J.F.J. De Nul*, which would definitely enable the *Charles Darwin* to suck up the soil and pump it ashore. The problem was that, as a result, the production of the *J.F.J. De Nul* was rather low because you have to work slowly for pre-cutting so finely. It soon appeared though that the *Charles Darwin* could process the material with less preparation as well. Thus, we increased both the rotational speed of the cutter head and the swinging speeds of the *J.F.J. De Nul* so that it would work faster.”

The team managed to reach an optimal capacity and to pump the rock slurry ashore using the suction hopper dredger. “Everyone was very motivated to turn this project

Building trust in Asia for over 20 years

Ma Hong Po is Senior Business Development Manager in Asia for Jan De Nul Group. Over the last 22 years he has been travelling across China, Taiwan and Vietnam to identify new projects, talk to contractors and meet potential new clients.

“Asians, and particularly Taiwanese people, attach great importance to personal contact. So, a major part of my job involves developing good relations and earning trust. I spend two third of my professional life on travelling around, visiting consultants, contractors and clients. Only by investing time in relationship building, will you be able to convince potential new clients to consider you for their projects.”

Jan De Nul Group has a good reputation in Asia. Ma Hong Po: “Particularly for large and challenging projects, we are known for our execution speed combined with a high-quality result. Our technical capacities, global reputation and solution-oriented approach give us a clear advantage. We support our clients from the early preparatory phases of a project and many clients consider this a major asset.”

Being proactive

“Still, this doesn’t mean that we can rest on our laurels. Many local contractors are trying to enter the market for smaller-scale projects. We always remain alert and uphold a proactive business strategy to stay ahead of the competition.”

The process to win a project is different each time. “Sometimes, a contract is already signed after one day. But for many other projects, we must go through a long tender process that may take several years.”

Ten years of preparation

“Our dredging works in Linkou is an example of the latter. We’ve been following up this project for more than ten years starting with the first feasibility studies. We gave technical advice to the consultants, for instance on the requirements for a soil survey, and assisted in budgetary studies.”

“Unfortunately, in 2013 the project was assigned to another contractor who failed to deliver a proper job. This is why the client started a new tender process, where we achieved the best marks for all aspects of the tender and eventually signed the contract in 2017. Also for this project, our added value lies in the way in which we always think of creative solutions to meet the client’s demands.”



Project Manager Harold Heeffler and Senior Business Development Manager Ma Hong Po.



“It is immensely rewarding to get together with everyone involved and think of new ways to optimise production.”

Karel Foré
Superintendent Dredging Works



into a success: without this enthusiasm, this would never have succeeded. We challenged the captain and the crew of cutter dredger *J.F.J. De Nul* to explore the vessel's maximum technical limits. We also received the necessary support for our ideas. Colleagues from the production department flew over here to follow a number of crucial tests. It is immensely rewarding to get together with everyone involved and – time and again – think of new ways to optimise production”, Karel concludes.

Getting ahead – a six month schedule improvement

A detailed report on the completed test was drawn up so that from November another cutter dredger and suction hopper dredger could take over the project. Project Manager Harold Heeffter: “The *J.F.J. De Nul* had to sail on to a project in Mumbai. It was released in mid-November by the cutter suction dredger *Niccolò Machiavelli*, assisted by the *Vasco da Gama* and later also the *Vitus Bering*.”

“All dredged material from Linkou Port was used in Taipei Port to create a new harbour site”, Harold explains. “As a result, Hung Hua Construction also had to review its planning for constructing the bunds, the contour lines of the site to be reclaimed, and to have them ready in time, before the arrival of the *Vasco da Gama*. Our client Hung Hua Construction coordinated the works together with two fishing clubs. The planning had been changed and so the dredging works had to be executed during the peak period of the fishing season. Thanks to Hung Hua, everything went smoothly for all parties concerned.”

“We started working in Linkou in August 2017 and the port will be ready in the spring of 2018. That is more than half a year earlier than scheduled. We can be proud of having achieved this for our client.”



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Sub-centimetre measuring

In Linkou, different types of soil are being dredged: mudstone, boulders, fine sand ... This makes it difficult to establish the perfect volume balance and production levels. The survey team monitors the dredged volumes very accurately, in real time and down to the nearest centimetre.

In every marine project of Jan De Nul, the survey team is a crucial link within the supply chain. Without accurate positioning and accurate measurements of the starting levels and production volumes, the vessels would sail blindly and it would be impossible to determine whether we would be able to achieve the target levels, within the pre-set deadlines. "I personally find this the best job there is", says Vicky Gelaude, Project Survey Manager for the project in Linkou.

"The most hectic period is the start-up phase. We set up a base station with our own GPS system to enable us to accurately measure everything down to the last centimetre. We double-check all fixed coordinates passed on by the client. This determines the position of our vessels. This first step is absolutely essential. We also install a tide station, which transmits the water levels in real time to the vessels, and fully equip our survey vessel, connecting our measuring devices ourselves. Sometimes, you can even see us soldering the wires. All this makes it a very varied job."

A major challenge in Linkou is the different types of soil. "Our data determine how deep the cutter and suction hopper dredgers must go to realise the contractually established delivery target. But in Linkou, we had to consider the fact that the soil is raised compared to the pre-determined starting level because we first have to cut it loose with the cutter dredger. As a result, the production levels are continuously changing in the course of the dredging process, which makes it even more important for us to monitor and measure everything very intensively and accurately. Checking and double-checking the results is crucial in this project."





FIELD OF ACTIVITY

Civil

LOCATION

Hinterland of Port of Zeebrugge (Belgium).

CLIENT

Flemish Government, represented by the Roads and Traffic Agency.

ASSIGNMENT

The A11 highway between Bruges and Westkapelle, a missing link that will improve the connection between the Port of Zeebrugge and its hinterland. The A11 is the biggest DBFM-project in Flanders to date.

NOTABLE

Jan De Nul set itself very high standards. The company chose to go for innovative solutions that represented a greater construction challenge, with the results being more sustainable in the longer term.

12

kilometres of highway

71

engineering structures

423

million euro (exclusive of VAT) - construction budget

400

employees on an average working day

670


meter long - bridge deck, the longest span without joints

A11

Together with its partners, Jan De Nul built an impressive highway between Bruges and Westkapelle, finishing early and well within budget. During the opening ceremony in August 2017, the mayor of Knokke congratulated us for our “top-notch craftsmanship”.



Nature and architecture are reconciled in the A11, with respect for the magnificent polder environment.



A constructional pièce-de-résistance

Back in 2011, Jan De Nul, as frontrunner of the project company that realised the A11, did everything in its power to win the contract for this project. The innovative character of the engineering structures, the aestheticism and fully-fledged integration with the surrounding landscape, convinced the tendering Flemish administration to award the construction of the highway to Jan De Nul and its partners.

CIVIL

From original tender submission in 2011 up to final acceptance in mid-2017, and for the next thirty years, Jan De Nul can no doubt claim its pioneering role in the A11 project. Bart Callens, PPS Manager: "In 2011, we played a steering role in drawing up the perfect tender in cooperation with our partners. We coordinated all works, guided the studies and consulted with architects and landscape architects. At our request, every partner pulled out all the stops to develop the best possible solution for the tendered works, which, in turn, created extra construction challenges for us. This led to a particularly interesting interaction between the partners, which continuously stimulated one another to come up with even better solutions. As such, this mega-project rightly bears the quality label *engineered by Jan De Nul*."

“Jan De Nul played a pioneering role in each phase of this magnificent project.”

Bart Callens
PPS Manager



New sensitivities for engineers

Seventy one engineering structures. This is, essentially, how Jan De Nul describes the A11 project. This sounds plausible as these engineering structures (bridges, tunnels, viaducts ...) are the heart, soul and backbone of Flanders' newest highway. The solutions suggested by Jan De Nul went a lot further than the requirements set by the administration: "Obviously, that's something you might expect from us when it comes to the engineering part of the project. But we also considered the landscape and the needs of local residents. These are new sensitivities for engineers. Today, the increasing involvement of society in this kind of mega-projects plays an important

part. The fact that we anticipated these sensitive aspects and offered practical solutions, is no doubt one of the reasons why the Flemish administration awarded this project to us", confirms Bart Callens.

"Mind you, the decision to go for innovative techniques was not only taken out of conviction but also had economic motives", adds Operations Manager Civil Works Geert Versweyveld (responsible for the actual construction project). "Our approach will drastically reduce the maintenance costs as well as the nuisance to road users and local residents during construction. For the contract period of 30 years, customary in DBFM-projects, and beyond, simpler and smarter constructions



Operations Manager Civil Works Geert Versweyveld, PPS Manager Bart Callens and Senior Project Manager Civil Works Koen Van Regenmortel.

warrants less and more cost effective maintenance. The paradox here is that simple constructions can be extremely difficult to make, but that's something we at Jan De Nul are very good at!"

Bridges, tunnels and viaducts

Seen from the air, the whole trajectory of the A11 – from the industrial estate 'Blauwe Toren' near Bruges to Westkapelle – looks particularly impressive. Bridges, entry roads and exits and roundabouts form joint interchanges at several points of the track. Often, the engineering structures are not situated at ground level but have been raised or buried.

"The main reason for this is environmental, as we wanted to avoid to the maximum extent possible that the A11 would not stand out as an obstacle in the beautiful polder environment", says Senior Project Manager Civil Works Koen Van Regenmortel, who was responsible for the engineering structures of this mega-project. "We wanted to safeguard the lines of sight, ensure that neighbouring meadows get sufficient light and protect the local fauna. We also had to bridge quite a few waterways and main roads. And, obviously, the 15 kilometres of bicycle tracks that we created also had to cross the highway at frequent intervals. All this led to a considerable number of passages, with the viaduct at the Baudouin Canal being our most striking feature."

“In practise, we can detect no real differences between the plans and reality, that’s a feather in the hat of all employees and partners that were involved.”

Geert Versweyveld
Operations Manager Civil Works

“We also found it important to protect the visitors and residents of neighbouring polder villages from noise disturbance. It is for this reason that the A11 goes underground in places, and includes a one and a half kilometre tunnel near Westkapelle, plus noise barriers wherever they were needed, particularly along the viaduct.”

Project bonds

Long before there was any mention of the engineering structures, the financing plan already showed our sense of innovation. The A11 is a public private partnership or PPP-project. Public partner Via-Invest and private partner Via Bruges each contributed 80 million euro and these funds were combined with project bonds to the amount of 578 million euro. Bart Callens: “We worked with project bonds, which we placed with institutional investors. The bonds benefited from the Project Bond Credit Enhancement guarantee scheme of the European Investment Bank. This guarantee scheme is a European initiative set up to support the realisation of large infrastructure projects.”

A feather in everyone’s hat

Also after the opening of the A11 in September 2017, Bart Callens still likes to look back on this project, particularly on the moment

at which Jan De Nul Group got the go-ahead from the Flemish Roads and Traffic Agency. “Much to the astonishment of some that still don’t know Jan De Nul Group as a company specialising in civil engineering contracts. Marks were awarded on the basis of cost and engineering quality, in equal proportions. We focused quite strongly on ‘engineering quality’ and this was probably the decisive factor to award the project to us. Apart from the choice for an integral and thus maintenance-friendly design, there was also the added value in terms of architectural and scenic quality to consider. And, finally, the sustainability aspect. Did you know that soon a wind turbine will cover most of the electricity consumption? In the near future, the lighting along the A11 will be powered by wind energy. How’s that for a beautiful symbiotic relationship with the wonderful polder landscape?”

In spite of the enormous scope of the A11 project, the local reactions were remarkably positive. “Thanks to early comprehensive consultations, this project was supported from the very beginning by the many parties involved. Coastal and polder municipalities, the city of Bruges and the Flemish Government entered into an agreement and thus helped to lay the foundations for a project trajectory without notable objections. The works were executed within the pre-set budget and timing. A series of measures were taken to minimise unavoidable disruption, not only during the construction works but also later



The viaduct over the Baudouin Canal has a total length of 670 metres and, as such, is unique in Europe.



on. This makes a project more expensive, but also more valuable, and it automatically creates broad support.”

“The best thing is that we can look back with pride”, adds Geert Versweyveld. “In practise, we can detect no real differences between the plans and reality, that’s a feather in the hat of all employees and partners that were involved. Engineers, engineering offices,

architects, office employees and the workers that ensured the execution all gave it their best for six consecutive years. An overall technical masterpiece that has set a new standard in Flanders, and quite rightly so.”



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FIELD OF ACTIVITY

Offshore

LOCATION

North Sea, 47 km
off the Belgian coast.

CLIENT

Nobelwind, a special purpose
company of Parkwind and
others.

ASSIGNMENT

Design, construction and
installation of 51 foundations
and 50 wind turbines.

NOTABLE

The first project with
the new vessel *Vole au vent*.

51

foundations

50

wind turbines

186,000

families supplied
with green electricity

NOBEL WIND

The first project of Jan De Nul with the *Vole au vent*, a jack-up vessel intended for offshore lifting operations and installations.

Along with the wind

With the purchase of the *Vole au vent*, Jan De Nul confirmed its position in the offshore wind market. The vessel embarked on its first major mission under the umbrella of Jan De Nul in 2016: the installation of 50 offshore wind turbine foundations with accompanying wind turbines, and the installation of the offshore substation foundation. The design, construction and assembly were part of Jan De Nul's contract: a comprehensive project with major challenges.

OFFSHORE

"We landed the project at the end of 2015 and started right away because there was little time. We were responsible for most of the sub-contractors within the project. From the very start of the project, we consulted closely with them and followed up their progress", says Operations Manager Offshore Koen Marchand.

The job of the *Vole au vent* was two-fold: the installation of the foundations and of the wind turbines. The steel foundations consist of two parts: a monopile (MP), which is piled into the seabed, and a transition piece (TP) on top of the monopile that makes the connection with the turbine. In all, there were 51 foundations: 50 for the wind turbines and one as the base platform for a transformer station. The client was Nobelwind, a project company of Parkwind, an affiliate of Colruyt, the main shareholder and developer. The wind turbines have





The *Vole au vent* is an offshore installation vessel and can transform into a stable platform at sea by means of jacking on its four spuds.



Wind turbine blades are loaded onto the *Vole au vent* in Esbjerg, Denmark.

been installed on a sandbank, the Bligh Bank, and are part of the Belwind wind farm.

“We sent our own people to the steel construction companies to keep an eye on progress and inspect the execution and the quality”, says Koen. At the same time, Jan De Nul’s project team worked out the installation methods and the equipment of the *Vole au vent* and bought all the necessary equipment for the installation of the wind farm. During the entire campaign, the port of Ostend served as operating base and marshalling port.

From vessel to solid platform

The *Vole au vent* is a jack-up offshore installation vessel that can transform into a stable platform at sea. “We lower the four legs, allowing the vessel to lift itself out of the water, a process also known as jacking”, says Senior Technical Superintendent Vessel Maintenance Kris Van Limbergen. The place where the vessel is jacked is always

“This is Jan De Nul: we tackle the works in earnest, whatever the novelty for us, we turn them into a success story.”

Koen Marchand
Operations Manager
Offshore



determined in advance because the sea bed must be strong enough. “For each project, we completely renovate the vessel. Each time, we start from an empty deck and install all the equipment and all parts. For Nobelwind, we were able to take four complete foundations on board for each trip, i.e. four monopiles and four transition pieces.”

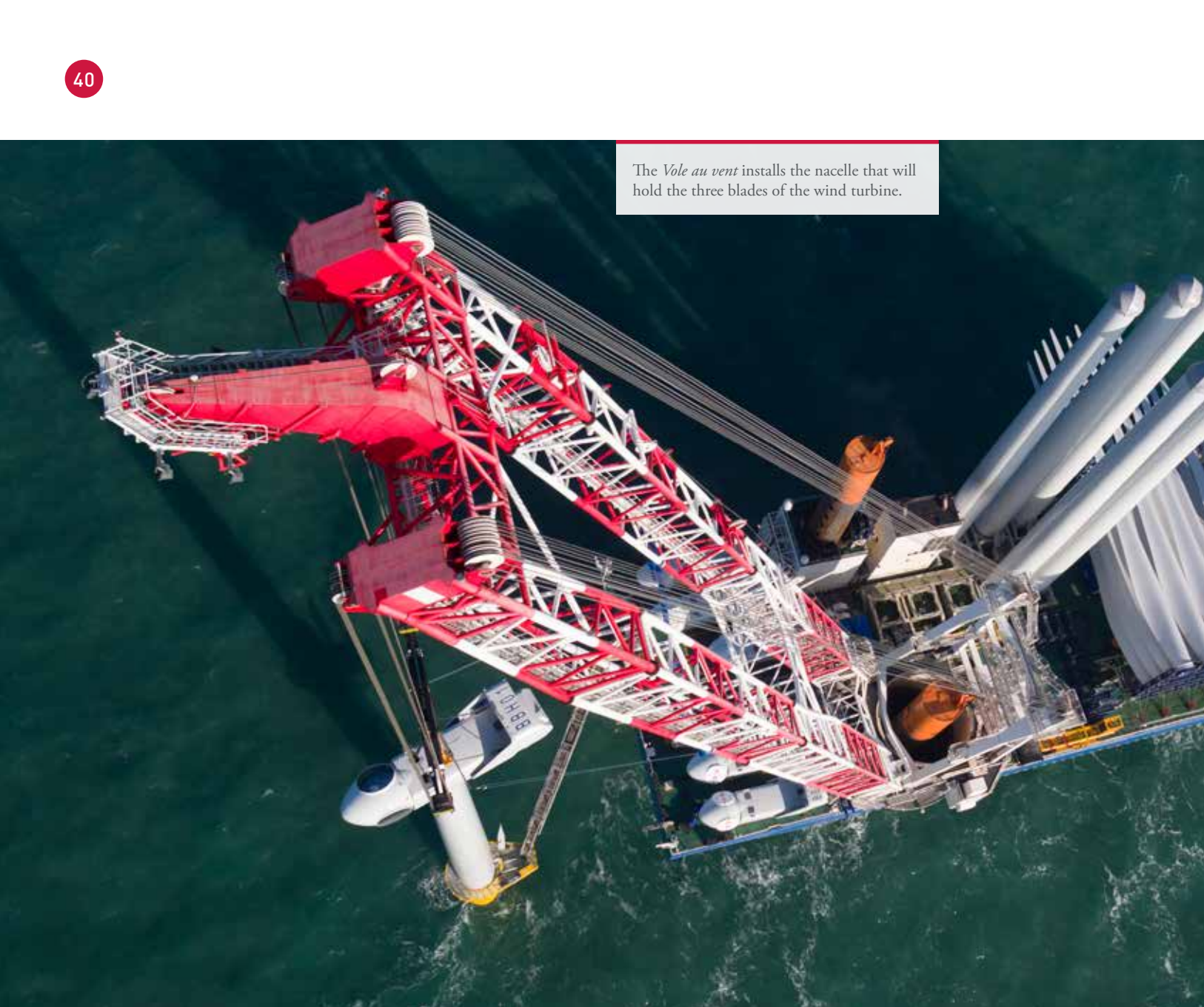
The installation works started in May 2016. The monopiles are up to 80 metres long and have a five-metre diameter. They are firmly piled into the seabed and come out a few metres above sea level. On the seabed, each monopile is surrounded by rocks that were placed there earlier by the fall pipe vessel *Simon Stevin* to counter erosion from the sea bottom caused by sea currents. Koen Marchand: “We used the large crane of the *Vole au vent* to lift each monopile and place it vertically on the seabed. Then we piled the monopile through the sea bed with a large hydraulic hammer. It is of course crucial that the pile stands perfectly vertical, otherwise the wind turbine wouldn’t be vertical, its efficiency would decrease, and the structure

would have to bear a higher load than allowed. We passed this challenge with flying colours, achieving a vertical accuracy of 0.1 degree!”

The transition piece was then attached on top of the monopile using 84 bolts of 25 kilos each. “The transition piece and the monopile had to be perfectly aligned because there is less than one millimetre of clearance on the bolt holes.” Afterwards, the vessel lowered itself back into the water, and sailed on to the next installation position.

Installation

October 2016 was the start of Jan De Nul’s second campaign: the installation of the wind turbines themselves. First, the deck of the *Vole au vent* underwent a complete transformation at the shipyard in Vlissingen. “We first removed 450 tonnes of steel sea fastenings and structures and built a new 350-tonne structure to accommodate the wind turbines on board”, says Koen.



The *Vole au vent* installs the nacelle that will hold the three blades of the wind turbine.

The installation of the wind turbines on top of the transition pieces was taken care of by the Danish manufacturer MHI Vestas itself, which entailed strict agreements, says Offshore Installation Manager Rick Van Hellemond. "The time on the vessel was divided between our activities and those of MHI Vestas. We delivered the vessel with everything that goes with it: the equipment, the crane and the crew. Then, the team of MHI Vestas came on board to install the turbines."

Challenge

With all wind turbines installed by early April 2017, a final coating campaign followed during which any damaged paintwork was touched up. The project was fully completed and commis-

sioned in October 2017. "I am very proud of this project", says Koen Marchand. "This was the first major project for our new vessel. Thanks to good preparation, our confidence and experience to manage big projects and also thanks to the excellent cooperation with our client and subcontractors, the project was completed within time, in full compliance with the contractual requirements. It was quite a challenge but we succeeded in bringing it to a perfect end. This project summarises exactly what we stand for: we approach the works thoroughly and however new the challenge might be for us, we manage successful completion."



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Only one chance

Precision is very important in offshore projects. During foundation installation the site survey and everything that has to do with measuring techniques, is crucial. “You only have one chance”, says Senior Area Survey Manager Bert Declerck. “If the pile is in the ground and you start tapping it in, you can still adjust during the first five to ten metres, but after that, it’s too late. Then the pile stands and you cannot take it out or straighten it, it must be right from the very first try.”

The survey team used a combination of different techniques. The depth was determined by a multibeam, which uses a technique based on acoustics. The surveyor sends out sound waves that get reflected on the seabed and are caught again. “We also mapped out the seabed with a side-scan sonar, which produces a sort of photographic scan of the seabed and using magnetometers, that measure the magnetic intensity, we checked for the presence of metal objects.”

Stable surface

In the first phase of Nobelwind, a gravel bed was created for each wind turbine. “We first delivered a gravel bed to an accuracy of 20 centimetres high. Then came the foundations themselves, which we had followed from the manufacturing stage to make sure they were manufactured correctly and that they met all tolerances, for e.g. making sure the bolt holes matched.”

“Once the vessel stood on its feet out of the water, the first pile was placed. We measured where the pile was and checked whether it was standing vertically.” Once the pile was in the right place, a hammer tapped the pile into the ground. “Onto that hammer, we attached reflectors, which basically are a kind of mirrors, to allow us to closely monitor the hammer and we used lasers to check that the hammer had not damaged anything.”

The Nobelwind project comprised 50 turbines, all installed within the required tolerances. “This project had a very steep learning curve and all the teams became finely tuned with each other as the techniques were improved and refined throughout the installation process. Another useful set of experiences that we take with us to a next project!”

FIELD OF ACTIVITY

Environment / Dredging

LOCATION

Oskarshamn, Sweden,
a port town located between
Malmö and Stockholm.

CLIENT

The local administration
of Oskarshamn.

ASSIGNMENT

Remediation of contaminated
harbour basin.

NOTABLE

The entire treatment
plant was built in only
six months' time.

500,000

m² of seabed

400,000

m³ of sludge dredged

OSKARS HAMN

The contaminated seabed in the port of Oskarshamn was dredged and dewatered in a plant designed by Jan De Nul.

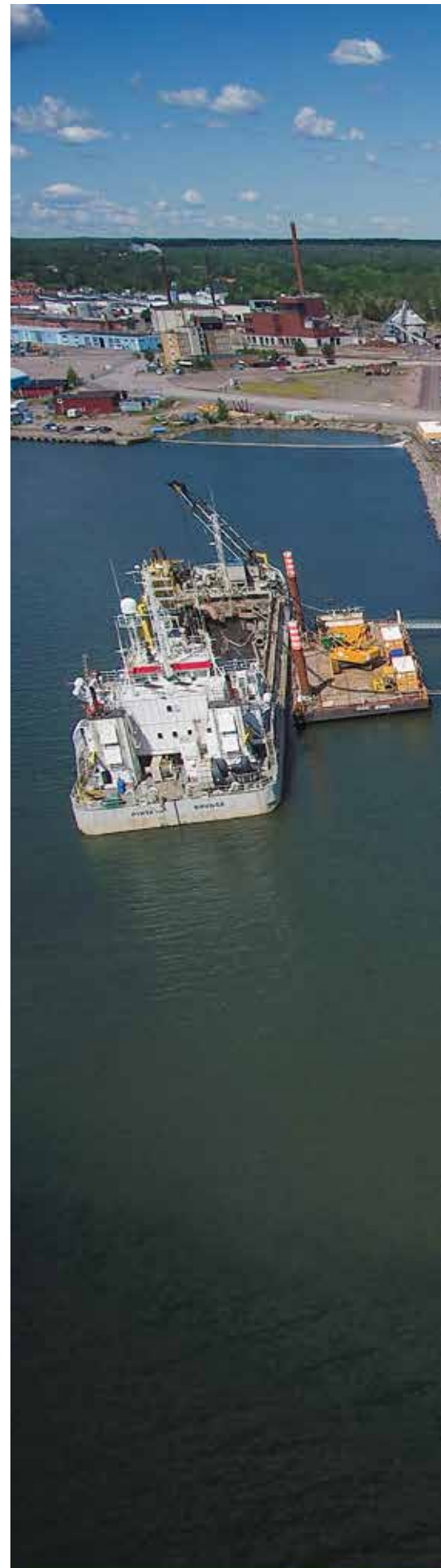
The largest publically financed environmental project ever executed in Sweden.

Envisan focuses on **environmental dredging**

Oskarshamn is a Swedish port city with a rich industrial history. In the past, a copper production site and battery factory discharged their contaminated waste water into the sea, resulting in the whole harbour basin becoming contaminated with heavy metals, PCB and dioxins. As shipping continues to sail into and out of the port, the polluted sediments were regularly dispersed over the Baltic Sea. Envisan has been entrusted with the remediation work to help clean up the port of Oskarshamn sediments, in what is currently the biggest environmental project ever executed in Sweden.

ENVIRONMENT**DREDGING**

In March 2016, Envisan started with the construction of the sediment dewatering and water treatment plant in the port of Oskarshamn. The plant was designed entirely in-house. Project Manager Environmental Works Sofie Herman was involved in the project from the start: "There was absolutely nothing here, just the port and a large asphalt site that we could use. We brought all components with us and set up the plant on site, from filter presses and thickeners to all pipes, scaffolding and steel structures." The purpose of the whole operation is to decontaminate the seabed in the harbour basin, a surface of 500,000 square metres.





The installation was designed and built in six months.

Fika time

Swedes like their coffee, to say the least. Every day at 9 am, everything is paused for fika time: sitting together with a cup of coffee and a biscuit to catch up.

Sofie Herman with a smile: “A bomb may explode, Swedes will hold on to their fika time. Swedes have a different mentality than Belgian people. They really love this pleasant coffee moment, whereas we Belgians would take our time to finish a job first, they choose to enjoy that moment together. Also during meetings with the client, there is always a coffee break. As our plant works round the clock, it is of course not always possible to enjoy a cup of coffee all together. But we do try to have a real fika moment once a week.”

The Belgian colleagues of Jan De Nul also notice another working culture among Swedes. Kristien Veys: “You cannot really rush a Swede or make him nervous. What cannot be done today, will be done tomorrow. Sometimes, this may be a bit frustrating, we can also learn something from it though. Swedes always remain much calmer.”

Meanwhile, Sofie Herman and Kristien Veys do speak some Swedish. Sofie: “I know a few sentences and the technical terms. Still, most communication takes place in English.” Last year, Ricardo João Almeida was still working in Panama, the biggest difference to him is the temperature. “This has a major impact on the daily life of people: they stay much more inside in their own homes when it’s cold, there are only few people in pubs and restaurants. You can walk here on the street and be almost on your own. But it is a very pleasant country with nice people.”



Sofie runs this project together with Project Engineer Environmental Works Kristien Veys. “We are a tandem team, complementing one another perfectly. Sofie maintains client and office colleague contact, monitors the financial data and takes the fundamental decisions. I, on the other hand, deal with the practical side of the project and act as the link between vessel and shore”, says Kristien. For Envisan, this is the biggest project during the last five years.

From sediment to cake

The *Petrus Plancius* has been converted into an environmental dredging vessel; the drag-head of the dredger was equipped with valves to remove the layers of contaminated sediments. For the areas with a lot of debris on the seabed, including stones, the trailing suction hopper dredger *Pinta* was deployed, which has a higher loading capacity and a bigger pump to pump the sediments into the treatment plant.

Sofie Herman: “The *Pinta* pumps the dredged sediments into the plant, where initially the sediments are screened so as to separate out all coarser material. Subsequently, the sediments are transferred to thickeners which, through a settling process, makes the first separation between water and sediments. The water is pumped to the water treatment plant, and the sediments onto a silo for conditioning and further dewatering. In the silo, we add a lime suspension to accelerate the dewatering



Project Engineer Environmental Works Kristien Veys and Project Manager Environmental Works Sofie Herman.

“This project was a precious learning experience and gave our team a lot of confidence.”

Sofie Herman

Project Manager Environmental Works

process. The final step in the dewatering process is executed in filter presses, where the remaining water is physically pressed out of the sediments, leaving behind a hard cake. These cakes are then discharged to a licensed land-fill.” The filtrate water from the filter presses is decontaminated and then partly re-used in the plant as process water, partly discharged into the sea after a quality inspection.

Coordination

For the first time, the environment division has used a dredger such as *Pinta*. Effective coordination between onshore and offshore is of crucial importance in this project. Ricardo João Almeida and Olivier De Lange are the Onshore and Offshore Superintendents Dredging Works. “Olivier informs me which dredged material we may expect so that we can prepare our plant to receive it”, explains Ricardo. And Olivier adds: “And the other way round, Ricardo informs me when maintenance works are needed or if there is some problem or other with the plant so that we know we have to stop dredging for a while.” At the same time, this is not a typical project for the dredging division. Again Olivier: “As the dewatering plant has been designed for processing 1,000 m³ of sediments per day, we can only dredge for around one hour per twelve-hour shift, which is totally different to a conventional dredging project, during which we dredge round the clock.”

Aiming at 100%

The maintenance of the plant is a huge challenge for the team as the plant operates on a 24/7 basis. Site Superintendent Environmental Works Stijn Van Poucke explains: “This plant has been especially built for this project, which inevitably brings about some teething problems. Our priority is keeping the plant 100% operational. This is not at all obvious, you always have parts that break down, come to a standstill, or need servicing. You can leave a perfectly running plant in the evening and come back in the morning and detect that the plant has come to a complete standstill.”

Winter break

The project started in 2016 and will be completed in 2018. This long programme has everything to do with the winter in Sweden. Kristien Veys: “In November, it already starts freezing. When the dredger supplies the last sediments, these must still be processed onshore. Afterwards, we make everything ready for winter: shielding, insulating, making it waterproof and a technical inspection.” In 2017, Jan De Nul Group dredged until mid-November. The plant was re-started in April 2018.



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6,546

workers

773

locally recruited
workers worldwide

+400

new employees for offices
and projects worldwide

75

nationalities

WHO WE ARE

With more than 6500 people in 45 countries, together we are sustainable and innovative, FIT, ITA as well as experienced and creative.



Corporate social responsibility

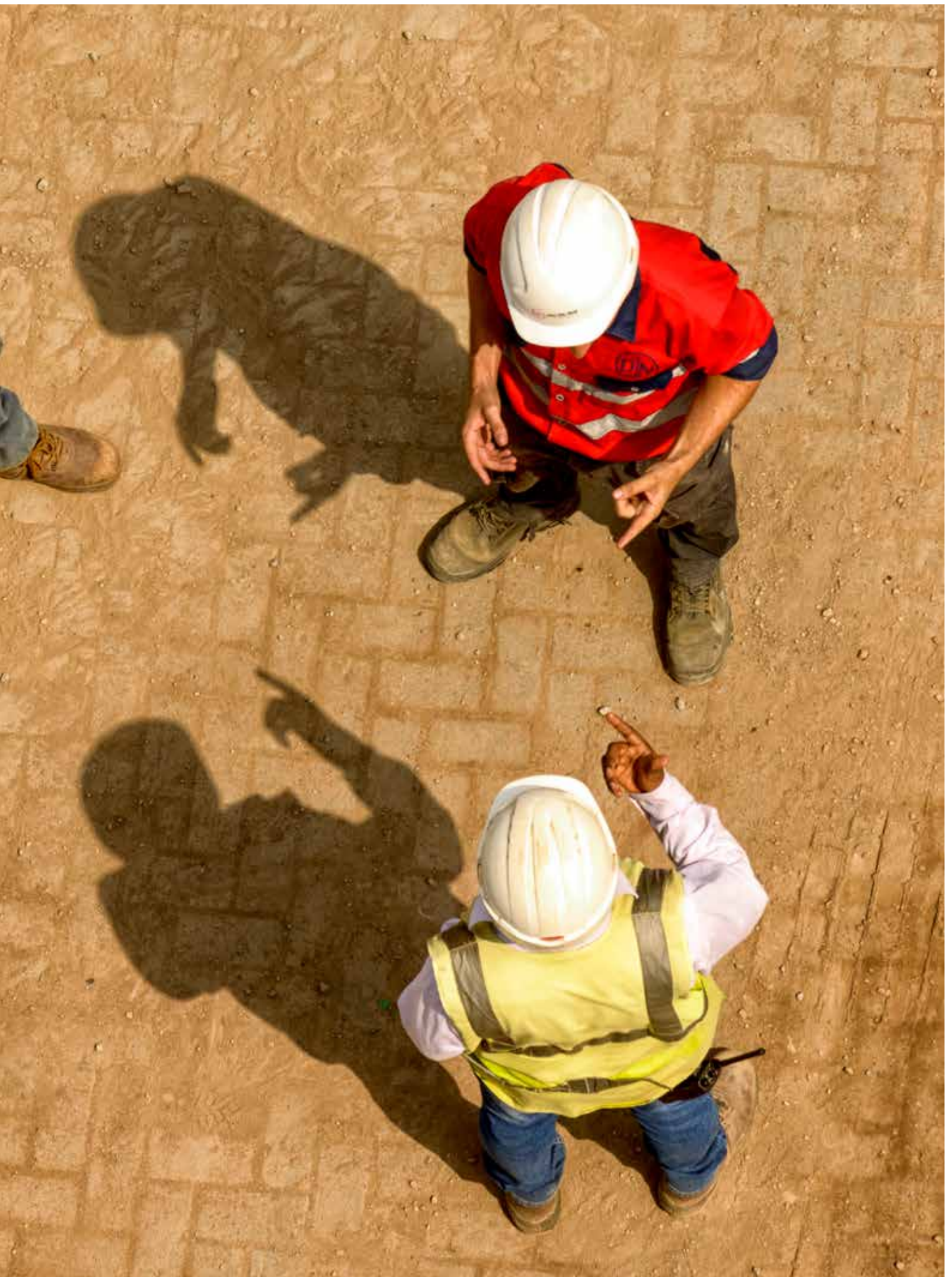
Jan De Nul Group stands for innovation and new technologies, without losing sight of sustainability, corporate social responsibility and safety. The group goes beyond the obligations and needs specific to its sectors and takes up its social responsibility by investing in human capital, environmental protection and relationships with others. In our activities, we always have the future in mind and we always deliver high quality and prosperity, with respect for people and the planet. Acting and managing ethically and sustainably is a starting point for us, or even rather: a condition.

Sustainable management or management with a human face means on the one hand resolutely and continuously investing in our own human capital and knowledge. On the other hand, we ensure that the relationships with our partners, suppliers, subcontractors and customers are sustainable. We are also more than aware of the importance of sustainable relationships with society, the living environment and the people populating it. Mutual respect is a condition. Jan De Nul Group is pleased to share materials and logistics forces along with its knowledge and work ethic with local communities.

As a global player, we are more than aware of our impact on our planet. That is exactly why we are constantly trying to separate our environmental footprint from our growth: a precarious exercise that we perform on a daily basis in our projects and techniques. We create valuable sustainable solutions to do more, with fewer resources. Or even better: to create infinite chances in a finite world. We strive to limit pollution and waste, reduce our energy consumption and protect biodiversity. Moreover, the group also resolutely plays the card of circular economy and brownfield development.

In short: for Jan De Nul Group, sustainability is more than just a nice adjective that does an excellent job between innovative and ground-breaking!

For more information about our sustainable initiatives we like to refer to our biennial CSR-report.



Jan De Nul Group invests in its largest capital asset, its people.

After years of ad hoc sporting initiatives, a much more comprehensive internal programme was set up in early 2017: FIT. Food, In balance and Training & sports.

Healthier eating is being promoted at the office, on board and at the construction sites. From a salad bar and fruit at the office, to chefs on the ships who make every effort to spoil crew and staff with culinary treats, right through to participating together in Days Without Meat. It was just a start, but a delicious start.

What also contributes positively to health, for both the employees and the company is the work- life balance, the personal balance. Work pressure, burnout, stress, you name it. It is inseparably linked to these hectic times. Jan De Nul Group is convinced that a good work-life balance bring tangible benefits to both the company and the individual. Recent satisfaction surveys has gauged the extent to which that balance is experienced by employees and in 2018 we will start working with the results. At the end of 2017, several successful yoga initiations were held at the office and during 2018 we will organize yoga classes twice a week at the office. Namaste.

Enjoying sport together with colleagues had been a Jan De Nul habit for many years. However, with the FIT programme, it all became a tad more official. Dressed in a fluorescent yellow FIT shirt, colleagues started to run together, and within a few weeks they were running five kilometres. For many, it did not stop there but remained a nice habit during lunch-break. The *Drakenbootrace* in Antwerp, an inclusive Pentathlon in Gooik, the *Baggerzeilweekend*, Climbing for Life, the SmartRun in Luxembourg, a triathlon in Bruges, etc. This is just a selection from a varied range of activities that our FIT colleagues took part in together. How is that for teambuilding?









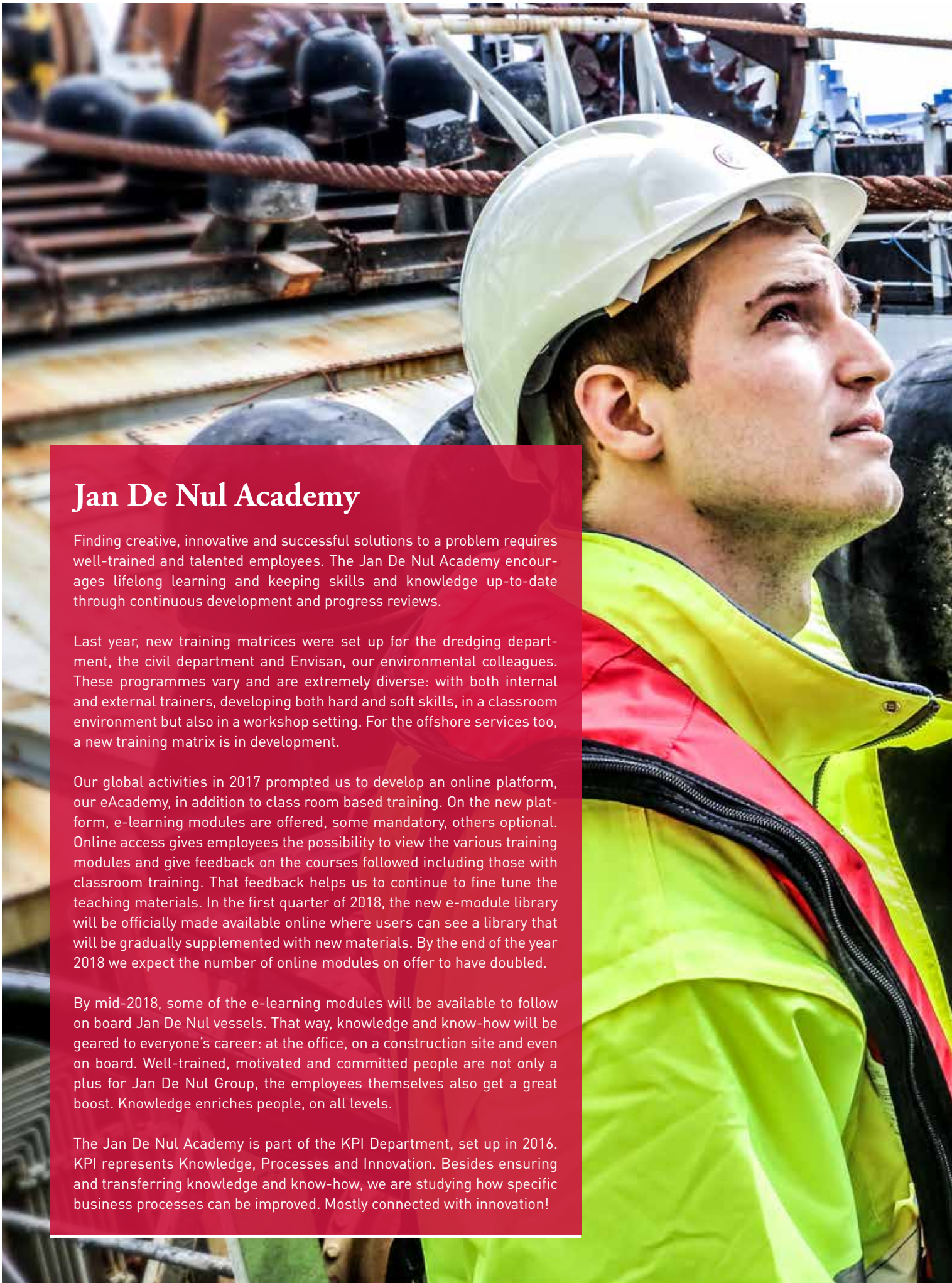
ITA. Imagine. Think. Act.

Since the campaign launch during late 2015, the ITA levels in the blood of everyone in the Jan De Nul Group has increased considerably. 2017 was no different.

Under the impetus of a motivated management, which signed the ITA charter in early 2017, ITA was rolled out on the ships and the construction sites. We did not have to wait long for positive feedback. On the contrary, the ITA Ambassador Workshop is eagerly attended. ITA ambassadors live, work and breathe ITA! ITA helps us focus on having full control over what we do and on better communication on various – sometimes critical – operations. Worldwide, following important consultations with staff, a Critical Operations Pocket manual was successfully distributed and discussed with staff.

Operational control means that we have a plan to deal with risks and that we have clear leadership and the required sense of responsibility to implement ITA. Stop and Rethink, at all stages of implementation. This assessment and questioning, provided a simple solution, that earned Jan De Nul Group an *IADC Safety Award* in 2017 for the optimization of moving and transporting dredging pipes.

ITA lives in all layers of our organization: from the worker on the construction site to the executive team. Everyone imagines, rethinks and acts, alone and as part of one team and one plan! ITA is more than just an abbreviation that sounds catchy, it is a way of working that should be adopted by everyone, both individually and in team. It should be a reflex. That is exactly why we will continue to share the ITA message even more in 2018. Initiatives such as a poster campaign and a new ITA website are on their way. Moving forward, ITA will continue to innovate and achieve more excellent results, and build on the success to date.



Jan De Nul Academy

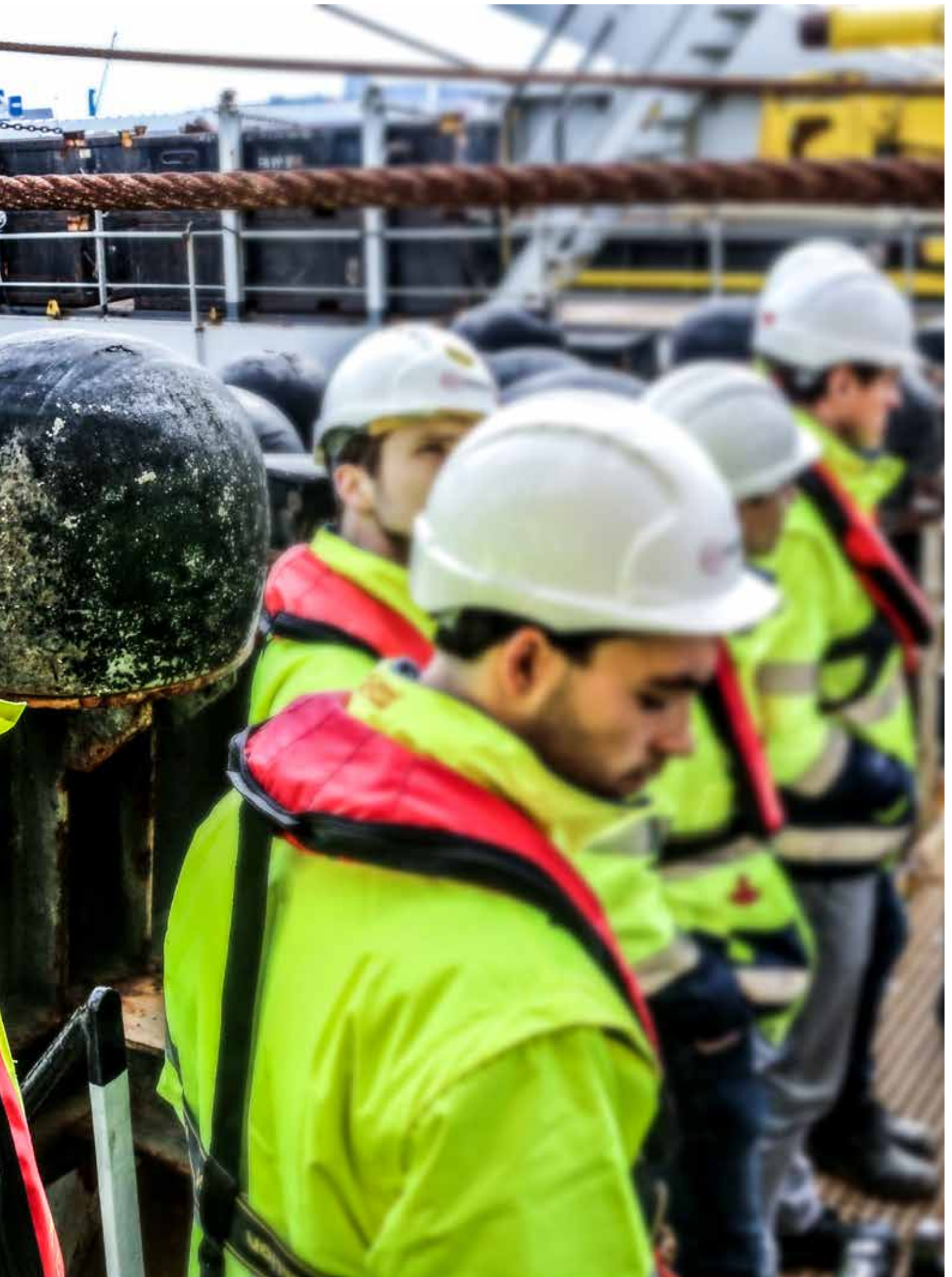
Finding creative, innovative and successful solutions to a problem requires well-trained and talented employees. The Jan De Nul Academy encourages lifelong learning and keeping skills and knowledge up-to-date through continuous development and progress reviews.

Last year, new training matrices were set up for the dredging department, the civil department and Envisan, our environmental colleagues. These programmes vary and are extremely diverse: with both internal and external trainers, developing both hard and soft skills, in a classroom environment but also in a workshop setting. For the offshore services too, a new training matrix is in development.

Our global activities in 2017 prompted us to develop an online platform, our eAcademy, in addition to class room based training. On the new platform, e-learning modules are offered, some mandatory, others optional. Online access gives employees the possibility to view the various training modules and give feedback on the courses followed including those with classroom training. That feedback helps us to continue to fine tune the teaching materials. In the first quarter of 2018, the new e-module library will be officially made available online where users can see a library that will be gradually supplemented with new materials. By the end of the year 2018 we expect the number of online modules on offer to have doubled.

By mid-2018, some of the e-learning modules will be available to follow on board Jan De Nul vessels. That way, knowledge and know-how will be geared to everyone's career: at the office, on a construction site and even on board. Well-trained, motivated and committed people are not only a plus for Jan De Nul Group, the employees themselves also get a great boost. Knowledge enriches people, on all levels.

The Jan De Nul Academy is part of the KPI Department, set up in 2016. KPI represents Knowledge, Processes and Innovation. Besides ensuring and transferring knowledge and know-how, we are studying how specific business processes can be improved. Mostly connected with innovation!



CONTACT

BELGIUM

Jan De Nul NV
 Tragel 60
 9308 Hofstade-Aalst, Belgium
T Nat. Divisie: +32 53 73 15 11
 Int. Divisie: +32 53 73 17 11
F +32 53 78 17 60
 +32 53 77 28 55
 info@jandenu.com

LUXEMBOURG

Dredging and Maritime Management SA
 34-36, Parc d'Activités Capellen
 8308 Capellen | Luxembourg
T +352 39 89 11
F +352 39 96 43
 info@dmmlux.com

MAURITIUS

Jan De Nul Dredging Ltd.
 Suite 308, St James Court
 St. Denis Street, Port Louis | Republic of Mauritius
T +230 210 69 97
F +230 210 66 61
 mauritius.office@jandenu.com

ARGENTINA

Hidrovia SA
 Corrientes 316, Piso 2
 (C1043AAQ) Buenos Aires | Argentina
T +54 11 43 20 69 00
F +54 11 43 20 69 11
 argentina.office@jandenu.com
 dragado@hidrovia-sa.com.ar

AUSTRALIA

Jan De Nul Australia Pty. Ltd.
 Level 3, 9 Colin Street,
 West Perth, WA 6005 | Australia
T +61 8 9226 1882
F +61 8 9481 5922
 australia.office@jandenu.com

BRAZIL

Jan De Nul do Brasil Dragagem Ltda.
 Av. das Américas, 3500
 Edifício Londres, Bloco 1, Salas 515 e 516
 22640-102 Barra da Tijuca
 Rio de Janeiro - RJ | Brazil
T +55 21 2025 18 50
F +55 21 2025 18 70
 brasil.office@jandenu.com

FRANCE

Sodraco International SAS
 28, rue de Dunkerque, Lot A03, rez-de-chaussée
 59280 Armentières | France
T +33 3 20 18 82 70
F +33 3 20 46 49 07
 info@sodraco.com

GERMANY

Jan De Nul Nassbagerei und Wasserbau GmbH
 Hauptstraße 68, 28865 Lilienthal | Germany
T +49 151 216 09 431
 germany.office@jandenu.com

HONG KONG

Jan De Nul (Jan De Nul Hong Kong Branch)
 19-01 Aitken Vanson Centre
 61 Hoi Yuen Road, Kwun Tong, Kowloon | Hong Kong
T +852 2951 9567
F +852 2951 9568
 office.hongkong@jandenu.com

INDIA

Jan De Nul Dredging India Pvt. Ltd.
 Capitale, 10th Floor, 554/555 Anna Salai, Teynampet
 Chennai 600018 | India
T +91 44 2435 2350 / +91 44 4858 2350
F +91 44 2435 2351
 info@jdnindia.com

ITALY

Jan De Nul (Italia) S.p.A.
 Via Carlo Matteucci 38/F, 56124 Pisa | Italy
T +39 050 54 24 35
F +39 050 97 39 03
 italy.office@jandenu.com

MEXICO

Mexicana De Dragados SA de CV
 Paseo de las Palmas 405 – Desp. 1104
 Colonia Lomas de Chapultepec,
 Delegación Miguel Hidalgo
 C.P. 11000, México Distrito Federal | Mexico
T +52 55 53 95 59 60
F +52 55 53 95 58 75
info@mexicanadedragados.com

NETHERLANDS

Dredging and Contracting Rotterdam BV
 P.O. Box 18024, 4601 ZA Bergen op Zoom
 Zuid-Oostsingel 24H, 4611 BB Bergen op Zoom,
 Netherlands
T +31 164 26 61 44
F +31 164 26 04 54
info@dcrn.nl

NIGERIA

Dredging and Reclamation Jan De Nul Ltd.
 10th Floor, Foreshore Towers, 2a Osborne Road,
 Ikoyi, Lagos | Nigeria
T +234 817 920 9502
nigeria.office@jandenu.com

PANAMA

Jan De Nul Panama SA
 Williamson Place, Building 762, Apto./Local 2
 La Boca, Ancon Panama | Republic of Panama
T +507 314 18 59
panamacity.office@jandenu.com

PHILIPPINES

Jan De Nul NV Philippine Branch
 The Excelsior Building, Room 303
 161 Roxas Boulevard, Baclaran
 Parañaque City 1700 | Philippines
T +63 2 879 80 42
F +63 2 879 82 39
philippines.office@jandenu.com

RUSSIA

Jan De Nul NV Russian Branch
 BC "Lotte", 65, Profsoyuznaya str., bld. 1, office 704
 117342 Moscow | Russian Federation
T +7 495 280 15 51
F +7 495 280 15 85
russia.office@jandenu.com

SAUDI-ARABIA

Jan De Nul Saudi Arabia Co. Ltd.
 P.O. Box 76616, Al-Khobar-31952
 Kingdom of Saudi-Arabia
T +966 13 887 72 35
F +966 13 887 72 53
saudiarabia.office@jandenu.com

SINGAPORE

Jan De Nul (Singapore) Pte. Ltd.
 400, Orchard Road, # 18-06 Orchard Towers
 238875 Singapore
T +65 6 235 27 90
F +65 6 235 27 91
singapore.office@jandenu.com

SOUTH-AFRICA

Jan De Nul Dredging Ltd. South Africa Branch
 The Business Centre, No. 1 Bridgeway Road
 Bridgeways Precinct, Century City, 7441
 Cape Town | Zuid-Afrika
T +27 21 830 5976
southafrica.office@jandenu.com

UNITED ARAB EMIRATES

Jan De Nul Dredging Ltd. Dubai Branch
 Office 116, Sultan Business Center
 P.O.Box 28805, Bur Dubai | Dubai | U.A.E.
T +971 4 335 55 47
F +971 4 335 53 56
middle.east.office@jandenu.com
jandenu@emirates.net.ae

UNITED KINGDOM

Jan De Nul (UK) Ltd.
 Richmond House, High Street
 Ascot Berks SL5 7HG | United Kingdom
T +44 1344 627 010
F +44 1344 627 139
uk.office@jandenu.com

COLOPHON

RESPONSIBLE EDITOR

Jan De Nul Group [Sofidra SA]
Luxembourg
info@jandenulgroup.com
www.jandenul.com
annualreport.jandenul.com

SOCIAL ADDRESS

34-36, Parc d'Activités Capellen,
8308 Capellen, Luxembourg

LAY-OUT AND TEXT

Cantilis
p/a Voorhavenlaan 31/003, 9000 Gent, Belgium
hello@cantilis.be | www.cantilis.be

PHOTOGRAPHY

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For more information on this annual report, please contact:
Paul Lievens, Financial Department
paul.lievens@jandenul.com

Dit rapport is ook beschikbaar in het Nederlands.
Ce rapport est également disponible en français.
Este informe también está disponible en español.

FLEET

Trailing Suction Hopper Dredgers

CRISTÓBAL COLÓN

Hopper capacity: 46,000 m³
2009



CAPITAN NUÑEZ

Hopper capacity: 6,000 m³
1977/1998



LEIV EIRIKSSON

Hopper capacity: 46,000 m³
2010



FRANCESCO DI GIORGIO

Hopper capacity: 4,400 m³
2003



VASCO DA GAMA

Hopper capacity: 33,000 m³
2000



TACCOLA

Hopper capacity: 4,400 m³
2003



CHARLES DARWIN

Hopper capacity: 30,500 m³
2011



MANZANILLO II

Hopper capacity: 4,000 m³
1988



8700

Hopper capacity: 18,000 m³
Delivery 2020



DE BOUGAINVILLE

Hopper capacity: 3,700 m³
2006



GERARDUS MERCATOR

Hopper capacity: 18,000 m³
1997



DE LAPÉROUSE

Hopper capacity: 3,700 m³
2010



JUAN SEBASTIÁN DE ELCANO

Hopper capacity: 16,500 m³
2002



JAMES ENSOR

Hopper capacity: 3,600 m³
1980



PEDRO ÁLVARES CABRAL

Hopper capacity: 14,000 m³
2012



AFONSO DE ALBUQUERQUE

Hopper capacity: 3,500 m³
2018



BARTOLOMEU DIAS

Hopper capacity: 14,000 m³
2013



DIOGO CÃO

Hopper capacity: 3,500 m³
2018



JAMES COOK

Hopper capacity: 11,750 m³
1992



TRISTÃO DA CUNHA

Hopper capacity: 3,500 m³
2018



FILIPPO BRUNELLESCHI

Hopper capacity: 11,300 m³
2003



AMERIGO VESPUCCI

Hopper capacity: 3,500 m³
1985



FRANCIS BEAUFORT

Hopper capacity: 11,300 m³
2003



ALVAR NUÑEZ CABEÇA DE VACA

Hopper capacity: 3,400 m³
2011



ALEXANDER VON HUMBOLDT

Hopper capacity: 9,000 m³
1998



SEBASTIANO CABOTO

Hopper capacity: 3,400 m³
2011



AL-IDRISI

Hopper capacity: 7,500 m³
2012



PINTA

Hopper capacity: 3,400 m³
1997



VITUS BERING

Hopper capacity: 7,500 m³
2012



NIÑA

Hopper capacity: 3,400 m³
1997



8046

Hopper capacity: 6,000 m³
Delivery 2019



GALILEI 2000

Hopper capacity: 2,320 m³
1979



8704

Hopper capacity: 6,000 m³
Delivery 2020



Cutter Suction Dredgers

WILLEM VAN RUBROECK

Total installed diesel power: 40,975 kW
Delivery 2018



VESALIUS

Total installed diesel power: 9,260 kW
1980



J.F.J. DE NUL

Total installed diesel power: 27,240 kW
2003



KAERIUS

Total installed diesel power: 8,330 kW
2007



IBN BATTUTA

Total installed diesel power: 23,520 kW
2010



HONDIUS

Total installed diesel power: 8,330 kW
2007



ZHENG HE

Total installed diesel power: 23,520 kW
2010



ORTELIUS

Total installed diesel power: 5,140 kW
1965/1978



FERNÃO DE MAGALHÃES

Total installed diesel power: 23,520 kW
2011



DIRK MARTENS

Total installed diesel power: 2,370 kW
1972



NICCOLÒ MACHIAVELLI

Total installed diesel power: 23,520 kW
2011



PETRUS PLACIUS

Total installed diesel power: 1,300 kW
2008



LEONARDO DA VINCI

Total installed diesel power: 20,260 kW
1985



HENDRIK GEERAERT

Total installed diesel power: 350 kW
2006



MARCO POLO

Total installed diesel power: 16,115 kW
1979



Backhoe Dredgers

POSTNIK YAKOVLEV

Total installed diesel power: 3,700 kW
2009/2013



GIAN LORENZO BERNINI

Total installed diesel power: 2,150 kW
2014



MIMAR SINAN

Total installed diesel power: 3,700 kW
2008/2013



IL PRINCIPE

Total installed diesel power: 1,800 kW
2005



VITRUVIUS

Total installed diesel power: 3,700 kW
2007



JEROMMEKE

Total installed diesel power: 993 kW
1994/2012



Heavy Lift Vessels

GULLIVER

Lifting capacity: 4,000 ton
Delivery 2018



RAMBIZ

Lifting capacity: 3,300 ton
1995



Wind Turbine Installation Vessel

VOLE AU VENT

Deadweight: 8,000 ton
Lifting capacity: 1,500 ton at 21.5 m
116.6 ton at 104 m
2013



Multipurpose Vessels

JOSEPH PLATEAU

Deadweight: 36,000 ton
2013



WILLEM DE VLAMINGH

Deadweight: 6,500 ton
2011



SIMON STEVIN

Deadweight: 36,000 ton
2010



LA BOUDEUSE

Deadweight: 6,310 ton
2005



ISAAC NEWTON

Deadweight: 12,500 ton
2015



TIGER

Deadweight: 6,310 ton
2012



ADHÉMAR DE SAINT-VENANT

Deadweight: 5,950 ton
2017



POMPEÏ

Deadweight: 1,850 ton
1988



DANIEL BERNOULLI

Deadweight: 5,950 ton
2017



Split Hopper Barges

L'AIGLE

Hopper capacity: 3,700 m³
2005



TIGER

Hopper capacity: 3,700 m³
2012



LA BOUDEUSE

Hopper capacity: 3,700 m³
2005



VERRAZZANO

Hopper capacity: 2,000 m³
1979



L'ÉTOILE

Hopper capacity: 3,700 m³
2006



MAGELLANO

Hopper capacity: 2,000 m³
1979



LE GUERRIER

Hopper capacity: 3,700 m³
2007



CONCEPCIÓN

Hopper capacity: 1,800 m³
2009



LE SPHINX

Hopper capacity: 3,700 m³
2007



SANTIAGO

Hopper capacity: 1,800 m³
2010



ASTROLABE

Hopper capacity: 3,700 m³
2010



TRINIDAD

Hopper capacity: 1,800 m³
2010



BOUSSOLE

Hopper capacity: 3,700 m³
2011



VICTORIA

Hopper capacity: 1,800 m³
2010



ARENT

Hopper capacity: 3,700 m³
2011



GEELVINCK

Hopper capacity: 1,800 m³
1974



LEEuw

Hopper capacity: 3,700 m³
2012



NIJPTANGH

Hopper capacity: 1,800 m³
1974



MARQUIS DE PRIÉ

Hopper capacity: 3,700 m³
2012



WESELTJE

Hopper capacity: 1,800 m³
1974



Oil Recovery Vessel

PIETER COECKE

1992/2011

