JOSEPH PLATEAU
STONE DUMPING & MINING VESSEL
Jan De Nul Group is especially known for its dredging and reclamation activities, but also for its civil engineering works and environmental activities. The core activity of Jan De Nul Group in 2011 is still dredging and marine work. Turnover in 2011 comprised approx. 10% civil engineering, 4% environmental activities and 86% dredging work.

The group would never have taken up this position, if it wouldn’t have had the courage and vision to keep investing in new activities, in new employees, but also in new material and innovation. Thanks to the continuous investments, the company is the proud owner of the most modern and most technological dredging fleet in the world. On the principle that we better do it ourselves, these new vessels are designed by the internal department design and engineering. Moreover, Jan De Nul Group itself furnishes the dredging equipment to the shipyard, which is unique in the dredging world.

In 2011 no less than 8 new dredging vessels were in use, including 2 self-propelled rock cutter dredgers, a mega hopper dredger with a 30,500 m³ hopper capacity and a rock-dumper with a 6,000 tonnes bearing capacity. In combination with a healthy order portfolio, the turnover of Jan De Nul Group exceeded the 2 billion mark Euros. It goes without saying that Jan De Nul Group is the largest dredging company on the free market.

2012 continues this trend: four launchings, six deliveries, diversification of activities and the continuous efforts to recruit and train staff and crew. The young enthusiasm of the 6,000 skilled employees, safety at work, the ultramodern fleet and the technical expertise are the strength and the future of Jan De Nul Group. The company can execute the most ambitious projects in great detail. Whether it concerns rock installation works at the coast of Sakhalin, a dredging sediment treatment plant in the port of Antwerp or the construction of a new lock complex in the Panama Canal.
THE VESSEL ‘JOSEPH PLATEAU’

After the successful investments between 2007 and 2011, amounting to more than 2 billion Euros, Jan De Nul Group decided to add three more vessels to the fleet. Two Trailing Suction Hopper Dredgers of 14,000 m³ each are currently under construction at the Uljanik Shipyards in Croatia. They have been baptised ‘Pedro Álvares Cabral’ and ‘Bartolomeu Dias’. At La Naval in Sestao, you will be witnessing the launching of the third vessel, the Fall Pipe and Mining Vessel ‘Joseph Plateau’, a sister vessel of the ‘Simon Stevin’, launched at the same shipyard in 2009. Both vessels are the largest in its kind worldwide.

The 191 m long vessel is used for accurate rock installation to a depth of 2,000 m. The system for the deployment of the fall pipe that guides the rock to the sea bottom, operates fully automatically. At the bottom of the fall pipe, at 2,000 m depth, is an ROV (Remote Operated Vehicle) accurately corrects the position of the lower end of the fall pipe with an accuracy of 10 cm. The vessel has a loading capacity of 31,500 tonnes of stones, and is herewith the largest vessel of its kind in the world. The vessel can accommodate 84 persons.

This vessel is mostly deployed in the offshore industry where oil and gas pipes have to be installed at large depths. The ‘Simon Stevin’ can construct causeways of rock at a depth of 2,000 m in order to safely install a subsea pipeline on an uneven seabed. Also pipeline crossing are umbelled to allow crossing of pipelines and cables without contact. The fall pipe can handle boulders with a diameter up to 400 mm, which is more than any other fall pipe vessel on the market, and which is sufficient to resist the strongest subsea currents.

Jan De Nul Group decided to build a sister vessel for the ‘Simon Stevin’ in order to be able to offer rock installation services to clients worldwide. The ‘Simon Stevin’ will be mainly deployed in the eastern hemisphere, whereas the ‘Joseph Plateau’ will be working in western waters.

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**TECHNICAL DETAILS**

<table>
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<th>Total deadweight</th>
<th>36,000 tonnes</th>
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<tbody>
<tr>
<td>Length o.a.</td>
<td>191.5 m</td>
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<tr>
<td>Breadth</td>
<td>40.0 m</td>
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<tr>
<td>Draught loaded</td>
<td>9.25 m</td>
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<tr>
<td>Propulsion power</td>
<td>4 x 3,350 kW</td>
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<tr>
<td>Thruster power</td>
<td>4 x 2,000 kW</td>
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<tr>
<td>Total installed diesel power</td>
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<td>Capacity of rock storage units</td>
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<tr>
<td>Speed</td>
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<tr>
<td>Dynamic positioning</td>
<td>DYNAPOS AM/AT R Class 2</td>
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<td>Accommodation</td>
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**Fall Pipe**
- Max dumping depth: 2,000 m
- Max discharge capacity: 2,000 tonnes/h
- Fall pipe diameter: 1,000 mm
- Rock size: max 400 mm

**Helideck**
- Sikorski S92 or equivalent
WHO WAS JOSEPH PLATEAU?

Joseph Plateau (° Brussels 1801 - † Ghent 1883) graduated at the University of Liège as doctor of physical and mathematical sciences in 1829. He was appointed professor of experimental physics at Ghent University in 1835.

Plateau studied the effect of light on the retina, where an image will persist after it has been viewed. On this basis he made a device creating the illusion of continuous movement by intermittently viewing changing images. This device, the 'Phenakistoscope' was a precursor of the cinema, which is operating on the same basic principles.

He also did research on surface tension and capillarity (using soap bubbles and films as examples); the mathematical problem of calculating the minimum surface for a given boundary is called Plateau's Problem.

In Belgium, Plateau is remembered in the Joseph Plateaustraat in Ghent, where the faculty of engineering of Ghent University is located. The name will stir up memories of a significant number of the 545 engineers at Jan De Nul.

SOME ODD JOSEPH PLATEAU NEWS

Some say that Joseph Plateau became blind because he stared too long into the sun for his experiments on the effect of sunlight on the retina. But in reality, he became blind long after those experiments, most probably due to an eye disease.

Even after becoming blind, Joseph Plateau still experimented for the last 40 years of his life. Of course, he relied on those around him to help him. For example, his wife, Fanny Clavareau, read the papers and articles to him every day and helped him as his own secretary. Joseph Plateau must be admired for his ability to solve complicated analytical problems without even seeing them.
A FEW INTERESTING FACTS AND NUMBERS REGARDING THE FALL PIPE VESSEL SIMON STEVIN

- The ‘Simon Stevin’, and now also the ‘Joseph Plateau’, is the largest sailing fall pipe vessel in the world with a total deadweight of 36,000 tonnes. One vessel is enough to provide the Grand Place in Brussels for at least 20 times with new cobble stones.

- All existing fall pipe vessels are converted vessels. The Simon Stevin, on the other hand, is the first ‘purpose built’ fall pipe vessel. From day 1 the design was optimized to work at great depths.

- In order to install the rocks with great accuracy, the pipe is attached below the vessel until right above the seabed, up to a depth of 2,000 m. That is as deep as 6x the Eiffel tower. The fall pipe can be built in 6 hours and, after dumping, can be dismantled in six hours and taken on board of the vessel. To facilitate this, Jan De Nul Group designed a new installation method that is fully automated and that works independently from the vessel movements at sea. The heart of the installation, the so called ‘motion base’ was manufactured by Jan De Nul Group itself.

- The bottom of the fall pipe is operated by an unmanned submarine, Remote Operated Vehicle (ROV), that can work at depths up to 2,000 m.

- The vessel is equipped with a second ROV for survey and other interventions. This can be operated completely independently.

- The rocks are dumped at 2,000 tonnes per hour which equals 100 trucks per hour or 1 full truck every 36 seconds.

- The total engine power amounts to more than 25,000 kW, enough to provide a city of 130,000 inhabitants with electricity to do the housekeeping.

- The distance between the keel and the bridge equals the height of a church. However, a lift on the vessel makes life a lot easier.

- The accommodation on the vessel for more than 70 persons can easily compete with four star hotels. For instance, every day 35 m³ - or 3 tankers - of drinking water is produced out of seawater. The same water is being purified on board after which it can flow back into the sea.

- The vessel has its own helicopter landing platform that is suitable for most types of helicopters such as the well-known Seaking from the popular Flemish TV series and movie “Windkracht 10”.


OFFSHORE ACTIVITIES FOR THE OIL, GAS AND RENEWABLES INDUSTRIES

Specialised services for the offshore oil and gas industries are a key part of the services provided by Jan De Nul Group. These works include, among others, the dredging of shore approaches for offshore pipelines together with onshore civil works including the installation of cofferdams, tunnels and pipe pulling. Away from the shallow water dredging required for landfalls the large hopper dredgers in the fleet have been used to pre-trench and profile the seabed ready for pipeline installation and to excavate ‘Glory Holes’ in hard clays for wellhead protection at more than 135 m depth.

Jan De Nul Group is capable of placing 31,500 tonnes of rock in one load over pipelines, cables and for scour protect around offshore structures for the installation of cables and umbilicals.

Using the Jan De Nul fleet together with the shared ownership of heavy lift vessels, offshore services have been provided to the renewable energy industry including the design and installation of wind farm jackets & gravity base foundations, the ballasting and scour protection for gravity base foundations for offshore windmills, and the installation of inter array and export cables.
A FEW REFERENCES OF THE SISTER VESSEL ‘SIMON STEVIN’

Australia: Rock installation for Pluto and Reindeer pipelines
Upon delivery, the ‘Simon Stevin’ immediately sailed full speed to Australia for free span correction on the Pluto pipeline in 80 m water depth, and the construction of a pipeline crossing for the Reindeer pipeline crossing the Pluto pipeline at a depth of 130 m. This required very accurate rock placing to construct a bridge over the Pluto pipeline to allow the Reindeer pipeline to go over without touching the Pluto pipeline.

Russia: Scour protection around several platforms
After completion of the project in Australia, the ‘Simon Stevin’ sailed with a load of rock to the Russian island of Sakhalin for repair of scour protection around several offshore platforms. As the work has to be executed very close to the platform, a new inclined fall pipe has been installed on the vessel.

Northsea: Troll P12 pipeline and other Stone dumping activities
The ‘Simon Stevin’ executed the pre-lay rock berm installation for Statoil’s P12 future pipeline to the Troll platform in Norway. The works involved very accurate placing of pre-lay berms for support of the pipeline within allowable free spans. In view of the soft seabed conditions, considerable amounts of counter fill had to be installed in order to guarantee the slope stability. Over 360,000 tonnes of rock were loaded at Halsvik quarry near Bergen, and installed at 40 different locations in up to 340 m water depth within a tolerance of 10 cm. Part of the work had to be executed within 50 m of the Troll platform.

Furthermore, the stone dumping vessel ‘Simon Stevin’ has executed rock installation works in the North Sea for a series of projects, including Noordgas transport, BP, Subsea 7 and Britned. In total, more than 10 million tonnes of rock were installed.

Norway: Foundation for jack-up drilling rig
The ‘Simon Stevin’ successfully completed a large seabed gravel foundation structure in the Storebjørn field off the Norwegian coast for Det Norske Oljeselskap ASA. The foundation will support the spud cans of the 3 legs of the jack-up drilling rig Maersk Guardian during exploration drilling. The design of the foundation consists of 3 round ‘pads’ with an average diameter of 60 m, each for the spud cans of the drilling rig. The biggest challenge was finishing the final top level within 10 cm absolute vertical tolerance.

Russia, Sakhalin: installation of cables at 90 m water depth
At the east coast of the Siberian island of Sakhalin, the ‘Simon Stevin’ will install umbilicals for Gazprom at 90 m water depth. These umbilicals serve to control the gas field manifolds from land. This gas field is now a priority development for Gazprom, because of an increased demand in Japan due to the shutdown of the nuclear power plants.
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