



**Jan de Nul** group, operating worldwide is specialized in dredging and land reclamation, rock placing, trenching, rock dumping for oil and gas related offshore pipeline projects, quay walls, marine related projects, civil engineering & large-scale environmental remediation projects, with a solid reputation in turnkey projects.



Technical characteristics of the *Manzanillo II*:

Built in 1988.

- Length: 113.6 meters
- Main engines:  
2 SEMT Pielstick 8PA6 L280
- Total installed Diesel Power:  
12,140 kW
- Total diesel tanks capacity: 1 292 m<sup>3</sup>
- Hopper capacity: 4 000 m<sup>3</sup>

In May 2009, **Jan de Nul** group took stock of the greenhouse gases emissions and general state of cleanliness of the ship's engines. Right after, the fuel of the dredger was improved with the **Xbee** biotechnology to evaluate its impact. The first results were available five months later. Indeed, a second analysis of the gases indicated the following:

Difference in the gases emissions measurements in percentage

CO <sub>2</sub>	Carbon Dioxide	<b>- 5.97%</b>
CO	Carbon Monoxide	<b>-16.35%</b>
NO	Nitrogen Oxide	<b>-13.90%</b>
NO <sub>x</sub>	Nitrogen Dioxide	<b>-13.83%</b>
X Air	Excess of air during combustion	<b>10.34%</b>

The reduction of Carbon Dioxide alone represents about **200 tons** at each complete refilling of the tanks



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**Jan de Nul** is fleet composed of more than 70 units:

- ✓ 14 cutter suction dredgers;
- ✓ 26 trailing suction hopper dredgers;
- ✓ 19 split hopper barges;
- ✓ 5 backhoe dredgers;
- ✓ 4 subsea rock installation vessels;
- ✓ 2 heavy lift vessels;
- ✓ 1 oil recovery vessel;
- ✓ Several auxiliary and heavy equipments.

Engines and fuels guarantees:

▫ **Xbee** is recognized by some of the most important marine engines manufacturers.

▫ On the other hand, **Xbee** respects the European regulation EN 590 Diesel norm and CSR 500 IFO 380 norm.

