

About Dredging International.

Dredging International is a subsidiary of the Belgian DEME Group, a world leader in dredging, environmental and marine engineering projects. Its shareholders are industrial holding Ackermans & Van Haaren and Contracting Company CFE. The DEME Group has 3,500 employees (staff and crew) working on five continents. With its 80 large dredgers and some 200 pieces of auxiliary equipment, the group has one of the most advanced, best performing and diversified fleets in the world.

About Bexco.

BEXCO manufactures ropes for marine and offshore applications and is one of the leading suppliers worldwide. BEXCO is the result of the merger in 1999 between Le Lis n.v. and Vermeire nv, whose (traditional) rope making activities can be traced back to 1725. During the last 10 years BEXCO has evolved from a traditional rope making company to a high tech specialist rope maker for marine and offshore applications. The company has a staff of appr. 120 highly qualified employees. www.bexco.be

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Two kilometers of advanced rope help secure 300 MW of clean power

Dredging International uses mooring ropes made with Dyneema[®] at Belgian wind farm

It's a big, long-term job, taking place about 30 km off the coast of Zeebrugge, Belgium. When completed, the wind farm located at Thorntonbank will contain 60 Wind Turbine Generators (WTGS) with a combined capacity of 300 MW of clean power.

Each of the wind towers will be 120 meters high, positioned on flask-shaped concrete foundations that weigh 2800 tons each. These foundations will rest on the seabed at a depth of approximately 25 meters. Lead contractor on this project is DEME (Dredging, Environmental and Marine

Engineering). They are responsible for all foundation preparation and on-site construction for this massive project. One critical phase of the operation is the positioning and securing of barge vessels used to handle all the equipment, including lifting cranes. This phase is being handled by Dredging International, a subsidiary of DEME.

For this job, Dredging International, one of the four leading dredging companies in the world, chose to use mooring ropes made with Dyneema[®], instead of steelwire ropes (SWR).





The four ropes used on this project were manufactured by BEXCO (Belgium). Each 500-meter length of rope had a MBL of 199mt. These ropes were used to moor the barge with four anchors to the seabed. They are directly wound on the hydraulically operated and GPS-controlled traction winches.

Why did Dredging International chose ropes made with Dyneema®? How did these ropes perform? Read on.

Starting small in Sweden

Before the Thorntonbank job, Dredging International had previous experience working with ropes made with Dyneema®. In 2006 the company was contracted to dredge a lake in Sweden. Due to local restrictions and the size of the lake, only small boats could be used to move, position and anchor the mooring lines. SWR simply would have been too heavy for the job. They would have swamped the boats. For that operation, Dredging International called on BEXCO. The company delivered 12-strand braided ropes made with Dyneema®. Each rope was 105 meters long and had a MBL of 105 tons. For this two-month operation, the 32 mm SWR on the winches was removed and quickly replaced by 32 mm rope made with Dyneema®. The ropes performed up to all expectations. Jorne Beyen, project engineer, Applied Development at Dredging International said this about working with the ropes, “We experienced much easier rope handling and much faster rope positioning.”

Based on this positive experience in Sweden, the company also chose to switch from SWR to ropes made with Dyneema® for the Thorntonbank contract.

Faster... because they're lightweight and easy to handle
One of the biggest advantages of working with ropes made

with Dyneema® is their light weight. To illustrate, for the same strength and diameter as a SWR, a rope made with Dyneema® will have one-seventh the weight. This makes it much easier for crewmembers to handle the ropes. This enables them to work faster (a huge advantage, especially when working with short weather windows), and more efficiently. This is exactly what happened in the challenging environment of the Thorntonbank site. Jorne Beyen explains: “The exceptional properties of Dyneema® made it possible for us to reposition the ropes quicker and easier. We were able to save about 30% of the time to reposition, which comes down to four to five hours of savings per repositioning operation.”

“During such an operation,” continues Beyen, “the rope could be winched, with tension ranging from 60 to 90mt, with no issue whatsoever.”



Simply safer

Working with ropes made with Dyneema® also is much safer. One reason for this is the ropes are so much lighter. Being lightweight, they present less of a threat on board. There are simply fewer injuries related to back, arms and legs. In addition, ropes made with Dyneema® present less of a physical threat. SWR lines, for example, can fray after time, exposing sharp edges or hooks. This simply will not happen with ropes made with Dyneema®. The smooth, abrasion-resistant nature of the fiber keeps the ropes smooth for the lifetime of the rope. Jorne Beyen of Dredging International was impressed with yet another aspect of safety: “Snap back with wire rope upon failure is a constant threat on board. Ropes made with Dyneema®

- and the fact that they do not snap back - clearly contribute to improved safety on board our vessels. “Furthermore, working with ropes with Dyneema® require no grease or oil, given the smooth nature of the fiber. This helps maintain a cleaner and safer working environment on board. Of course, the value of safety on board can be measured on the balance sheet.

A good investment in many ways

Ropes made with Dyneema® can contribute to a more efficient, more profitable operation. While initially more expensive than other synthetic ropes and SWRs, the improved productivity, ease and speed of handling and safety all make these ropes well worth the investment. The saving can come from unexpected sources, too. As stated earlier, ropes with made with Dyneema® need no oil or grease, unlike other synthetic ropes and SWR. Working with ropes made with Dyneema®, therefore, eliminates the need for (expensive environmentally friendly) grease. Not to mention the cost of manpower needed to apply and clean it up. In many cases, the period needed to payback the initial investment for these advanced ropes is surprisingly short... especially when factoring in the absence of injury-related costs, as well as those costs for maintenance, repair and



replacement, typically needed for SWR and other, less durable synthetic lines. Jorne Beyen noted, “during the use of the ropes only minor abrasion could be observed. This contributes to their long life.”

Why mooring ropes made with Dyneema®?

All of crew at Dredging International who handled the mooring lines made with Dyneema® were satisfied with the performance and ease of operation.

The advantages of using mooring lines made with Dyneema® can be summed up as follows:

- Faster handling of mooring lines, especially in short windows of opportunity.
- Much easier to handle and maneuver, due to light weight.
- Reduced maintenance.
- Improved safety, due to light weight and minimal risk of snap back.
- Cleaner, safer working environment, due to lack of grease or oil on deck.

“The long life of these ropes,” said Jorne Beyen, “combined with their easy handling and the improved safety make these ropes a good investment... the ideal choice for future dredging operations.” Clearly, mooring ropes made with Dyneema® made a big impression in the waters of Sweden and Belgium.

Find out how they can help improve your operation. Visit www.dyneema.com