

SMIT Salvage assures their clients that Dyneema® is “With you when it matters.”

SMIT Salvage is synonymous with total commitment to the challenging field of salvage and marine emergency response, where optimal care for the environment is a priority. SMIT’s name is also one of the foremost connected with wreck removal and port clearance operations. SMIT’s track record in this area is unparalleled. As the world’s most experienced and leading salvor, SMIT maintains round-the-clock readiness for operations anywhere in the world. Salvage is the first line of defense against marine pollution when major casualties occur. No company has made a greater contribution to the development of salvage capability and thus to the protection of the environment than SMIT.

About Dyneema® in marine applications

Dyneema®, invented and manufactured by DSM Dyneema, is a Ultra-High Molecular Weight Polyethylene (UHMwPE) fiber that offers maximum strength combined with minimum weight. Due to its many inherent properties, Dyneema® fiber has become a reliable component in products in a wide range of marine applications. These include offshore, fishing, aquaculture, lifting, salvage, mooring and towing. DSM Dyneema cooperates closely with the leading rope manufacturers worldwide in serving these market segments and together they have established an efficient and highly reliable global network.

Some of the key advantages of lines, cables, slings and ropes made with Dyneema® for mooring, tugging, towing, and lifting include:

- **A proven track record:** Secure, safe, and fast mooring for LNG and oil tankers, containers, carriers, bulk cargo vessels, along with RoRo and Navy ships worldwide.
- **Economic advantages:** Less weight means greater fuel savings. Higher durability translates into longer useful life for maximum ROI. Harbour turnarounds can be sped up with lines that are lighter and less cumbersome.
- **Safer and easier to handle:** Lighter lines also reduce stress and fatigue for workers, providing them with a safer, more productive workday and reducing on-the-job injuries. In the unlikely event of a line break, lines made with Dyneema® avoid a “lash back” hazard, due to the material’s resistance to stretch/elongation.
- **Environmentally friendly:** For towing applications in shallow waters, bridging large towing line distances or close to coral reefs, Dyneema® offers significantly less disruption and breakage, compared to steel wire.

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Meeting challenging maritime operations with strength and innovation

SMIT safeguards a global reputation - using lines made with Dyneema[®]

With nearly 170 years of service in the maritime industry, SMIT understands that there can be no compromises when it comes to strength and safety. Whether their team is facing challenging salvage operations, mitigating environmental disasters, or ensuring safe transport of vessels and cargo, the stakes are always very high for this company's 24/7 on-call operations.

SMIT takes its leadership role seriously and has always been an “early adopter” of new methods and materials - incorporating fresh technologies into their business to test and prove them under real-world conditions. Over the years, SMIT has learned to identify and optimize the “best of the best” materials and practices in all of its key areas of operation.





High Island II

The High Island II, a jack-up drilling platform, was damaged during the passage of hurricane Rita, in 2005. Unlike the other jack-up cases of this season, the High Island II remained attached to her legs 55 feet above the sea level. Three of the damaged legs were splayed and the entire jack-up structure was severely listing.

Recovery of the jack-up included detailed engineering and utilization of a pull barge to upright the structure allowing the unit to be jacked down into the water and towed to a local shipyard.

The area around the rig was still in production with live pipelines. The SMIT team engineered a salvage plan which included a pulling barge — moored with her anchors a significant distance from the High Island II rig to avoid any interference with the live pipelines. To bridge the long distance from the pulling barge to the rig, lightweight lines made with Dyneema® were used. Steel wire ropes would have bent too much under gravity and would have been difficult to deploy over this distance. The lines with Dyneema® were transferred with relative ease by means of a small boat.

A trusted material performs for SMIT “when it matters.” SMIT has been using lines made with Dyneema® for nearly 16 years. They were one of the first companies to appreciate the material’s performance advantages in marine salvage operations.

SMIT has used lines made with Dyneema® in many of their high-profile salvage operations such as:

Linda Buck

In 1993, the RoRo vessel, Linda Buck, (2,584 dwt) became immobilized in heavy weather, eventually running aground on a sandbank off Terschelling, Netherlands. The vessel was refloated by two tugs using lines with Dyneema®, following the dredging of an “escape channel” by bulldozers working during low tide.

At the time, this hybrid land/sea operation was praised for its speed and efficiency, resolving a potentially expensive disaster quickly and safely. Lines with Dyneema® were used for efficient and lightweight handling of the towing lines.



Linda Buck

Vermontborg

Another noteworthy operation was the successful recovery of the Vermontborg (3,000 dwt) in 2003. Its tug had lost the Vermontborg near Guernsey (Channel Islands) after a bout of heavy weather. The new vessel was being towed to a shipyard for completion when it broke free in high winds and drifted onto La Capelle Reef. A SMIT’s salvage Emergency Response team led by a Salvage Master and two powerful tugs were mobilized for the refloating operation which was completed in three weeks with the help of lines made with Dyneema®. The tugs were unable to get closer than 500 meters from the Vermontborg, due to the shallow water of the reef. That meant getting a long length of line that could actually float on the water in order to transfer it from the tug to the vessel. SMIT had the tow line flown in from their 24/7 Emergency Response Centre in Rotterdam. Today, SMIT has lines with Dyneema® on-hand, 24/7, in all four of its Emergency Response Centres in Rotterdam, Houston, Singapore and Capetown.



Vermontborg stranded on La Capelle Reef

Looking toward the demands of tomorrow's marine applications

"SMIT is constantly aware of the importance of R&D — especially in the unpredictable market of the Salvage Industry," explains SMIT's Manager of Innovation & Business Development, Bert van der Velden "Shipping has become safer during the years, however the size of vessels and cargo is increasing steadily. This means that in the event an incident happens, it can result in a more complex operation—requiring dedicated tools and modern materials that have been already developed before-hand; We need to be prepared for the salvage realities of tomorrow. In that respect it is important to have competent and experienced partners in the industry like DSM whom we can rely on for joint development of dedicated materials.

The floating ability of a line made with Dyneema® was again a key characteristic in SMIT's ability to take-on a post-hurricane recovery operation in the Gulf of Mexico.

Creating sustainability "wins" within difficult circumstances

Growing sensitivity to shipping's impact on the environment is placing new demands on all participants in the industry. For example, when a vessel is grounded on a coral reef the use of steel wire rope could damage the reef to a great extent. A rope with Dyneema® has a density less than the density of water, thus it floats. At the same time, it offers the equivalent strength as a steel wire of the same size. The use of a towing line made with Dyneema® to refloat and tow a vessel out of the reef reduces the risk of additional damage to the environmentally sensitive coral.

SMIT puts "the world's strongest fiber" to the test

DINA Barge

During the summer of 2008, SMIT successfully refloated the 'DINA barge' and her cargo of 12 river barges. This vessel was on a voyage from the Far East to Europe when the tow was lost in a violent storm. The barge eventually grounded on the West coast of India, approximately 90 kilometers south of Mumbai.

After a salvage contract was agreed on, two tugs were dispatched from Dubai together with a dedicated SMIT salvage team. The 120-ton bollard pull 'Matsas Star' and the 82-ton bollard pull 'Seacor Valor' reached the site, only to find the 'DINA barge' to be inaccessible, at a position too far in the shallows.

The use of a 1,900 meter lightweight towing line, made with Dyneema®, allowed for the rigging of a long-distance tow connection, using a small craft working in the shallows.



DINA Barge rescue

It is believed that this line represents one of the longest single tow lines ever successfully used. With no ability to offload cargo to another vessel, SMIT had to refloat the 'DINA barge' fully laden. To have sufficient water depth, they had to be ready for the only spring tide available until the end of the monsoon season. Failure to meet this deadline would have condemned the 'DINA Barge' to a lengthy stay on that Indian Beach. The towing line's perfect performance was essential to the operation's success.

About SMIT

SMIT has a proud tradition of nearly 170 years of service in the maritime sector. The company has earned an excellent reputation by combining expertise and experience with high-quality materials and equipment in the nearly 50 locations around the world where SMIT is active. SMIT aims to provide its worldwide services in the main to shipping companies, producers in the oil and LNG industries, (offshore) construction companies, insurers, governments and shipyards.

SMIT maintains the highest standards in respect of Safety, Health, the protection of the Environment and Quality. SMIT's services are organised into four Divisions:

- **Harbour Towing:** harbour towing services and related maritime services.
- **Terminals:** towing services and related maritime and management services to offshore and onshore terminals.
- **Salvage:** salvage, wreck removal, environmental protection and consultancy.
- **Transport & Heavy Lift:** chartering, barge rental & transport, ocean, coastal and river towing, heavy lifting and marine support to a variety of civil and offshore projects and subsea services.