

# GREATER GABBARD LIFTING SLINGS CASE STUDY

**Samson large-diameter heavy lift slings used for multiple lifts by Seaway**

## Samson high-performance synthetic slings used to install monopiles in rough seas, performing 140 lifts total

Seaway Heavy Lifting used very large-diameter synthetic-rope slings fabricated from Samson's AmSteel®Blue in the installation of monopiles in the North Sea. This portion of the Greater Gabbard project involved the installation of 140 turbine foundation monopiles in the typically demanding conditions of the British sector of the North Sea. Located in the sandbanks 23 km off the coast of England, the Greater Gabbard project is the world's largest wind farm, scheduled for completion in 2012.

Seaway Heavy Lifting (SHL) anticipated rough seas during the installation of the monopiles. Because of their light weight and easy handling, SHL specified synthetic woven-round-sling systems for the job instead of the heavy, awkward wire or cable-laid version. Synthetic heavy lift slings would also mitigate potential damage to the monopiles during their transfer from the supply barge to the deck of the installation vessel, the Stanislav Yudin. Each lift system called for two slings attached to the lifting pins at one end and a single grommet, making a basket configuration at the opposite end.

SHL has been a customer of Endenburg BV of Gouda, The Netherlands, for many years and has used Samson's synthetic ropes successfully in the past. Because of this relationship, SHL sought Endenburg's advice. Endenburg brought the Samson technical sales team into the discussion, and together with SHL, they examined the possibility of using a synthetic rope solution in place of the proposed round slings.

While the advantages of using synthetic fiber over wire in heavy lift slings, such as the differences in weight and ease of handling, are obvious, the advantages of using synthetic rope over synthetic round slings are not commonly known. Among the key advantages of using synthetic rope slings are:

- > Strengths are available to 4,457 metric tons in a grommet configuration;
- > Removable jackets can be placed on them for protection from abrasion, but are easily removed and replaced for inspection purposes;
- > They are simple to repair and splice in the field; and
- > Longer lengths are available.



For the Greater Gabbard project, each monopile weighs from 519 to 676 metric tons. Based on the required working load limit supplied by SHL, Endenburg determined that heavy lift slings fabricated from Samson's 152 mm diameter AmSteel®Blue would meet specifications. SHL agreed and ordered two lifting systems; each included two slings and a grommet. The very large diameter rope was manufactured at Samson's Lafayette, Louisiana plant. Break tests were performed locally under Lloyd's third party supervision to certify the rope's minimum breaking strength met or exceeded the strengths required.

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Endenburg, Samson's Master Distributor in Europe, then fabricated the slings and grommets, complete with all weight-bearing points protected with chafe gear. Upon delivery, these became the first very large-diameter synthetic heavy lift slings certified by Lloyd's for multiple uses in offshore installations.

By the end of the third quarter of 2010, all 140 turbine foundation monopiles were installed using the first set of lifting slings.

Upon inspection, they showed no signs of wear according to Endenburg's master splicer who conducted several inspections throughout the project. These inspections included removing the chafe gear and closely examining the entire line for wear and damage. Lloyd's also proof loaded the slings and recertified them for continued use.

Through this process, it has been determined that the original set of slings and grommets can be used again. The second set is still in storage.

For more information visit our website, [SamsonRope.com](http://SamsonRope.com), or contact our customer service department.

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Samson manufactured the 152 mm diameter AmSteel<sup>®</sup>Blue and conducted break tests to confirm strengths. The minimum break strength for 152 mm AmSteel<sup>®</sup>Blue is 1,457 metric tons.



Endenburg BV fabricated the 2 sets of the slings and grommets for the project. Chafe protection was applied to all weight-bearing points.



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