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Taking the Lead

FIRST DNV GL APPROVAL FOR FIBRE ROPES HEAVY LIFT SLINGS

RECENTLY, LANKHORST ROPES BECAME THE FIRST FIBRE-ROPE MANUFACTURER TO ACHIEVE DNVGL APPROVAL OF MANUFACTURE FOR ITS LANKOFORCE HL HEAVY LIFT SLINGS. ACHIEVING DNVGL-CP-0173 APPROVAL OF MANUFACTURE (AoM) CERTIFICATION shows that Lankhorst's sling production process has been reviewed and evaluated, and it has now been shown that it complies with the strict requirements for E303 certification. This certification is an important stepping-stone in the wider market acceptance of heavy-lift, fibre rope slings.

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In recent years, offshore oil & gas and renewables industries have shown an increasing interest in the use of synthetic fibre rope slings, especially in offshore engineered lifting operations. Synthetic fibre rope slings offer many advantages compared to steel-wire rope slings, which translate into significant operational savings. However, widespread adoption of synthetic fibre rope slings has been hindered mainly by the lack of understanding of fibre rope characteristics and discard criteria. And also because no relevant fibre rope standards exist for engineered lifting operations. According to Rui Pedro Faria, Senior R&D engineer at Lankhorst Euronete Portugal, "There is no specific standard for synthetic heavy lifting slings, which is why we are working in close collaboration with certification body DNV-GL, to qualify our slings according to the Qualification of New Technology (DNV-RP-A203) and DNVGL-OS-E303 Offshore Fibre Ropes certification, which covers the technical requirements for offshore fibre ropes and offshore fibre tethers."

Heavy Lifting Simulations

In parallel with its collaboration with DNV GL and the importance of sling certification, Lankhorst is carrying out continual research into the characteristics and performance of fibre rope slings. The R&D programme is a joint effort with installation companies, and includes accurate lifting simulations based on real lift operations' input, developing a full understanding of rope performance under relevant usage scenarios. Typically, fibre slings are designed for engineered lifts. These are project-specific, non-routine lifts, especially prepared and documented by industry procedures such as DNV-RP-H201. The factors governing the design of the slings include the load capacity of the rope and load elongation characteristics, including stand and dynamic stiffness. Sling construction: eye and eye or endless (grommet), working length and environmental requirements. Lankhorst manufactures the Lankoforce HL range of heavy lift slings with a minimum breaking load (MBL) of around 2,000t in single leg configuration and 3,200t in an endless configuration.

The Lankhorst approach is to look at the complete lifting system, recognising that the slings are part of a complex system where interfaces need to be understood and managed. From this, Lankhorst aims to understand the rope's service life in terms of operational limits, covering the use of the rope and failure modes such as fatigue, abrasion, creep and mechanical damage, for example. >>

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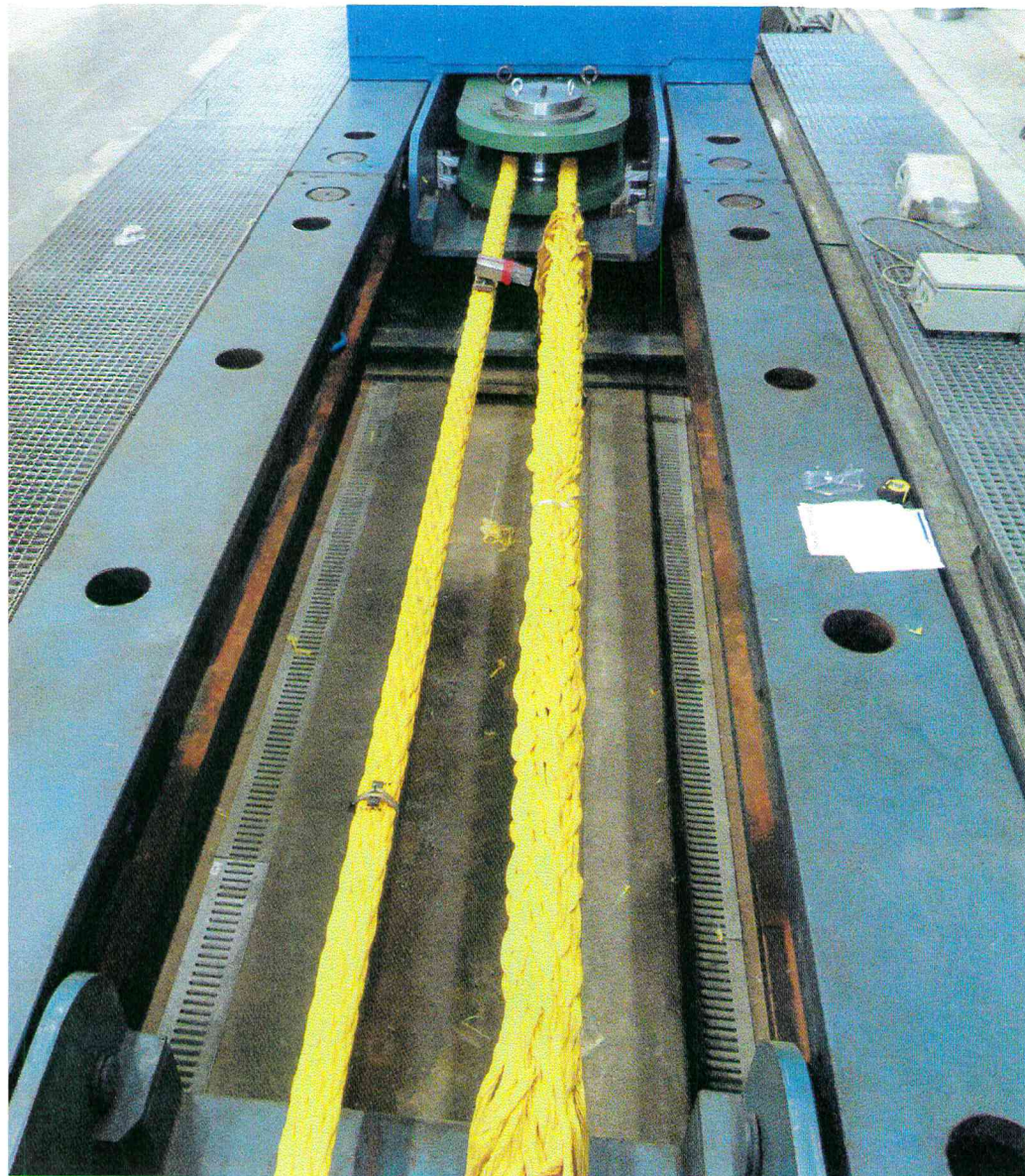
Photo courtesy of Roll Group



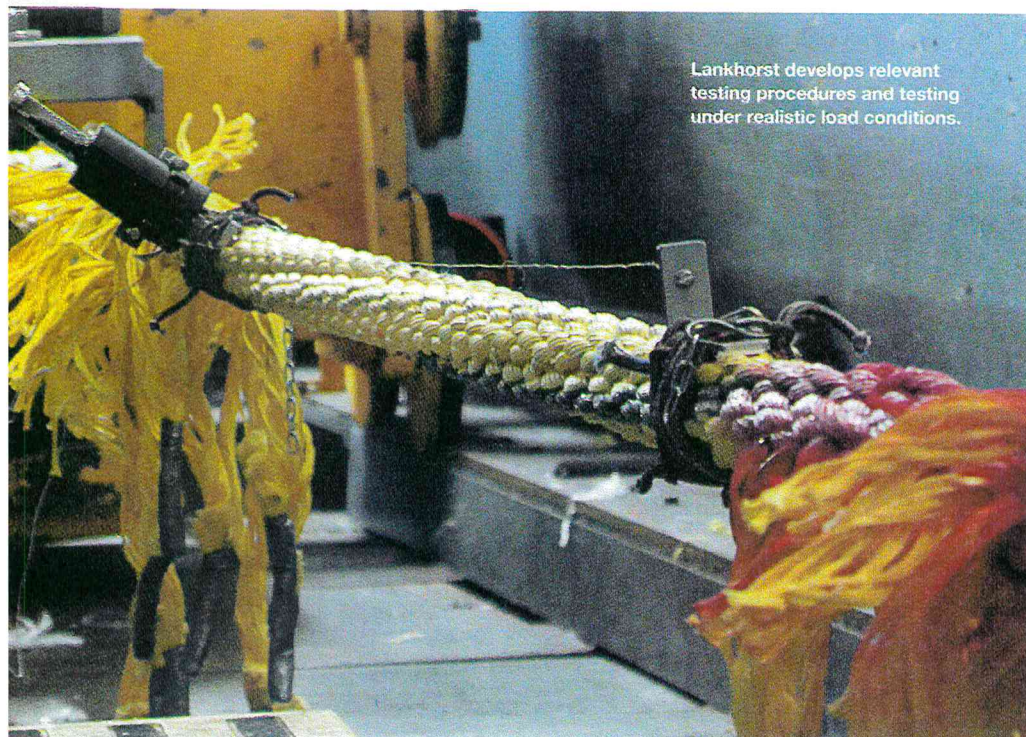
RollDock lifts Cranes with Lankhorst Slings

When RollDock was asked to ship three Liebherr LHM800 mobile harbour cranes from Rostock, Germany to Valparaiso, Chile, it opted to use a multipurpose vessel, avoiding the need to disassemble the cranes. "Shipping them complete meant the cranes would be ready for operation in a very short time," says Erik Lindeman, Purchasing Manager at Roll Group. "However, we needed a method of lifting the cranes without damaging them, which is why we chose Lankoforce HL fibre slings. The slings worked well and, importantly, were very easy to handle compared with steel wire rope slings."

In total, Lankhorst supplied fourteen Lankoforce HL slings to the multipurpose vessel RollDock Sky to lift the LHM800 mobile cranes each weighing over 700t. The success of the first shipment has led to the subsequent use of Lankoforce HL slings for LHM 800 crane shipments from Rostock to Bourgas (Bulgaria) and Novorossiysk (Russia).



Slings Testing – When fibre rope slings are certified according to the requirements of DNVGL-OS-E303, it indicates that they are properly engineered, tested and manufactured.



Lankhorst develops relevant testing procedures and testing under realistic load conditions.

Mr Faria, “We are building the knowledge needed to understand the service context and lifting scenarios, and through this develop interfaces and understand failure modes and boundary conditions. Based on this, Lankhorst is developing not only relevant testing procedures, and testing under realistic load conditions, but also the ability to certify and re-certify ropes.”

Rope Certification is Vital

Fundamental to Lankhorst’s research is certification. Product certification means that the full production process, comprising manufacture, testing, assembly and commissioning, has been reviewed and validated by an independent body, and complies with industry best practices and/or standards. A certificated rope sling is important in ensuring greater reliability, durability and extended service life which, in turn, translates into reduced sling maintenance costs, repairs and replacement. When fibre rope slings are certified according to the requirements of DNVGL-OS-E303, it indicates that they are properly engineered, tested and manufactured. In addition, they meet the highest industry quality levels, and are designed to provide the highest performance and reliability, while fulfilling the intended application requirements.

“Buying and using a product that is not certified, although a lower initial investment, will increase the inherent risks of failure, repairs and other ‘surprises’, Mr Faria claims. He also stresses that a Verification Statement for a proof-load test is not a certificate. “A proof-load test will provide evidence that a sling has experienced a particular static load, for a certain amount of time, under laboratory and controlled conditions. This kind of load capacity verification does not consider any other characteristic loads experienced during a real lifting operation (such as dynamic loadings) and is, therefore, a poor indication of sling performance and reliability in a project scenario.”

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