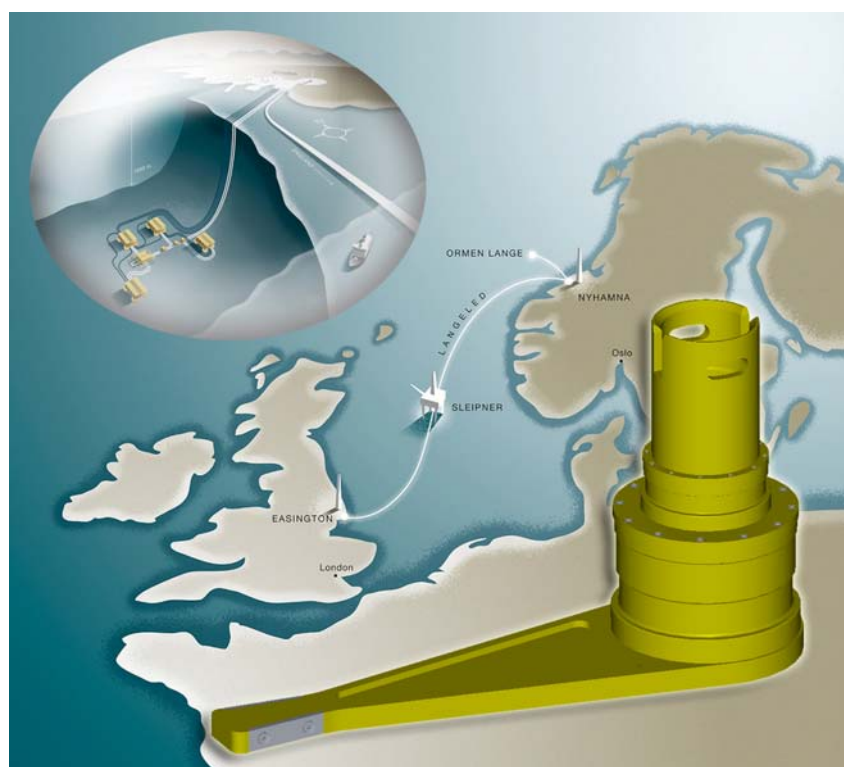


NEW TORQUE TOOL MAKES A SPLASH IN OFFSHORE GAS PROJECT



The oil and gas industry is an important market for Norbar Torque Tools. Every fastener used on pipelines has to be tightened to a verifiable torque setting to ensure its integrity. Given that pipelines generally run across inhospitable terrains, the use of Norbar tools in tough operating conditions is nothing unusual. However, a recently completed project provided a stiff test of both ingenuity and engineering skill.

The newly opened Langedled pipeline, bringing gas to the UK from the Norwegian Ormen Lange gas field in the North Sea, was a massive engineering challenge. It is the first offshore gas field where all the production stations lie on the sea bed – a sea bed every bit as rugged and unforgiving as the Norwegian coastline itself. Surveying and constructing a route for the pipeline across this uncompromising undersea terrain required the extensive use of unmanned remote-operated vehicles able to carry out each stage of construction to a high degree of accuracy.

Because of the challenging terrain, the gas pipes needed to be carefully routed around underwater peaks, gulleys and rockfields. At each turn, the fasteners that secure the sections of pipe together had to be tightened to a precise torque setting using a calibrated instrument. This was no easy task given that much of the pipeline is over 1km below the surface and at sub-zero temperatures most of the time.

Remotely operated vehicles provide the only practical means of carrying out the required torquing operations, but that in itself presented problems as Aksel Braethen of Norwegian tooling specialists Verktøy AS Industri relates. “The torque tools we would normally use for jobs like this are quite substantial pieces of equipment. The challenge was to find a tool capable of generating a large torque to the required degree of accuracy, but which was also capable of being carried by an ROV. The maximum payload of 60kg in water meant that a standard steel-bodied torque multiplier was out of the question.” With Verktøy being the Norwegian agent and distributors for Norbar Torque tools, Aksel contacted the Banbury-based torque tool manufacturer for its help.

Philip Brodey, Sales Manager of Norbar, explains: “It was quite clear that we needed to come up with some new ideas to meet this challenge. The solution was a specially built version of our HT14 torque multiplier manufactured from Aluminium rather than steel.” The bespoke design weighed-in comfortably below the required payload limit, but nobody was really sure whether the aluminium construction would prove sufficiently resilient for arduous duties in such a hostile environment. Braethen elaborates: “We were a little concerned at first as to whether the aluminium-bodied tool was rugged enough for the job and whether it could maintain sufficient accuracy in working conditions.”

However, exhaustive tests carried out by Verktøy proved that such fears were unfounded, as Aksel explains: “The factory acceptance tests showed conclusively that we had seriously underestimated the number of duty cycles the customised HT14 was capable of, and that it was actually much more durable than we’d hoped.” Following successful testing in both the factory and at sea, the aluminium-bodied HT14 entered service in 2005 and played a key role in the construction of the 1,200km pipeline, which will provide the UK with around 20 billion cubic metres of gas per year when the field reaches full production in four year’s time.

The success of Verktøy’s customised Norbar torque multiplier has generated significant interest from the oil and gas industry. Aksel concludes: “We learned a lot from developing this tool, and it has led on to a lot of new ideas for sub-sea tool systems. We are currently working with the Norbar factory to develop a version with built-in torque transducers in the gearbox to give a real time readout of applied torque.”