claxton®

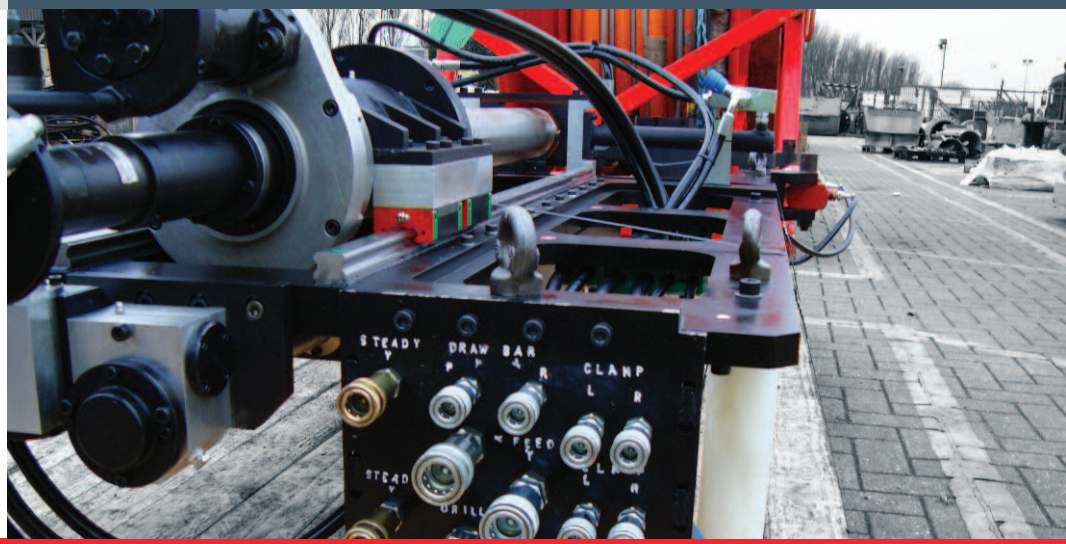
SUBSEA CONDUCTOR DRILLING AND PINNING SOLUTION.

Claxton works with sister company, Mirage Machines, to enable – and deliver – a world first solution to the issue of recovering conductors with fatigued connectors.

THE PROBLEM

Concerns about the integrity of a redundant well conductor threatened a project for recovering a drilling slot beneath a platform in the North Sea.

The question was could the conductor (its safe removal being the first step in the slot recovery process) once severed just above the seabed, support its own weight while being lifted out of the water. There had to be no possibility that the conductor, which measured over 90 m from just above the seabed to the platform's well deck, would fall to the seafloor during its removal from the platform slot.



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THE SOLUTION

Claxton quelled the uncertainty with a proposal to drill and pin the conductor and the various casing strings just above the severance point. This is normal practice at the top of the conductor and provides safe lifting of the conductor and the casings together. By drilling and pinning them at the bottom, the internal casings effectively bear the weight of the conductor.

The solution found favour with the platform's operator, which gave its full support to the development by Claxton and fellow Acteon company Mirage Machines of what is thought to be the world's first remotely operated, subsea drilling and pinning machine.

In a normal drilling and pinning operation, the conductor and casings are first drilled, then the bit is withdrawn and a separate pin is inserted through the series of holes in the pipe walls. This is relatively straightforward. The development team quickly realised that withdrawing the bit and then inserting the pin would be difficult underwater and by remote control. They decided to design a drill bit that would double as the pin – an elegant idea to minimise subsea manipulation.

The combined drill bit and pin uses 4"-diameter, high-tensile-strength steel designed to withstand 100 t of force. The cutting angle on the face of the bit is lower than normal, as, when acting as the pin, its ends need to be as flush as possible to the outside wall of the conductor.

Another question was how the bit could be easily detached from the machine's drill carriage once it had penetrated the tubulars. This uses a motorised, threaded draw bar that passes through the body of the carriage and screws into the back of the bit. Activating the motor retracts the drilling carriage to leave the bit in place. Screwing the carriage back from the bit also causes sprung gripper pins set in the side of the bit to emerge from behind the conductor wall and lock the bit in place.

THE RESULT

Jay Miller, the Claxton project engineer for the work, says, "We thoroughly tested the new machine in the yard before we took it offshore. Nevertheless, as with the first field use of any new technique, the operation came in for close scrutiny. In fact, the machine worked beautifully; the drilling and pinning operation, undertaken with the support of a remotely operated vehicle, took a little over eight hours and was without incident. Thereafter, removing the conductor and its casings was routine, as there was no chance the conductor would fail and drop to the seafloor.

Miller expects an subsea drilling and pinning capability to be of interest to many operators involved in well decommissioning or slot recovery when questions exist over the integrity of aged conductors. "What is, on the face of it, a simple technology advance offers significant benefits for the operators of mature fields," he concludes.

Claxton holds a suite of slot recovery tools and regularly provides packages of equipment and personnel to recover aged conductors.

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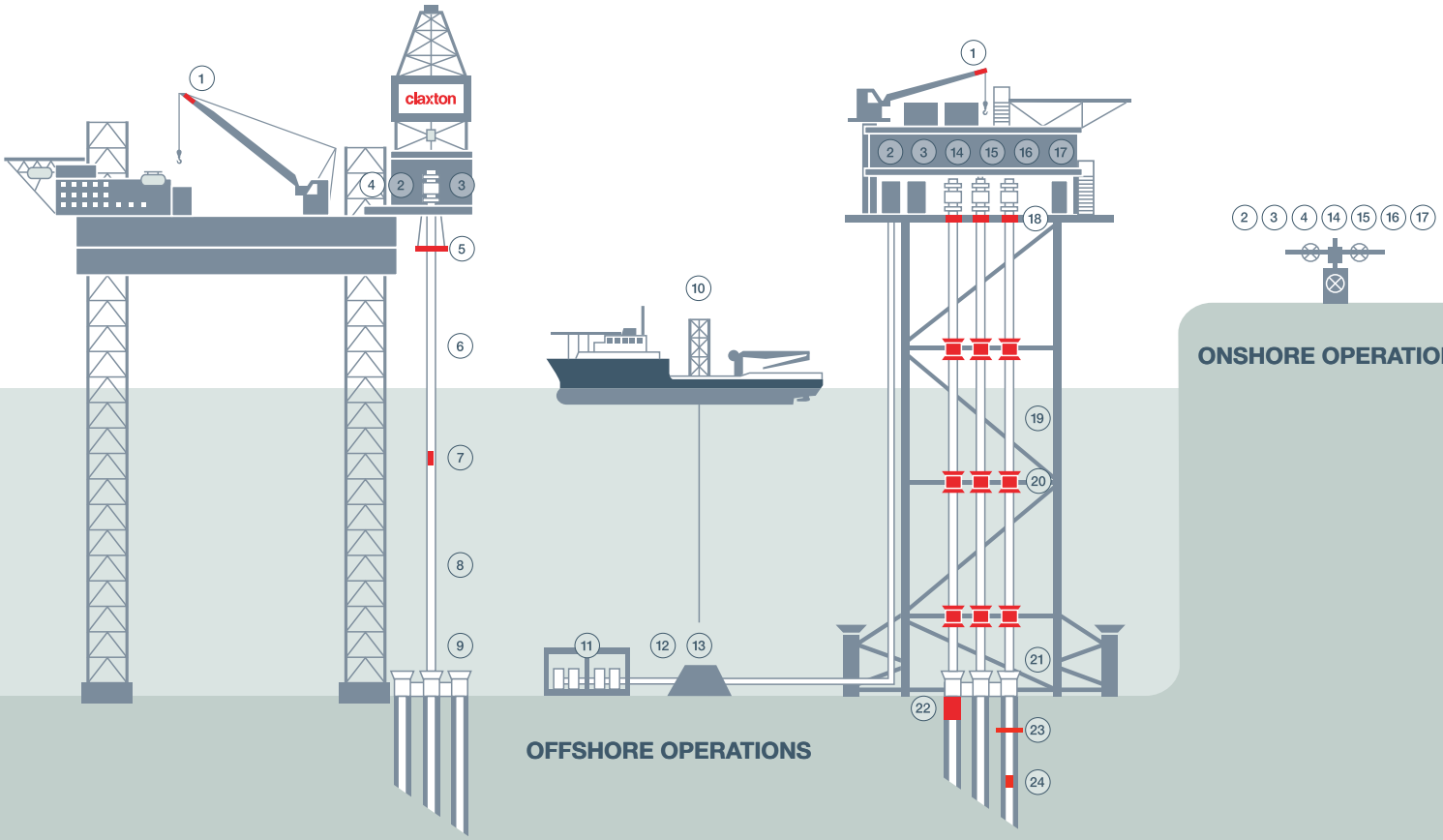
MAKE IT HAPPEN.

Trust Claxton to make your project happen.

CLAXTON CAPABILITIES



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