

GROUTING, AND ABRASIVE CUTTING SUPPORT FOR CRUDE OIL STORAGE (COS) TANK REMOVAL



PROJECT OVERVIEW

Acteon brands provided support to multiple vessel contractors and operators for decommissioning activities on an oil production platform in the UK sector of the North Sea.

LDD, a marine foundations brand in Acteon's Engineering, Moorings and Foundations division was contracted to install a fabric formwork support, and Claxton a Cutting and Decommissioning brand in Acteon's Energy Services division provided multiple abrasive cutting solutions in a water depth of 160 m.

THE CHALLENGE

The oil platform operator was removing two crude oil storage tanks from the side of a platform requiring the tanks to be cut free from the platform. They did not want to shock load their expensive crane when making the final cuts. Instead, they wanted to put support under the crude oil storage (COS) tanks so that when they made the final cut the tank could not move suddenly downwards.

The cutting operation would require 800mm holes to be cut into the COS tank top at exactly 180 degrees opposite each other to allow a 9m long lifting pin to be installed through the tank ready for lifting, meaning a total of four holes were required for two lifting pins to be inserted. The COS tanks were inspected and found to have fractures in the jacket legs between the COS tank and jacket braces, so Claxton needed to mitigate the challenges of structural integrity issues as well as tight access.

CUSTOMER GOAL

The operator needed to safely remove and lay down the COS tanks onto the seabed using a heavy lift vessel. The goal was to protect the COS tanks during cutting by completing a precision operation with multiple suppliers working in synergy within a six-week timeframe.

OUR SOLUTION AND ITS COMMERCIAL BENEFITS TO THE PROJECT

Market leading services and integrated solutions

- LDD developed a bespoke fabric formwork support (also known as grout bag) to suit the subsea dimensions between the COS tanks and the seabed.
- A deployment method was developed with the operator and heavy lift vessel owner so the formworks could be deployed remotely and pulled into position using a remotely operated vehicle (ROV).
- A bespoke fabric formwork deployment frame was built and performed well. The formworks were filled correctly and provided suitable support to the COS during cutting.
- Claxton modified existing tooling which had previously been designed to secure to the exact COS tank on a previous

project using a vacuum suction cup design. These became abrasive cutting tools which allowed both ROV and diver operation to install the tools onto the tank.

- A 4m long abrasive cut was made to separate the main brace connecting the jacket leg to the COS tank to mitigate the tight access challenges.
- Developed bespoke equipment including new fly-to-place ROV hole cutters and alignment apparatus for 4Te lifting pins to be installed as well as two 800mm hole-cutting abrasive manipulators.



Scopes for additional contractors involved an integrated approach to multiple challenges.

Work at scale with a proven track record for delivery

- Managed multiple client interfaces, which changed during the project, for the same overall scope.
- Scopes for additional contractors involved an integrated approach to multiple challenges through standard rental and bespoke cutting/cleaning solutions, resulting in 35 assets and six multi-skilled technicians mobilised.
- The linear manipulator for ROV control was the largest supplied by Claxton to date.

Optimise the project to increase the commercial value

- A further lower brace cut was made using a diamond wire saw, which saw extremely tight access challenges, to make handling and operating subsea more efficient for the ROV and divers.

PRODUCTS USED

Cutting

- Grit blast cleaning
- High-pressure water cleaning
- Diamond wire saws
- Abrasive hole cutters
- Abrasive linear manipulators 1m
- New design and build 4m long abrasive linear cutter

Grouting

- Ordinary Portland cement grout
- Recirculating jet mixing and pumping system
- Offshore cement storage silos
- Offshore laboratory
- Mobile workshop
- Subsea ROV grout connectors
- ROV formwork deployment frame
- Custom grout bags/fabric formworks