

# BESPOKE UHP CUTTING TOOL

## PROJECT INFORMATION

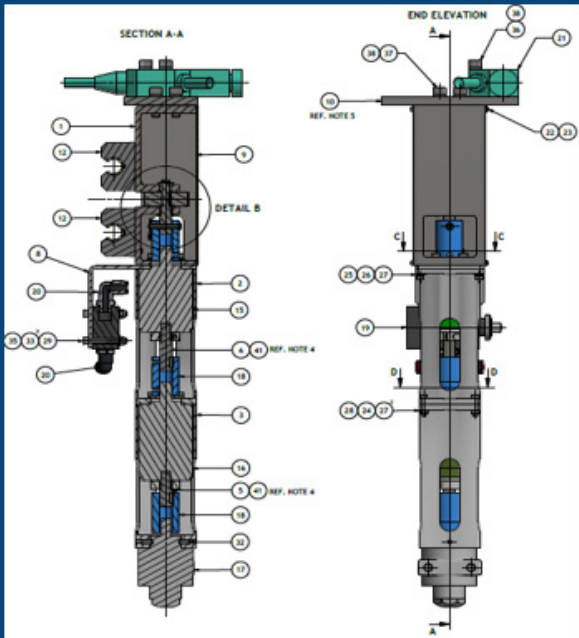
Date: 2021 - 2024

Location: Brent Charlie Offshore Installation

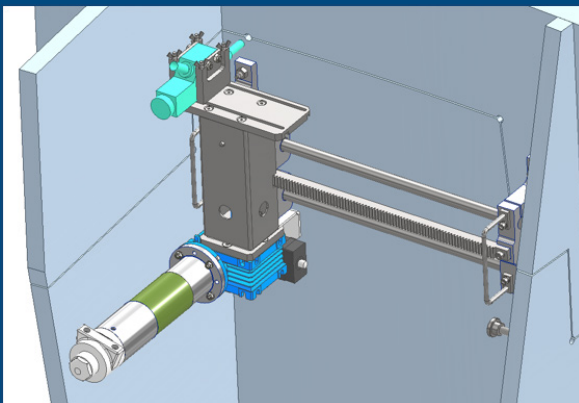
Innovations: Bespoke UHP cutting equipment

HSEQ Stats: No lost time incidents

Completion: No Lost Time or Safety Incidents



UHP Cutting Tool Prototype Design



UHP Cutting Tool Detailed Design Drawing

## SCOPE OF WORK

In 2021, Shell approached Stork regarding utilising our Ultra-High Pressure (UHP) cold-cutting systems to cut the four legs of the Brent Charlie platform that was being decommissioned in the North Sea.

Due to internal stiffeners located in the platform legs and the size of the tooling, our traditional method of deploying the UHP cutting system was not suitable for use, as this would result in inaccurate / inconsistent cuts.

### Notable Challenges:

- Four Legs – 192 Stiffeners
- Seven Different Cut Types
- 264 Total Cuts Per Leg
- Restricted Access Between Leg Stiffeners
- Existing Tooling Resulting in Inconsistent Cuts
- Steel Structure 45mm Thick
- UHP Jetting Pressure 36,000psi
- Remote Operations

## STORK'S SOLUTION

Stork was awarded the contract for the separation of the GBS legs on Brent Charlie in 2021, based on a concept trial that utilised the technique of Ultra High Pressure (UHP) cutting. Stork's innovative solution, although untested in an offshore environment, had several benefits compared to the base case hot work methodology, oxy fuel cutting:

- Eliminates hot work within a confined space (removes buildup of hazardous fumes and spark potential)
- Eliminates an extensive preparatory campaign
- Prioritises safety as operators are away from the line of fire
- Significant time savings compared to oxy-fuel cutting, as well as a physical air gap
- A more cost effective method compared to oxy fuel cutting

Through collaboration and extensive prototype testing on a replica section of the platform leg, with our decommissioning team and the client, a production design was finalised in 2022 and commissioned for use offshore.

Due to the complexity and safety critical nature of the project, the overall design process took approximately 18 months from initial client enquiry.

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## RESULTS

In early 2023, a specially trained team of technicians were deployed to the asset to perform the first cuts with the bespoke UHP cutting equipment.

Since then, Stork has successfully cut all four legs on the Brent Charlie and completed the scope four weeks ahead of schedule, 78% of the scheduled allocation, exceeding both Stork and Shell's expectations for the scope execution. The tooling has been reliable, cutting with a consistent air gap between the GBS leg and topside, which allows for physical verification, providing all parties with the confidence that the leg, is 'cut'.

In an unnerving working environment such as a GBS leg, Stork's solution prioritises worker safety and delivered a cost saving alternative for our clients.

On the 9<sup>th</sup> of July, the topside of the Brent Charlie platform was successfully removed from the North Sea by a major lifting contractor. Weighing more than 31,000 tonnes, Brent Charlie is the largest single offshore topsides to be lifted.

## VALUE ADD

Through collaboration with our experienced designers, engineers and decommissioning specialists, we can offer a flexible cutting system which will suit most applications.

Stork's bespoke UHP cutting system results in quicker, safer and more reliable cutting solutions, rather than traditional oxy-fuel cutting techniques, with no requirement for hot-work permits, habitats or pre-work e.g. removal of coatings etc.

Additionally, our flexible and unique UHP cutting system has several health and safety benefits for the operator:

- Remote operation (> 4m away from cutting surface)
- No hand held tooling results in no HAVs issues
- No hazardous fumes from hot works

This innovative method has the potential to transform the decommissioning industry, eliminating hot work leg cutting methods. The impact is not just project specific or contained within the North Sea and UK offshore energy sector, but globally too. UHP has become the cutting tool of choice on Brent, and by pushing the boundaries with leg cutting Stork has demonstrated that we have a very broad operating range for a variety of applications. Transitioning to UHP separation will provide operators with a safer and more efficient method of topside separation.



UHP Cutting Tool Offshore in Use



UHP Cutting Tool Offshore Result



Offshore Team with the Brent Charlie Leg

*"Stork demonstrated a deeply practical approach to problem solving, innovation and perseverance. This applied both to development of the technology but also setting up their staff for success offshore. We have been continually impressed with Stork's ability to work collaboratively, transparently and apply a learner mindset – nothing was too much trouble.*

*Thanks to the preparatory work, the offshore programme of work was a great example of flawless execution with no HSEQ incidents and delivery ahead of schedule."*

- Shell Project Manager