



**STORK**



# **DECOMMISSIONING SOLUTIONS**

**DELIVERING SAFE AND EFFICIENT DECOMMISSIONING  
SOLUTIONS FOR ALMOST 30 YEARS**

**[STORK.COM/UK](https://stork.com/uk)**



# WE ENGINEER TO ENABLE SAFE AND EFFICIENT EXECUTION

Stork is a leading provider of integrated decommissioning support services to the offshore oil and gas industry. We partner with our clients throughout every stage of their asset's lifecycle and decommissioning is no different.

From preparation to cessation of production, to process and utilities separation, specialist industrial cleaning and decontamination, to disconnection, removal and disposal, Stork delivers.

Our expertise isn't defined by one of our services; it's the combination of our solutions to best fit our client's needs. By delivering integrated solutions at a larger scale, this helps to not only reduce cost, but it also enables our clients to leverage multiple technologies and expertise throughout their asset's life.



## ENGINEERING

- Concept Review
- Offshore Pre-enabling Surveys
- Project Planning and Management
- Structural Engineering
- Design Engineering
- Electrical Engineering
- Environmental Engineering
- Failure Analysis
- 3D Modelling and Storyboards
- LOLER



## ENABLING

- Access Solutions
- Topside Drain Down Services
- Decontamination
- Pipeline Flushing / Cleaning
- Breaking Containment
- Potential Dropped Object Survey
- Potential Dropped Object Removal
- Platform 3D Digital Model / Survey
- Sea Fastening
- Inspection and Non-destructive Testing
- Asbestos Surveys
- Asbestos Removal / Containment
- General Deck Preparations



## EXECUTION

- Module Strengthening/ Support Strengthening
- Lift Point Clearance/ Installation
- Provision Of Temporary Supplies
- Piecemeal Small Removal
- General Deck Preparations
- Leg Separation
- Air Gapping
- Conductor Separation / Remediation
- Caisson Cutting/ Separation for Topside Removal





# STORK DELIVERS

We recognise that there is no production revenue during decommissioning activities and fully understand that mitigating potential risks, maintaining outstanding HSEQ performance and driving significant cost savings is essential. Our track record in the project management of complex decommissioning projects ensures we successfully deliver results first time, every time.

We continually strive to develop new innovations and technologies, in order to offer the most advanced cutting, cleaning and access solutions throughout the decommissioning process.

Our multi-disciplined teams have the skills, experience and technical expertise to deliver a world-class safety performance and an unrivalled quality service in an ever-changing decommissioning environment.

**Predictable and Safe**

Our decommissioning services provide late life support for topside assets with particular focus on safety, efficient execution and quality.

Stork has more than 40 years of experience with decommissioning and waste management of topside assets and has a proven track record of engineering, managing and executing scopes safely on platforms and other infrastructures.

**Knowledge Management**

Our solution centres around the UK provide a full range of support capabilities, which are tailored to suit our client's requirements. Stork regularly introduces innovative solutions providing a safer, more efficient and cost efficient execution.

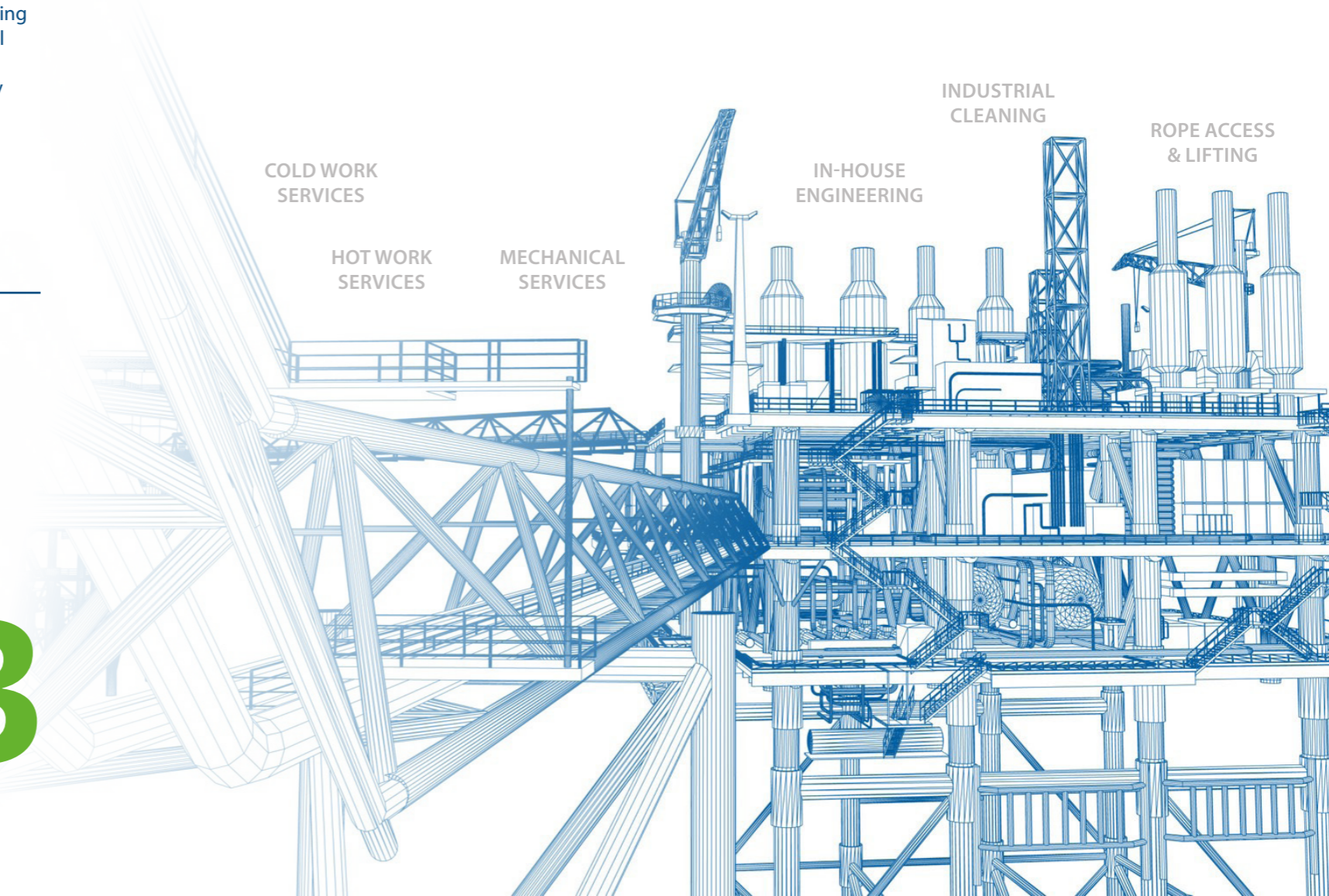
**Execution and Management**

We offer full execution and management of decommissioning activities including planning, work preparation, mechanical and waste management services. Where we do not have the required specialist know-how, we have proven industry partnerships to form a team able to meet the challenge.

Through our delivery-led approach, we provide a wide range of integrated support services to help our clients safely and cost-effectively deliver complex decommissioning projects:

- 1**  
**DEFINITION**  
Technical response to the scope of requirements  
Commercial proposal  
Onshore engineering and solution production
- 2**  
**EXECUTION**  
Supply of experienced labour, materials and equipment  
Onshore technical support throughout the project  
On time project delivery, every time
- 3**  
**CLOSE OUT**  
Comprehensive close out packages  
High client satisfaction and continual learnings

**DELIVERY-LED APPROACH**





# OUR HSEQ COMMITMENT

We are Safer Together. Every day, everywhere.

Stork is dedicated to being recognised as a leader in all aspects of health, safety, the environment and quality; by our employees, clients and industry peers. Our award-winning HSEQ engagement programme, Safer Together, enables us to achieve this goal.

We engage our teams to challenge themselves to think and do more to improve our HSEQ culture and performance. As an organisation we function as one team with shared values and responsibility.

We promote a caring, preventative culture where no one gets hurt, through an uncompromising focus on safety in the workplace.

Whatever priorities we have each day, taking care of, supporting and protecting each other is central to how we do things. We believe that HSEQ is a team effort and by working together as a team, we are Safer Together.



WE CARE | WE SUPPORT | WE PROTECT





# PROVEN TRACK RECORD

More than 30 years of experience delivering Decommissioning support service.



Topside decommissioning services

2011 - 2016

Cold removal of a main oil line pump system and skid

2014

2014 - 2015

Cold cutting removal of wemco separator, skid and scrubber vessel

2016 - 2019

Environmental, decontamination and decommissioning

2018

Topside decommissioning services

2019

Cleaning and UHP cold cutting 2 x DA towers

2020

Full decom, module clearance, tank removal, conductor cutting

2022

Conductor removal, prep for decom mode



2013 - 2014

Cold cutting removal of two tilted plate separator tanks, a gas flotation tank, pipework and cables



2014

Cold cutting removal of deck plates for landing bridge

2014 - 2015

Cold cutting removal of spring housings (under pressure)

2017

Topside vessel, pipework decontamination and pre-decommissioning work

2019

UHP cold cutting of caissons and risers

2020

UHP Jetting coating removal internal legs for cutting purposes

2021

Full decom, module clearance, tank removal, conductor cutting





# SUPPORTING OUR CLIENTS EVERY STEP OF THE WAY

## COLD WORK SERVICES

### Ultra High Pressure Cold Cutting

Ultra-High Pressure (UHP) cold cutting is a powerful water abrasive technique, which uses a mixture of ultra-high pressure water (40,000 PSI) and grit to cut through or destruct materials of various thicknesses.

Stork has over 25 year's of experience utilising UHP technology. We have built up a suite of cutting packages that cover conventional re-occurring scopes. Stork's in-house engineering team can also adapt, engineer and manufacture bespoke packages to suit our client's set up requirements.

The remote cutting technique offers an efficient solution to destruct activities when the platform is not hydrocarbon free.

Practical examples of executed UHP cutting scopes include:

- Column leg cutting
- Conductor / Caisson / Pipework destruct
- Clamp removal
- Steelwork destruct
- Access hatch cutting



### Innovative Cold Cutting Technique

A major offshore operator approached Stork in 2021 regarding the possibility of utilising our UHP cold cutting systems to cut the four legs of a platform that is being decommissioned. The UHP cutting system has a number of benefits over traditional hot cutting techniques:



Oxy-fuel cutting reduces potential risks to technicians as it can be operated remotely



There is no need for hot work permits or use of habitats system only uses high-pressure water and grit.

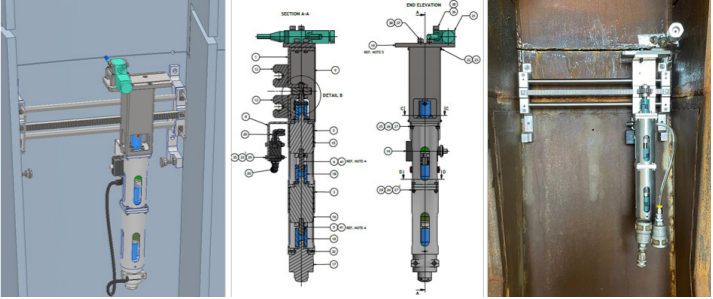


No potentially hazardous fumes generated from burning.

Due to internal stiffeners located in the platform's legs and the size of the tooling, Stork's traditional method of deploying the UHP cutting system was not suitable in this case, as this would result in inaccurate and inconsistent cuts.

In response, Stork's technical authorities designed, tested and manufactured a new bespoke UHP cutting manipulation system, that would be suitable for use on the platform legs.

Using the latest in engineering design software, our engineering team set to work developing conceptual 3D models of a new system. Through collaboration with our client, a prototype design was finalised. Technical drawings were created, components sourced and we oversaw the manufacturing and assembly of the prototype system. After extensive testing on a replica section of the platform leg, a fully functional system was finalised 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.



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

The first cutting campaign with the new equipment was hugely successful. The team were able to successfully carry-out **130 cuts**, through steel stiffeners up to **38mm thick**, in **8-days**, with **no loss of time, incidents or safety concerns** noted.

Stork's team received extremely positive feedback from the client. This first campaign provides confidence to all stakeholders that the bespoke tooling, developed in-house by our in-house engineering team and operated by our specialist decommissioning team, will complete the remainder of the leg cutting work in a safe and efficient manner.

Looking ahead it, we will now look to deploy Stork's bespoke and adaptive UHP cold-cutting systems to the wider industry for use on other decommissioning scopes on other assets throughout the North Sea and beyond. This is a prime example of our teams taking ownership of a client's challenging and engineering a solution from start to finish.



### CASE STUDY: CAISSON REMOVAL

Stork was part of a multi-company scope, that were required to separate a 24" clean water caisson between the topside and GBS legs.

In order for the caisson to be fully separated it was required to be:

- Cut subsea at -5.00m LAT by other subcontractors
- A lift pin installed at +7.5m LAT by Stork
- Cut at +8.00m LAT by Stork

Both subsea and topside caisson sections were cross-hauled around the platform by Stork and recovered topside by the east crane.

As a prerequisite, Stork was also required to four install lift points to aid with the removal.

**Man Hours:** 720 man hours (6 man team; 1x cutting supervisor, 1x rope access cutting operative, 1x mechanical fitter, 1x rope access team lead and 2x rope access riggers).

**Safe Execution:** we deployed our UHP cutting spread to externally cut two lift pin access holes and caisson separation.

**Delivered on time:** Scope was delivered ahead of schedule with no safety incidents recorded.



## HOT WORK SERVICES

### Oxy-Fuel Cutting

Oxy-fuel cutting is a thermal cutting process that uses a mixture of oxygen and acetylene to cut through materials.

Stork has extensive experience executing hot work scopes via rope access or by utilising access platforms. Bespoke spark containment habitats are readily supplied depending on the platform's status.

The invasive technique benefits strongly from a reduction in set up times in comparison to UHP cutting.

Some practical examples of our hot work activities are:

- Clamp removal
- Removal of MSF plate girder, runway beams, padeyes, access platforms, overboard discharge pipework and hoses.
- Sub-platforms and degasser platform
- Mooring hooks
- Partial destruct of guide frame
- Partial destruct of knee brace connection



### CASE STUDY: MOORING HOOK REMOVAL

Stork was tasked to remove a mooring hook within the splash zone to enable the approach and engagement of the HLV Lifting Yokes for topside removal.

**Man hours:** 360 man hours, (5 man team; 1x rope access team lead, 2x rope access riggers and 2x rope access platers)

**Safe Execution:** Stork used oxy-fuel cutting on ropes to remove the mooring hook in four sections; hook component, mid-section, south outrigger and north outrigger, this ensured that weight of each section did not exceed 1000kg. All cuts were made as close as possible to the re-pads, max 30mm stub was allowed

**Delivered on time:** Scope was delivered on time with no safety incidents recorded.

## MECHANICAL SERVICES



### Clamshell Cutting

Clamshell cutting is utilised when a controlled depth destruct cut is required e.g. when the pipework contains inner strings or a pump.

Stork has extensive experience in supplying and executing clamshell cutting scopes, covering pipework ranges from 152mm to 1524mm.

Where the pipework is to be removed post cut, an integrated cut and pin clamshell cutter can be supplied, reducing the risk of dropped objects.

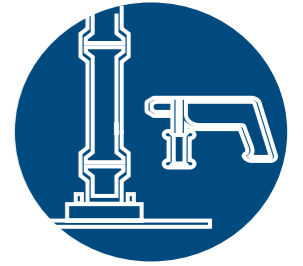


### Bolting

Failure of one of the thousands of bolted connections that keep a facility together can result in unsafe situations.

These bolts can be related to pipe flanges, equipment fixations and foundations.

We apply the full spectrum of bolting and torquing tools and techniques to ensure safe removal during decommissioning phases of a project.



### Conductor and Grouted Coring

Dual coring is commonly used to core through pipework with internal casings within, to facilitate the instalment of dead-weight support beams.

### CASE STUDY: FWSW CAISSON

Stork was contracted to separate and secure two service water / firewater (SWFW) caissons, containing SWFW pumps and a riser, between the topsides and GBS legs.

To secure the caissons, Stork had to install a restraint frame consisting of a restraint beam, collar half shell and collar holder at the existing mooring point (pre-cut), and then install a securing clamp on each caisson (post cut).

Once secured, the caissons were cut using a clamshell cutter in order to control the depth of cut and not damage the pump and riser within the caisson.

**Man hours:** 1080 man hours, (5 man team; 1x rope access team lead, 2x rope access riggers, 2x rope access machinist)

**Safe Execution:** After installing all restraints and clamps and ensuring both caissons were secure, Stork deployed a C6 clamshell cutter down to the cut location. For C1 and C2 the C6 clamshell cutter cut through 28mm of caisson and 93.5 coating, caisson and liner respectively.

**Delivered on time:** Scope was delivered on time with no safety incidents recorded.



## IN-HOUSE ENGINEERING

### Job by Design

Stork's engineering team have the track record to tackle complex scopes where off the shelf products are not fully applicable.

Following an engineering approach of concept design, detailed design, manufacturing, testing and execution, Stork produces quick and reliable solutions.

We have a multi-disciplined engineering team which includes mechanical and structural Engineers, draughtsmen and construction project managers.

With access to a suite of the latest engineering software, Stork provides services such as:

- Structural analysis using non-linear finite element analysis
- Mechanical design and product development
- 3D modelling and storyboards

## INDUSTRIAL CLEANING

We deliver a number of necessary industrial cleaning services that are required during the decommissioning process:



### NORM Management and Disposal

Delivers a complete management service covering the monitoring, removal, treatment and disposal of NORM. All work is completed in line with Ionising Radiations Regulations 1999. Our Radiation Protection Supervisors are trained to the highest industry standards to ensure the appropriate controls are in place to manage the hazards associated with NORM scale and minimise exposure.



### Vacuum Cleaning

Vacuum systems are a cost effective and efficient method for transferring fluidised materials in industrial environments.

The systems are capable of transferring up to eight times more waste per hour than traditional methods, the system reduces physical exertion and the requirement for confined space entry.



### Asbestos

Stork has an extensive track record in successfully delivering asbestos management and asbestos abatement projects in both on and offshore environments. We are fully licensed by the Health and Safety Executive (HSE) to undertake work with asbestos and are members of the Asbestos Removal Contractors Association (ARCA). All asbestos projects are undertaken in accordance with the Control of Asbestos Regulations 2012 (CAR2012) and HSE Approved Codes of Practice & Guidance Notes.

## ROPE ACCESS & LIFTING

### Rope Access Solutions

Stork has over 30 years' of experience in developing rope access equipment and techniques to provide a safe and cost effective service.

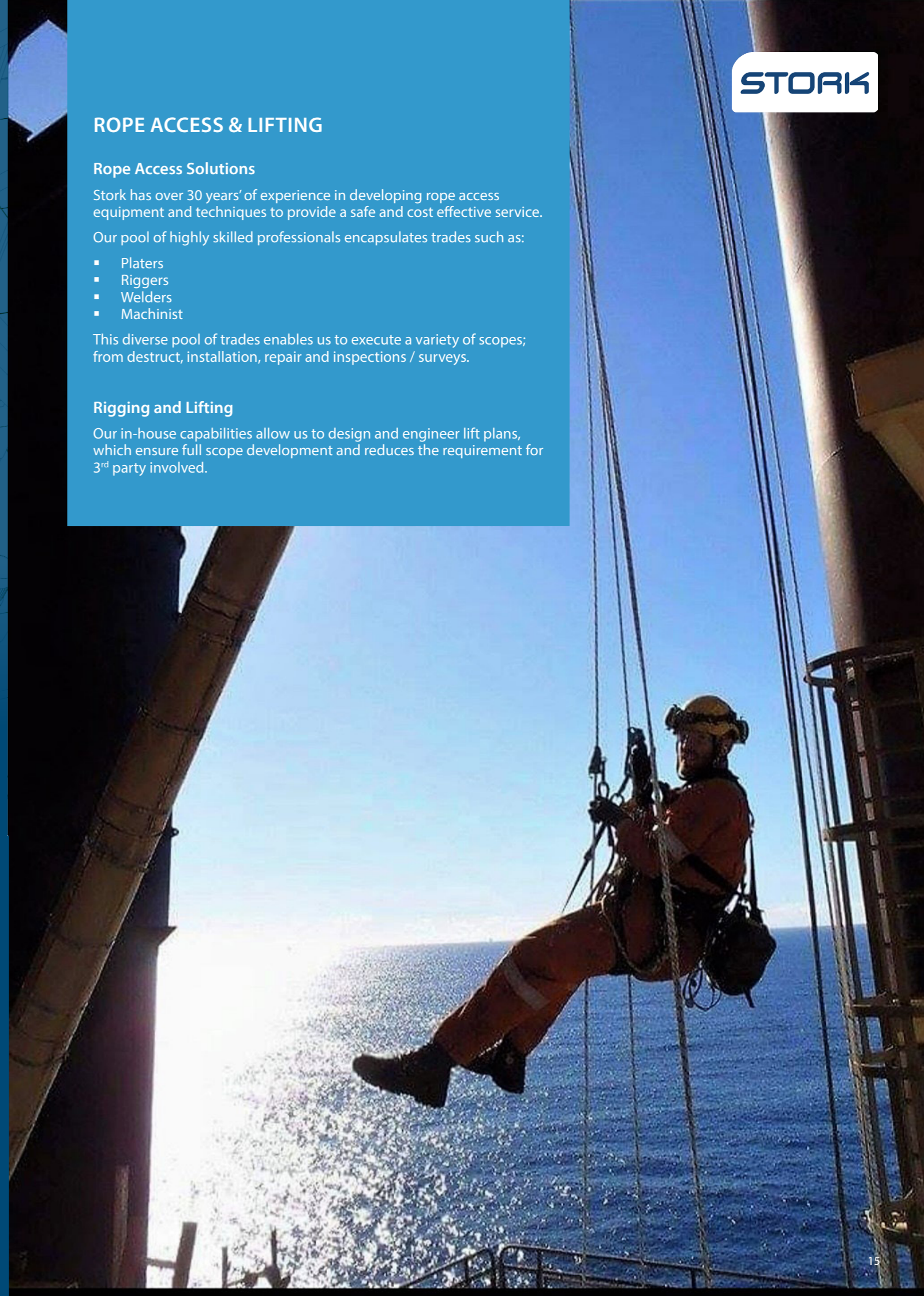
Our pool of highly skilled professionals encapsulates trades such as:

- Platers
- Riggers
- Welders
- Machinist

This diverse pool of trades enables us to execute a variety of scopes; from destruct, installation, repair and inspections / surveys.

### Rigging and Lifting

Our in-house capabilities allow us to design and engineer lift plans, which ensure full scope development and reduces the requirement for 3<sup>rd</sup> party involved.







## CASE STUDY: C2 FWSW CAISSON CUTTING AND CLAMP INSTALLATION

Two service water / firewater (SWFW) caissons attached to the outside of column 2, containing SWFW pumps and a riser, were required to be separated and secured between the topsides and GBS legs.

To secure the caissons, we had to install a restraint frame consisting of a restraint beam, collar half shell and collar holder at the existing mooring point (pre-cut). We proceeded to install a securing clamp on each caisson (post cut). The restraints provided the necessary support in both winter and summer conditions.

Once secured, the caissons were cut using a clamshell cutter in order to control the depth of cut and not damage the pump and riser within the caisson.

### Challenges:

- Risk of damaging the FW pump and riser during cutting operation; FW pump will be isolated.
- Swage repair in C2 may have not been secure at the location of the cut, preventing the clamshell cutting of the inner lining.
- C2 had a neoprene surface coating.
- The time between cutting the caisson and installing the new securing clamp had to be limited.

## EXECUTION 2

A 5-man multi-disciplined team was mobilised in the Summer of 2022, consisting of a rope access team lead, 2x rope access machinists and 2x rope access Rigger.

Following re-fabrication of the free-issued items, Stork proposed an additional activity to install the securing clamps on each caisson in a temporary position to ensure the clamps were fit for purpose prior to cutting. This was agreed by the client, as it would mitigate against the risks of leaving an unsupported cut caisson if the clamps did not fit.

The scope was executed in the following engineered sequence:

- C1 & C2 mark-up - Cutline, temporary upper clamp and final upper clamp setting out
- C1 & C2 Installation of lower restraint clamp
- C1 & C2 Installation of upper securing clamp in temporary position
- C2 installation of 4 off securing stud bolts (secure and centralize swage liner)
- C2 Clamshell set up and cutting
- C2 Installation of upper securing clamp in final position
- C1 Clamshell set up and cutting
- C1 Installation of upper securing clamp in final position

For C1 and C2 the C6 clamshell cutter cut through 28mm of the caissons and a 93.5 coating, caisson and liner respectively. The scope took a total of 18 days, 3 days less than predicted. No safety cases occurred during the scope.

## CLOSE OUT 3

Following scope completion, Stork compiled an extensive close out report, supplying evidence for each hold point specified within the work Instruction.

The close out report met both client's and lifting parties satisfaction.

### Successfully Completed Using our 3 Step Approach

## DEFINITION 1

Stork produced a high level technical proposal and detailed commercial proposal in order to satisfy the client's requirements and expectations for the scope.

Upon award of the work, we then engineered a comprehensive work instruction, lift plans and visual aid storyboards, to cover each aspect of the scope. We have found utilising storyboards in tandem with work instructions, assists with scope development onshore and a more efficient execution offshore.

As the restraint beams and securing clamps were free-issued items, Stork requested to complete a quality check prior to shipping offshore. In doing so, we identified that all items had been manufactured to the wrong revisions of the drawings. Stork's thorough and structured approach to scope development, prevented serious consequences occurring during execution.





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