

The logo for STORK, featuring the word "STORK" in a bold, blue, sans-serif font with a registered trademark symbol (®) to its upper right. The logo is contained within a white rounded rectangle with a blue border.

STORK®

TECHNICAL SERVICES

A large offshore oil rig is visible in the background, situated in the middle of the ocean. The rig is a complex structure of steel beams and platforms, with various pieces of equipment and pipes. It is supported by a large, rectangular barge or platform. The sky is overcast, and the water is a dark greyish-blue.

ONE PARTNER FOR LIFE

Machining, Bolting and
Flange Management

www.storktechnicalservices.com

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MANAGEMENT
SERVICES

What we do...

We provide the oil and gas industry with a fully integrated machining, bolting & flange management and support service capable of delivering complex flange management construction for shutdown & turnaround (TAR) scopes.

Stork has significant experience in supporting clients to reduce shutdown time through developing integrated plans for shutdown worksopes.

Stork have the ability to take ownership of the shutdown programme, to optimise the deployment of competent, multi-disciplined personnel, minimising bed space requirements.

Also, Stork can deliver all activities within a shutdown work scope, including flange face machining & bolting and pipe cutting.

OVERVIEW

Results & Benefits

Stork aim to add value wherever we operate and we do this by:

- Using multi-disciplined teams who can deliver a complete flange management service
- Managing potential conflicts between safety, non-routine tasks and high manning levels
- Reducing POB by using multi-disciplined teams
- Offering innovative solutions and technologies, for example iBolt
- Providing one focal point to manage services provided
- Working in partnership with our clients to efficiently manage the services required



Integrated Services

As the provider of integrated flange management services we are committed to developing and introducing technical innovations that help deliver significant safety and efficiency benefits on your flange management projects.

These services include:

- Machining and bolting
- Hot bolt clamping
- Pipe cutting
- In-situ machining
- iBolt flange management

Delivering on Expectations

Stork prides itself in the level of support provided to all their key clients in the provision of bolting, machining and flange management services and is keen to maintain its track record on delivery.

The company has met, and often surpassed, all the planned and unplanned requirements placed upon it during 2012 and have also absorbed a number of scopes which their competitors were unable to resource.

MACHINING & BOLTING

Stork support clients to achieve their business objective safely and efficiently by providing appropriate management and control techniques.

The integrity of bolt and flange connections is key to minimising production downtime.

Stork's on-site machining & bolting division manages the entire joint integrity process from inspection through to assembly, testing and completion.

Their experienced multi-disciplined technicians, supported by extensive stocks of specialist equipment are on hand to provide bolt tensioning and torquing services, and on-site machining services worldwide.

Stork offer:

- A dedicated team of experienced engineers to support all client enquiries
- 24/7 response for technical queries
- Industry leading procedures and operational knowledge gained over 20 years in the industry
- In-house capability for bespoke solutions

The requirements set for bolted connections with regard to quality and reliability are substantial. Developments in bolt materials and gaskets now lead the requirement for good pre-calculated tension in bolted connections. The bolt tightening services offered by Stork include:

- Hydraulic Bolt Torquing
- Hydraulic Bolt Tensioning
- Induction Bolt Heating
- Nut splitting
- Joint splitting

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- Hydraulic bolt tensioning
- Induction bolt heating
- Nut splitting
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HOT BOLT REPLACEMENT

Stork have designed a Hot Bolt Clamp System to improve the integrity management of bolted flange connections.

Since its launch in February 2012, Stork's innovative and award winning hot bolt clamp system has revolutionised the integrity management of bolted connections.

The system enables the safe removal and replacement of corroded bolts on live flanged connections that have eight bolts or less, with no disruption to production. Removal and replacement is achieved with the pipeline remaining in service which removes the requirement for shutdowns and the associated downtime, manpower and bed space requirements.

The system maintains the integrity of the of a connection by allowing or corroded or damaged studs to be replaced. This can be undertaken with the pipeline remaining in service which removes the requirement for shutdowns and the associated downtime, manpower and bed space savings.

Most Importantly the clamp system improves safety for offshore operatives and the asset as a whole by reducing the risk of Hydrocarbon releases.

To date over 6000 four bolt flanged connections have been re-worked with 100% success rate with additional applications scheduled.

The hot bolt clamp can be utilised on utility and hydrocarbon lines, some of the typical applications are listed include:

- Instrument air
- Plant air
- Seawater
- Produced water
- Diesel transfer
- AFFF Foam Storage
- Open/Closed Drains
- Nitrogen
- Chemical injection
- Hydraulic oil
- Aviation fuel



HOT BOLT REPLACEMENT

Workscope

Stork was contracted by BP to carry out a four bolt flange replacement on the Andrew installation.

To determine a fixed workscope, Stork were also asked to carry out a pre job survey on the platform.

Solution

Stork made the recommendation to conduct a pre-job survey. This allowed the workscope to be planned efficiently.

The HBC team worked all flanges under live operational conditions, eliminating the need to de-pressurize and purge any lines, removing the requirement for a costly shutdown.

Innovation

The multi-award winning Hot Bolt Clamp system is a set of bespoke designed hydraulic clamps that clamp a set of pressurized bolted flanges together so stud bolts can be safely removed.

The system has been specifically designed to allow the hot bolting of four bolt flanges (it is not limited to this number of bolts).

"BP contracted Stork to carry out four bolt flange replacement bolt programme and this entailed using hydraulic clamps to change the bolts out on live systems.

We found the attitude of the Stork technicians to be of an excellent standard. They displayed a safe and conscientious attitude towards the tasks they were asked to carry out and completed the scope in less time than planned."

Alan Love
Andrew Mechanical Engineer
BP North Sea Region



Project information:

- Maximum working pressure – 689 bar
- Hand pump operation

Typical application:

- 4 bolt flanges
- Working from 150 # to 600 # rated joints
- Temperature range up to 90°C

Works in conjunction with:

- Controlled torque tightening.
- Ultrasonic bolt length measurement

Results & benefits:

- Stork's HBC team replaced the bolts in over 100 flanges in 4 weeks with 100% success rate
- The full work scope was carried out in time and within the CTR budget
- Work scope completed safely and on time and with zero incidents
- Job completion and work pack completion reports given to the client within 7 days of demobilization of the men and equipment

HOT BOLT REPLACEMENT

Workscope

Stork Technical Services (Stork) was contracted to carry out four bolt flange replacement on the Shell Nelson.

Stork were also asked to carry out a pre-job survey on the platform to determine a fixed scope of work.

Solution

A pre-job survey was recommended and agreed with the client. This allowed work to be planned efficiently in line with ongoing work scopes.

All flanges worked were under live working conditions allowing the HBC team to work on the flanges without the need to de-pressurize and purge any lines, removing the requirement for a costly shutdown.

Innovation

The Hot Bolt Clamps are a set of purpose designed hydraulic clamps that clamp a set of pressurized bolted flanges together so stud bolts can be safely removed.

The clamps have been specifically designed to allow the hot bolting of four bolt flanges (it is not limited to this number of bolts).

"I would like very much to have Stork technicians back on Nelson in the turn of the new year.

I think that the Hydraulic Clamp would be extremely useful and open up a lot of work that will allow us to complete our Nuts & Studs 2010 spreadsheet, it would certainly make my job a lot easier together with a significant reduction in the amount of man hours and input from operations as no breaking of containment would be required and very little in the way of plant would need to be isolated".

Michael Herdman
Engineering Team Leader
Shell, Nelson



Project information:

- Maximum working pressure – 689 bar
- Hand pump operation

Typical application:

- 4 bolt flanges
- Working from 150 # to 600 # rated joints
- Temperature range up to 90°C

Works in conjunction with:

- Controlled torque tightening
- Ultrasonic bolt length measurement

Results & benefits:

- Following on from the initial trip and successful bolt change out of 20 flanges, we went on to operate a 5 month programme whereby, using the StorkHBC System, in excess of 500 four bolt flanges were successfully hot bolted
- The full work scope was carried out in time and within the CTR budget.
- Work scope completed safely and on time and with zero incidents
- Job completion and work pack completion reports given to the client within 7 days of demobilization of the men and equipment.

PIPE CUTTING

Stork offer a range of portable pneumatic or hydraulically operated machines enabling pipe cutting on almost any size, schedule or material of cylindrical pipe.

Each machine is classified as cold work / spark potential allowing work to be carried out in zone one areas while backed up with a client exemption certificate.

We also provide an extensive selection of ancillary equipment allowing other operations such as match boring, weld preparation and journal turning to be carried out using the same range of machines. Machine utilisation.

Stork utilise highly durable lightweight machines that can be used in any environment. The split frame design of these machines allows minimum set up time and ease of operation. These machines can be driven by either hydraulic or pneumatic motors.



Special Access Solutions

With use of all the above equipment Stork Mechanical rope access technicians can carry out Pipecutting operations in areas that would normally require scaffold or some kind of fixed access platform.



IN-SITU MACHINING

Reduced Downtime and Costs

Stork provide a comprehensive range of on-site machining services using in-house mobile equipment.

By taking the machine to the work piece instead of dismantling and transporting the work piece to the machine, downtimes and associated costs are reduced.



In-Situ Machining Services include:

- Flange facing to suit ½" to 120" diameter flanges, internally and externally mounted
- RTJ , raised face , O ring grooves etc.
- Milling applications up to 2.2 x 3 m square
- Pipecutting/Prepping from 1" diameter to 110" and above. Wall thicknesses of up to 4"
- Hot / Cold Tapping from ½" to 2" diameter
- Drilling & Tapping holes up to 6" diameter



iBOLT FLANGE MANAGEMENT

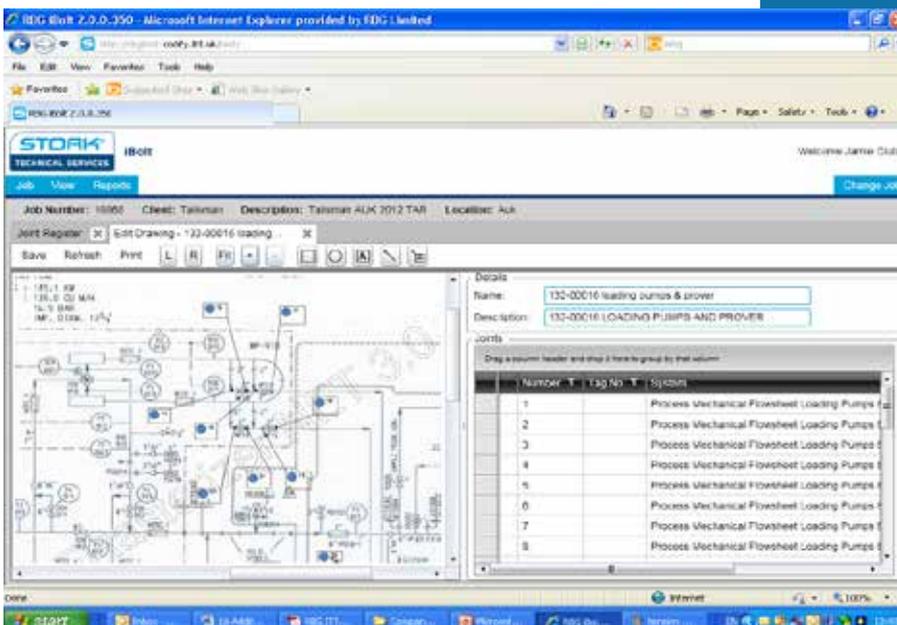
Bolt flange integrity management software improves the safety, efficiency and cost-effectiveness of bolting operations.

The user friendly, web-based system provides a complete auditable record of all activity carried out on flange management worksopes from topside to subsea.

The software can be tailored for specific platforms or project requirements. One of Stork's key clients, a major UKCS operator recently requested a bespoke version of the software for use across its North Sea assets.

Stork offer:

- A Joint Register populated by an experienced Flange Management Technician
- A Job Register displaying jobs logged into the iBolt software
- Records all data including torquing and tensioning information. P & ID & ISO drawings can be stored and marked up
- iBolt enables the handing back of plant and installations to the client with the confidence that every measure has been taken to ensure there will be no major leaks from flanges involved in the workscope



- All data relevant to each bolted connection from assembly through to final tightening (including all competency) is captured on an auditable trail for HSE requirements

INTEGRATED FLANGE MANAGEMENT SERVICES - DRIVING VALUE

	Traditional Approach	Stork Partnership Approach
Planning	<ul style="list-style-type: none"> • Client driven • Limited engagement 	<ul style="list-style-type: none"> • Embedded Stork support • Focus on best practice and value driven solutions • Identify pre-shutdown scopes
Survey	<ul style="list-style-type: none"> • Information gathering • No focus on efficiency 	<ul style="list-style-type: none"> • Improved accuracy • Focus on efficiency and effectiveness
Cost	<ul style="list-style-type: none"> • Costs designed in • Cost reduction by attacking margins 	<ul style="list-style-type: none"> • Focus on value • Increased accuracy • Reduced cost
Execution	<ul style="list-style-type: none"> • Individual teams • Multiple contact points • Increased downtime 	<ul style="list-style-type: none"> • Integrated teams • Improved safety • Less downtime • Improved quality



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