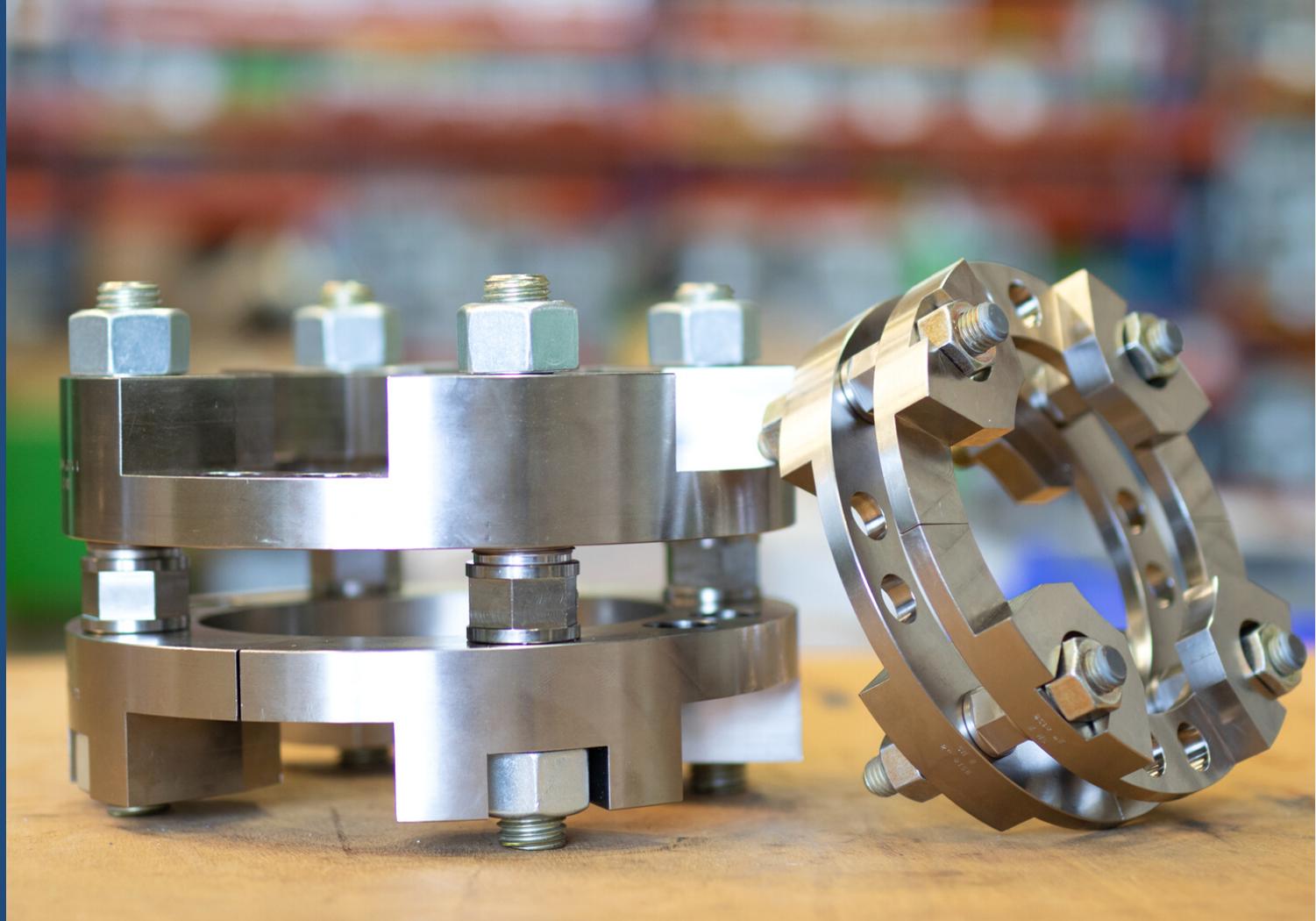


The SRJ logo consists of the letters 'SRJ' in a white, serif font, centered within a solid red square.

ELEVATING  
ASSET  
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## WORK WITH US

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PRE-SHUTDOWN  
HOT BOLTING

# THE BENEFITS OF FLANGE BOLT REPLACEMENT PRIOR TO A PLANT SHUTDOWN

## WHY BEST TO ACT BEFORE THE SHUTDOWN?

Undertaking bolt replacement prior to shutdown offers several key benefits, by:

- Reducing planned shutdown work scope.
- Decreasing the number of personnel required on site during the busy shutdown period.
- Reducing the risk of any emergent problems occurring during the shutdown event that may jeopardise planned activity sequences or the overall schedule.
- Confirming that any key pressure boundaries required for the shutdown, such as isolation valve flanges, are in an acceptable condition.
- Allowing changes to the material spec or grade of any bolts that are required to accommodate mods being made during the shutdown to be implemented beforehand.

## EXECUTION METHODOLOGY

SRJ provides an assessment process to help define pre-shutdown bolt replacement requirements, and the supporting tools to allow for safe bolt exchange under normal plant operating conditions.

The assessment process is used to classify and prioritise flange bolt replacement needs by reviewing inspection (anomaly) records of the defected flanged joints to qualify flange & bolting condition, establish ease of access and grade process risk.

## VALUE OFFERING

By applying the assessment process and using SRJ's safe bolt exchange (BoltEx®) technology, typically 90% of the bolt replacement needs can be successfully addressed via a pre-shutdown campaign. This leaves just a small residual of 10% of the scope to be addressed during the main shutdown. These may include flanges with specific access problems, flanges where bolts cannot be safely removed online, and flanges where condition has deteriorated to such an extent that broader remedial action is necessary.

SRJ can also assist in defining an appropriate remediation strategy.



The condition and ongoing integrity of corroded and defected bolted flanged joints is important for safe and reliable operations. Usually, leakage between the flange faces is the primary concern.

However, under extreme conditions any external corrosion process may rapidly reach a point where the structural integrity of the flanged joint (and piping system) is adversely affected, potentially resulting in a significant loss of containment.

