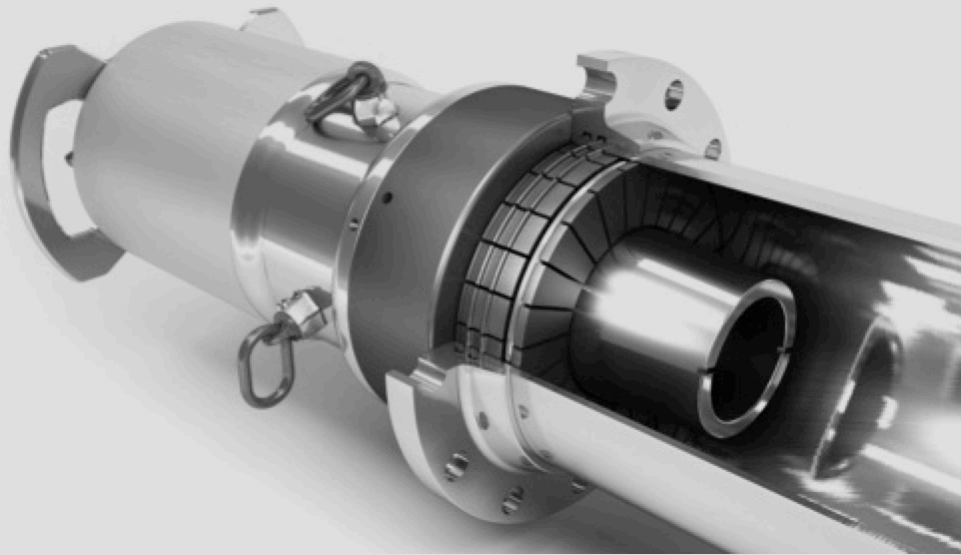


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Introduction

(((The Simple Connection System

Quickflange is the simple alternative to high cost, complicated mechanical pipe connectors.

Suitable for Critical and non-critical applications.

Established as the #1 choice for topside maintenance, repair and tie-in applications.



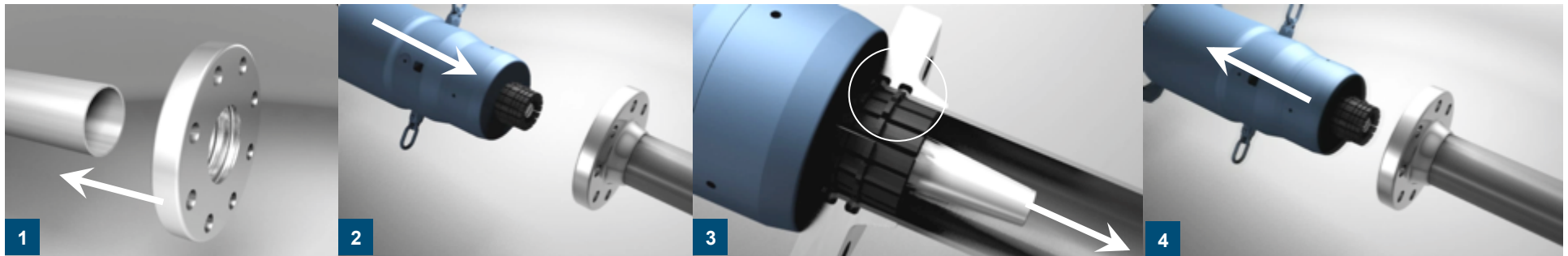
A flange connection, that.....

- Requires NO welding
- Is permanent, high performance connection
- Is Weld and hot-work free
- Is Cheaper, quicker and more reliable than competitor products
- Accredited
- Has and extensive Usage History



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Installation



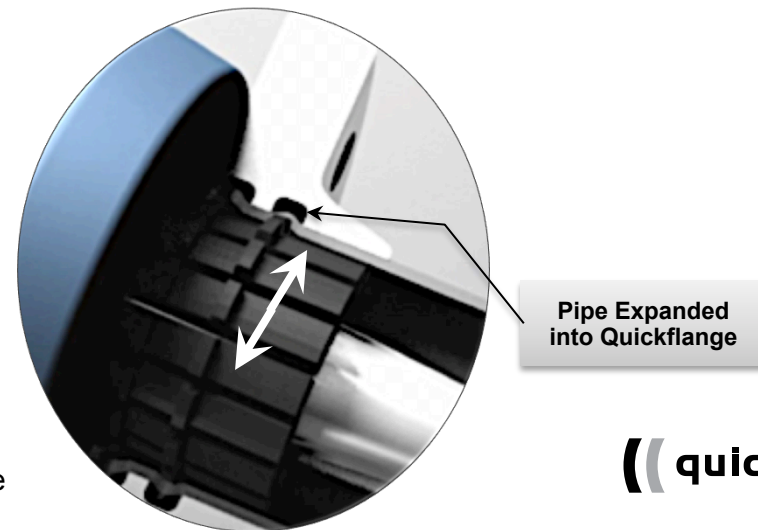
Start

Quickflange is a **Modified Standard Flange**

- 1 Quickflange is slid over the pipe, there is an end stop to ensure correct positioning
- 2 Quickflange Installation tool is inserted
- 3 Installation tool is activated and pipe is expanded into the Quickflange
- 4 Installation tool is retracted and removed. Installation Complete!

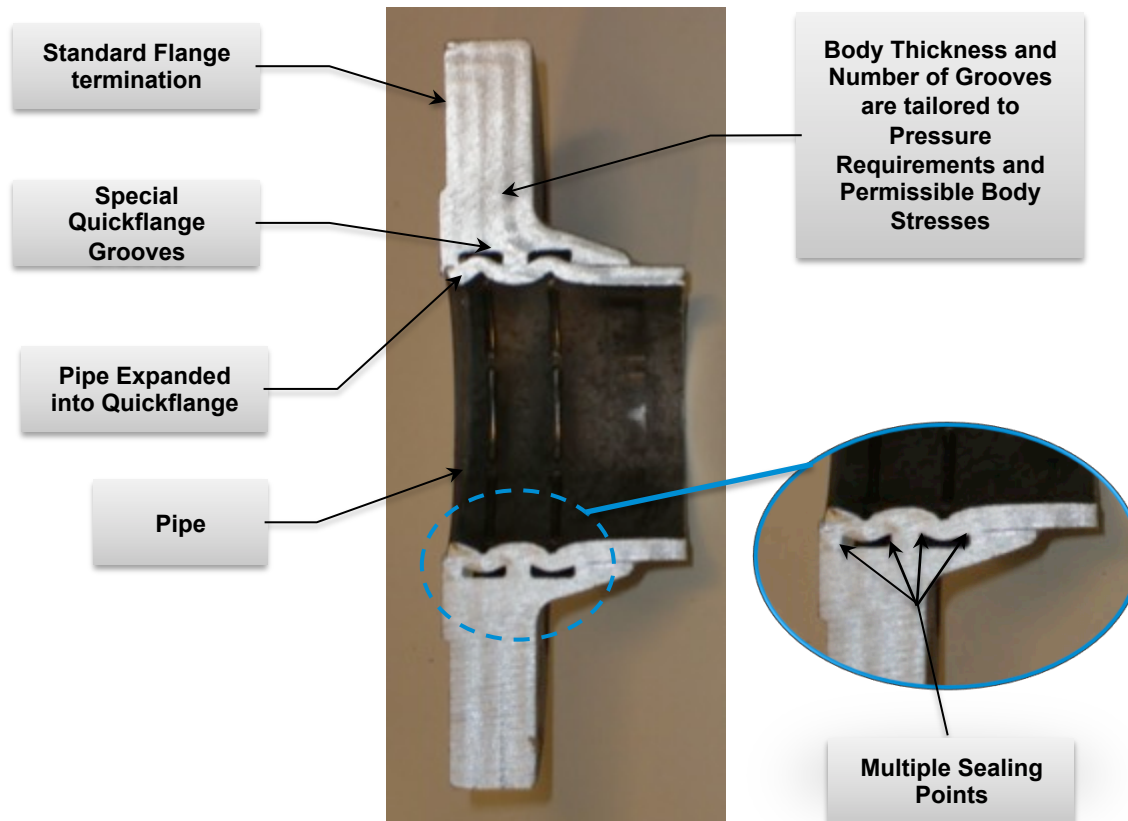
End

Bolt up Quickflange as per a normal Standard flange



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⌋ The Technology



- Pipe is expanded into the flange body (grooves)
- Full pipe integrity remains – no WT reduction
- Metal to metal seal with redundancy
- Full strength, permanent connection equal to welded flange
- Indentation have no detrimental affect (flow, strength, corrosion resistance)

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(((Accreditation / Approvals

Independently Tested and Qualified by Third Parties (DNV, ABS, Sintef etc)

Qualification verification covers extensive assessment inc:

- Structural,
- Pressure Retention
- Fatigue,
- Corrosion,
- Stress,
- Bending,
- Torsion,
- Vibration,
- Metallographic
- Fire



Examples of Standard / Rules Applied

- ASME B31.3 Pressure piping
- ASME B16.5 Flange design
- ASME BPVC Sect. VIII Div 1 UG-101 (Burst)

- DNV Rules for Classification of ships
- DNV Standards for Certification 2.9 No. 5-792.20
- DNV Offshore Standards

- ABS Steel Vessel Rules 2011

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Design Basis

Design according to ASME B31.3 Process piping

Flange geometry compatible with standards (e.g. ASME B16.5)

Bolted to a standard flange using standard gasket , bolts and torque

Flange material according to material standards (ASTM standards)

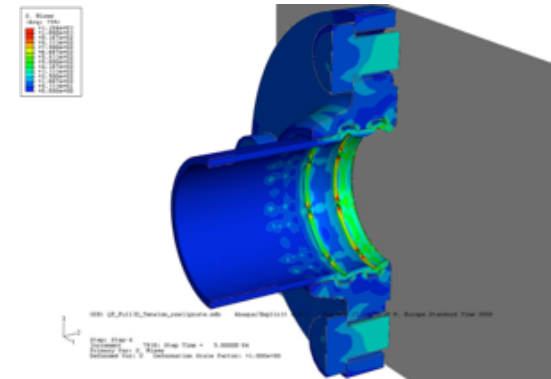
Flange material always matches the pipe material

Seal integrity ensured by optimizing flange to pipe contact pressure.

Proof testing according to standards (ASME BPVC Sec VIII Div1 UG-101)

Mechanical capacity with regard to axial load, bending moment and torsion load
consider ASME B31.3 maximum allowable pipe material stress.

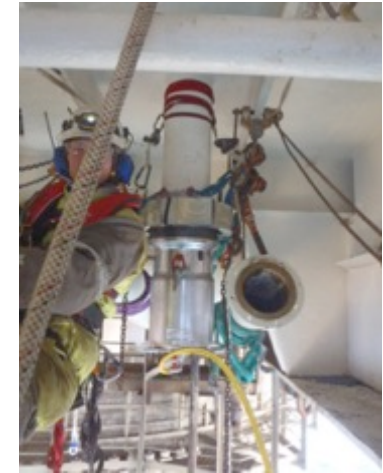
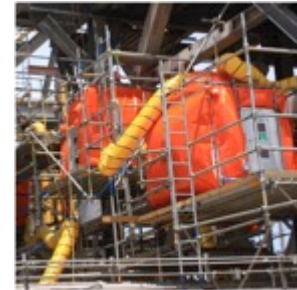
Nonlinear Finite Element Analysis and Mechanical testing.



Usage

Quickflanges are typically used on or where:

- Limited small volume repair modifications tie-ins
- Avoidance of Welding habitats
- Removing work from shutdowns into pre-shutdowns OR during operations
- Problem applications where welding is impractical
- Difficult to weld materials



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Range, Features & Benefits

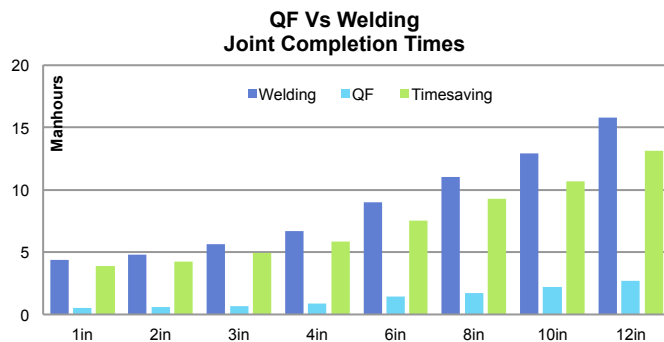
Standard Range

- Sizes 3/4in to 14in
- Pipe/flange materials – carbon steel, stainless steel, duplex, CuNi, 6MO, Super Duplex Monel, etc.
- 150lb to 900lb

Features

- ✓ No Hot work
- ✓ Increased Safety
- ✓ Easy Installation
- ✓ Robust connection
- ✓ No moving parts
- ✓ Short lead time
- ✓ Ideal for repair and Contingency
- ✓ Ideal for regional support
- ✓ Extremely Compact design

Customer Benefits



Data – Statoil - Norway

- Quickflange completed in a fraction of welding time, therefore –
 - Saving time, and greater efficiency and freeing resources
 - Low risk, no emission
- Training available for customer to install
- Flexible business model, Rental of installation tooling and sale of connectors – i.e. Low CAPEX and OPEX. Long term rental agreements etc
- Quickflange offers complete service – Survey, supply, training, pipe cutting, installation and joint testing



Customers - Examples



Typical Cases



Capixaba, Brazil

3" 600# application

Installation of new elbow.

Flanged in onboard workshop, tied into existing line with QF
Avoiding hotwork, shutdown, pipe work removal



Kikeh, Malaysia



Various Applications

In-shutdown, tie-ins to insert valves, re-routing etc

1", 2", 3", 4" carbon, stainless and galvanised pipe

Total of 30 flanges installed

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