

COMPLETION AND WORKOVER RISER SYSTEM (AQC-CW)

A complete seabed to surface vessel, semi-sub or jack-up deployed solution.



PRODUCT APPLICATIONS

- Completion and Workover Riser, for open water from vessels and mobile drilling units
- Landing String inside marine risers or conductor
- Surface well riser section between well head and surface intervention pressure control equipment

The Aquaterra Energy Completion and Workover Riser (AQC-CW) is 7-3/8" Nom Bore with AQC pin and box connections, allowing fast and efficient rig make-up. And crucially a means of a reliable repeatable (hundreds) make/break gas tight connections with back-up sealing, that can be tested upon make-up with significant operational anti back-off/torque resistance.

This is something that threaded and coupled connectors cannot offer, giving customers significant and unique technical advantages and operational cost savings, such as reduced spares and in-service repairs/replacements (large OPEX and CAPEX savings), as well as assurance of back-off resistance.

KEY PRODUCT FEATURES

- 5,000, 10,000 and 15,000 PSI rated
- 7-3/8" Nom Bore (other sizes available)
- Suitable for high-pressure and high-temperature wells
- Designed for sour service applications
- Connector make-up confirmation pressure test on assembly
- Fast make-up with no loose parts
- Patented testable dual seal arrangement
- Gas tight metal-to-metal seals with back-up elastomeric seal
- Fully automatic riser spider, umbilical handling and connector make up equipment available

Get in touch:

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COMPLETION AND WORKOVER RISER SYSTEM (AQC-CW)

AE Part Number:	02517
Primary Design Code:	BS EN ISO 13628-7 2006 DNVGL-OS-E101 Latest Edition Offshore Standard For Drilling Plant
Qualification:	BS EN ISO 13628-7 2006 CTOD testing in accordance with BSI BS 7448 PART 1 Combined loading, Fatigue tested and multiple make/break cycle Hydro and gas qualified Vibration back-off qualification
Pressure Rating:	5,000, 10,000 and 15,000 PSI rated
Temperature Rating:	-18°C to +121°C
Connector Type:	AQC-CW Completion & Workover Riser Connector
CWOR Connector To Pipe Manufacture:	Permanent factory installed to Tenaris Pipe via Tenaris Blue Riser Connector (no welding). Forumlok™ in place providing min 6x make-up torque to break-out.
Outside Diameter:	8-5/8" (pipe) 13.78" (box)
Intermediate Joint Length	12m Effective Length (can be made-up as doubles, with Tenaris Coupler in centre) Various Pup Joint Lengths
Inside Diameter:	7-3/8" Drift (other sizes available)
Pounds Per Foot:	Approx. 50 PPF
Service:	NACE MR0175/ISO 15156 region 3
Number and type of seals:	Metal-to-metal gas tight seal areas within gasket and 1 off elastomeric seal (mainly for make-up test)
Est. No. of Makes & Breaks	>500
Repair Method:	Cold weld repair seal face, replaceable dogs, regional service centres available
Coating:	Thermally Sprayed Aluminium (TSA) OD Corrosion resistant seal face (CRA) TK34-P Coating to AQC-CW Internals and pipe ID to improve service life

Inspectable, measurable, repairable, and replaceable components for long life and repeat make and break

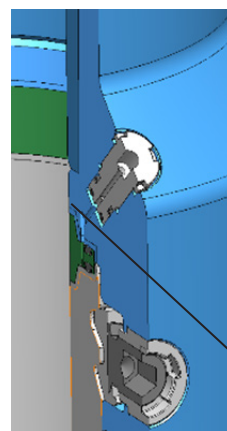
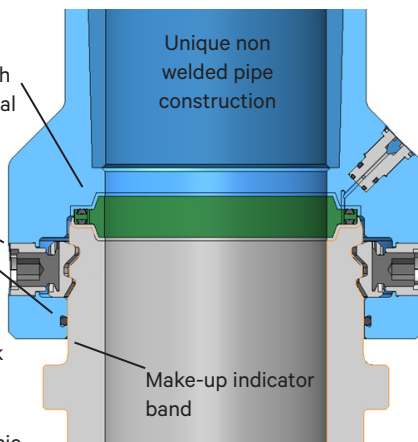
Gas tight metal to metal seal with qualified back-up elastomeric seal

Marinised seals

Integral components, no loose parts or dropped object risk

Anti-vibration dog drive bolt lock

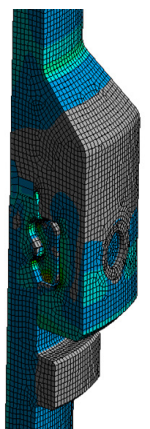
Preloaded static connection designed and qualified for dynamic loading



Fatigue enhancement features

FEA linked to real world conditions and qualification results

Back seat integral make-up confirmation pressure test



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The AQC-CW (Completion and Workover Riser Connector) has been specifically designed for high fatigue multiple make-up and break-out riser applications. It has excellent fatigue performance, dual metal-to-metal gas tight seals and an elastomeric back-up seal used primarily for connection make-up testing. The connector can be made-up and broken-out hundreds of times; when damage is identified the seal face can be cold weld repaired, whilst dogs and drive bolts can be replaced easily offshore. Designed with service life in mind, the connector is inspectable, measurable and repairable, with replaceable components for long life making servicing and five yearly overhauls simple and transparent.

Each riser joint has no structurally welded components to both improve fatigue performance and reduce weight. The AQC-CW pin and box are permanently joined (Forumlok™ thread compound, increasing the break-out torque from 60,118 Ft-lbs to 258,000 Ft-lbs) to the 8-5/8" OD pipe via a Tenaris Hydril Blue Riser box profile machined into the AQC-CW. This drastically reduces the riser weight whilst maintaining excellent strength, fatigue performance and provides extremely high in-operation torque resistance against vessel movement.

The AQC-CW is run pin-up, box down with a metal-to-metal seal ring, complete with elastomeric back-up seal insert on top of the pin. The riser string is supported during make-up on a lower pin load shoulder within the riser spider. This approach improves fatigue performance as no slip damage occurs, it also improves safety and makes deployment and recovery significantly faster than traditional bowl/slips by eliminating the removal and installation of master bushings. The AQC-CW is run on standard side door elevators. The drive bolts in the fully retracted position are flush with the box OD, once the drive bolts are fully torque loaded they are recessed into the box body. This design approach increases the vertical racking capacity.

During make-up, the box swallows 98% of the pin as it is lowered into position. Once the box has landed out, the radial dog drive bolts are torque loaded in controlled, progressive steps in a diametrically opposing pattern to ensure even make-up (either manually or using the automatic riser spider). The drive bolt design has been engineered and qualified to resist back-off and loss of preload. Once the drive bolts have reached full torque they will be recessed into the body and the underside of the box will be flush with the indicator groove to confirm correct make-up. This design provides a large connector preload, making it well suited for high load and fatigue sensitive applications such as top tensioned subsea completion and workover operations. Design features within the AQC-CW have been carefully engineered and tested to reduce stress, damage to seal faces, dogs and thread profiles to pro-long life and fatigue performance.

Once made up, an optional back seat seal ring test can be performed via the specially designed and patented box test port. This allows for confirmation of both the metal-to-metal and elastomeric seals, as well as the ability to test the port plug itself for well control compliance. Break out of the AQC-CW is performed via a controlled reverse procedure, once the connector has been broken out it is cleaned, inspected and protective storage grease applied. The inspection results are recorded on our unique asset and fatigue management tracking system, which is reviewed and approved by our independent riser analysis team.

The AQC-CW can be supplied with an automatic riser spider and AQC-CW drive bolt make up device or simply be made up manually via the low torque drive bolts.

RELATED PRODUCTS

- Riser Analysis
- Riser Monitoring System (RMS)
- Riser Maintenance and Fatigue Management
- Upper Stress Joint / Tension Joint
- Swivel Tension Ring
- Lower Stress Joint
- Riser Spider, Automated AQC-CW make/break and Umbilical Handling/Guidance System
- Slick Joint for landing string applications inside of marine riser or conductor
- AQC-SR big bore (14" and 20" ID) subsea jack up operation drilling risers

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