

# SUBSEA RISER SYSTEMS PRODUCT TECHNICAL SPECIFICATIONS

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# ARC-G SUBSEA HIGH-PRESSURE DRILLING RISER SYSTEM

A COMPLETE SEABED TO SURFACE  
JACK-UP DEPLOYED SOLUTION.

## PRODUCT APPLICATION

Jack-up deployed subsea well operations – drilling,  
interventions and subsea abandonments



The Aquaterra Energy  
ARC-G high-pressure  
subsea drilling riser is 14”  
or 21” Nom Bore with  
ARC-G pin and box  
connections, allowing fast  
and efficient rig make-up.

## KEY PRODUCT FEATURES

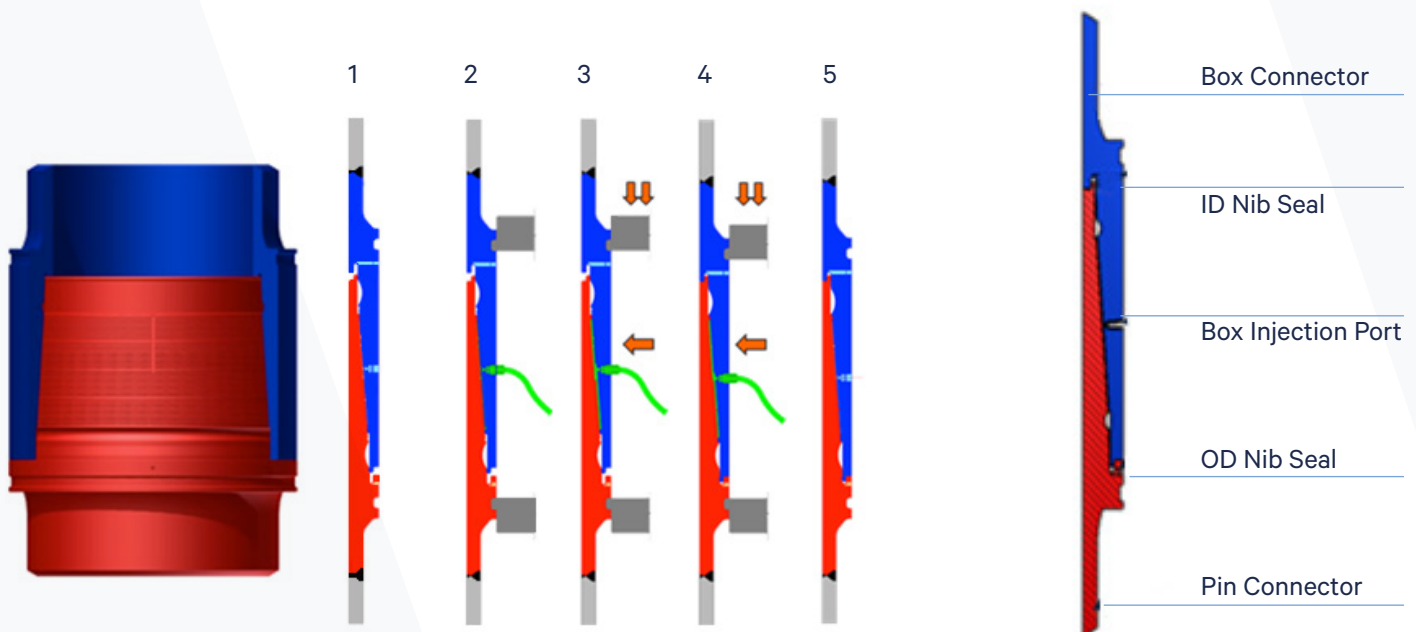
- ✓ 7,500 PSI rated
- ✓ Big Bore, essential for dynamic riser applications to prevent running clearance issues
- ✓ Low profile OD connector
- ✓ Fast make-up, with no loose parts
- ✓ Gas tight metal-to-metal seal on wellbore and environmental outer
- ✓ Concentrically threaded with interlocking teeth
- ✓ ID and OD preloaded contact shoulder
- ✓ Excellent torsional resistance

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# ARC-G SUBSEA HIGH-PRESSURE DRILLING RISER SYSTEM

Primary Design Code:	DNVGL-OS-E101 Latest Edition Offshore Standard For Drilling Plant
Qualification / Supplementary Standards:	API-STD-2RD API 16A
Pressure Rating:	7,500 PSI
Temperature Rating:	-18°C to +121°C
Connector Type:	ARC-G HP subsea drilling riser (ARC-G)
Outside Diameter:	ARC-G Box OD extends 1" radially from pipe OD 26" OD for 21" version
Inside Diameter:	AQC-SR for 13-5/8" subsea wells - 14" Drift AQC-SR for 18-3/4" subsea wells - 21" Drift
Intermediate Joint Length:	Circa 12m Effective Length Various Pup Joint Lengths
Joint Weight:	12m Joint circa 6.5 metric Te 20" Bore 7,500 PSI system
Service:	NACE MR0175/ISO 15156
Number and type of seals:	Metal-to-metal gas tight seal
Coating:	Thermally Sprayed Aluminium (TSA) OD



# VAM-TTR SUBSEA HIGH-PRESSURE DRILLING RISER SYSTEM

A COMPLETE SEABED TO SURFACE  
BIG BORE JACK-UP DEPLOYED  
SOLUTION.

## PRODUCT APPLICATION

Jack-up deployed subsea high-pressure well operations,  
such as drilling, interventions and subsea abandonments



The Aquaterra Energy supplied VAM-TTR HP subsea high-pressure drilling riser is a 14" Nom Bore with VAM-TTR threaded and coupled pin and box connections, allowing for fast and efficient rig make up. The system was developed in response to strong market demand for a gas tight 14" bore subsea riser.

## KEY PRODUCT FEATURES

- ✓ 14" bore x 16" OD threaded and coupled subsea high pressure riser system
- ✓ Gas tight metal-to-metal seals (internal and external)
- ✓ Known and documented fatigue and run history
- ✓ Fast make-up threaded connector
- ✓ Run inside or outside an environmental barrier
- ✓ Facilitates low cost shallow water subsea developments and abandonments
- ✓ Field-proven

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# VAM-TTR SUBSEA HIGH-PRESSURE DRILLING RISER SYSTEM

Primary Design Code:	DNVGL-OS-E101 Latest Edition Offshore Standard for Drilling Plant
Qualification:	API-STD-2RD API 16A
Pressure Rating:	10,000 PSI
Temperature Rating:	-18°C to +121°C
Connector Type:	Threaded and Coupled VAM-TTR
Outside Diameter:	16" Pipe
Inside Diameter:	Circa 12m Effective Length Various Pup Joint Lengths
Intermediate Joint Length:	NACE MR0175/ISO 15156
Service:	NACE MR0175/ISO 15156
Number and type of seals:	Metal-to-metal gas tight seal areas on wellbore and environmental outer seal
Repair Method:	Thread re-cut
Coating:	Thermally Sprayed Aluminium (TSA) on OD
Fatigue Management:	Inspection results are recorded on our unique asset and fatigue management tracking system which is reviewed and approved by our independent riser analysis team.



## T & C THREADED & COUPLED

Casing Riser 7" - 16" OD

### SAF 1.5

Make & break up to 10

- High fatigue performance
- External metal-to-metal sealing system
- Field proven

## VAM® TTR OUTER PRODUCTION RISER

Design Features:

- True metal-to-metal external seal
- Fatigue oriented, triangular thread profile
- Bending swoosh "hot spot" transfer zone
- Gastight, internal metal-to-metal seal
- Easy stabbing and running

## RELATED PRODUCTS

- Riser Analysis
- Full jack-up ready subsea riser systems available and interface and engineering service
- Subsea hydraulic connectors H4 and Collet
- Subsea ROV panels and hydraulic connector surface control packages and lock pressure surface monitoring
- Riser Monitoring System (RMS), Riser Maintenance and Fatigue Management
- Stress and Tension Joints
- Tension Rings, Tension Systems and Tension System Monitoring Systems
- Slick Joint for landing string applications inside of marine riser or conductor
- AQC-CW (Completion & Workover Riser Connector) 7½" for open water and landing string applications
- ARC-G (subsea drilling riser) for 7,500 PSI applications
- AQC-SR (HPHT subsea drilling riser) for 15,000 PSI, sour and high temperature applications



# SUBSEA HIGH-PRESSURE DRILLING RISER SYSTEMS (AQC-SR)

A COMPLETE SEABED TO SURFACE  
JACK-UP DEPLOYED SOLUTION.

## PRODUCT APPLICATION

- Jack-up deployed subsea well operations, such as drilling, interventions and subsea abandonments
- Surface well riser section between well head/tree and surface BOP



Our Subsea High-Pressure Drilling Riser System (AQCSR) is a 14" and 20" Nom Bore with AQC-SR pin and box connections. The connectors enable fast and efficient rig make-up and crucially a means of reliable repeatable make/break gas tight connections with back-up sealing, that can be tested upon make-up and come with significant operational benefits.

It's a unique offering that gives customers significant technical advantages, as well as OPEX and CAPEX savings via reduced spares and in-service repairs/replacements, and repeatable gas tight seal assurance.

The AQC-SR is the only purposely designed and qualified high-pressure subsea drilling riser system that complies with ISO 13628-7 2006 on the market.

## KEY PRODUCT FEATURES

- ✓ Suitable for 13-5/8 and 18-3/4 subsea wellheads and trees 5,000, 10,000 and 15,000 PSI rated
- ✓ Big bore, essential for dynamic riser applications to prevent running clearance issues
- ✓ 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

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# SUBSEA HIGH-PRESSURE DRILLING RISER SYSTEMS (AQC-SR)

Aquaterra Energy Part No.:	02230-001
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 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
Temperature Rating:	-29°C to elevated temperatures above 121°C for HPHT applications available
Connector Type:	AQC-SR HP subsea drilling riser (AQC-SR)
Outside Diameter:	AQC-SR for 13-5/8" subsea wells - 30-1/4" (box) AQC-SR for 18-3/4" subsea wells - 41" (box)
Inside Diameter:	AQC-SR for 13-5/8" subsea wells - 14" Drift AQC-SR for 18-3/4" subsea wells - 20" Drift
Joint Weight:	12m Joint circa 11.5 metric Te 20" Bore 15,000 PSI system
Service:	NACE MR0175/ISO 15156 region 3
Number and type of seals:	Metal-to-metal gas tight seal areas within seal ring and 1 off elastomeric seal (back up seal and for make-up test)
Est Number of Makes & Breaks:	>500
Repair Method:	Repair Method:
Coating:	Thermally Sprayed Aluminium (TSA) OD Corrosion resistant seal face (CRA) Component Xylan subsea coating

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

Preloaded static connection designed and qualified for dynamic loading

Back seat integral make-up confirmation pressure test

Integral components, no loose parts or dropped object risk

Marinised seals

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

Make-up indicator band

Anti-vibration dog drive bolt lock

FEA linked to real world conditions and qualification results

Fatigue enhancement features

Upper and lower running shoulders: fast riser spider operation, no time consuming, manual bowl and slips

