

REDLINE

Version 2.0 to Version 1.0

Quality Requirements for Unfired, Fusion Welded Pressure Vessels

Redline Version



Revision history

VERSION	DATE	PURPOSE
2.0	April 2022	Second Edition
1.0	December 2018	First Edition

Acknowledgements

This IOGP Specification was prepared by a Joint Industry Programme 33 Standardization of Equipment Specifications for Procurement organized by IOGP with support by the World Economic Forum (WEF).

Disclaimer

Whilst every effort has been made to ensure the accuracy of the information contained in this publication, neither IOGP nor any of its Members past present or future warrants its accuracy or will, regardless of its or their negligence, assume liability for any foreseeable or unforeseeable use made thereof, which liability is hereby excluded. Consequently, such use is at the recipient's own risk on the basis that any use by the recipient constitutes agreement to the terms of this disclaimer. The recipient is obliged to inform any subsequent recipient of such terms.

Please note that this publication is provided for informational purposes and adoption of any of its recommendations is at the discretion of the user. Except as explicitly stated otherwise, this publication must not be considered as a substitute for government policies or decisions or reference to the relevant legislation relating to information contained in it.

Where the publication contains a statement that it is to be used as an industry standard, IOGP and its Members past, present, and future expressly disclaim all liability in respect of all claims, losses or damages arising from the use or application of the information contained in this publication in any industrial application.

Any reference to third party names is for appropriate acknowledgement of their ownership and does not constitute a sponsorship or endorsement.

Copyright notice

The contents of these pages are © International Association of Oil & Gas Producers. Permission is given to reproduce this report in whole or in part provided (i) that the copyright of IOGP and (ii) the sources are acknowledged. All other rights are reserved. Any other use requires the prior written permission of IOGP.

These Terms and Conditions shall be governed by and construed in accordance with the laws of England and Wales. Disputes arising here from shall be exclusively subject to the jurisdiction of the courts of England and Wales.

Foreword

This specification was prepared under Joint Industry Programme 33 (JIP33) "Standardization of Equipment Specifications for Procurement" organized by the International Oil & Gas Producers Association (IOGP) with the support from the World Economic Forum (WEF). Companies from the IOGP membership participated in developing this specification to leverage and improve industry level standardization globally in the oil and gas sector. The work has developed a minimized set of supplementary requirements for procurement, with life cycle cost in mind, resulting in a common and jointly agreed specification, building on recognized industry and international standards.

Recent trends in oil and gas projects have demonstrated substantial budget and schedule overruns. The Oil and Gas Community within the World Economic Forum (WEF) has implemented a Capital Project Complexity (CPC) initiative which seeks to drive a structural reduction in upstream project costs with a focus on industry-wide, non-competitive collaboration and standardization. The CPC vision is to standardize specifications for global procurement for equipment and packages. JIP33 provides the oil and gas sector with the opportunity to move from internally to externally focused standardization initiatives and provide step change benefits in the sector's capital projects performance.

This specification has been developed in consultation with a broad user and supplier base to realize benefits from standardization and achieve significant project and schedule cost reductions.

The JIP33 work groups performed their activities in accordance with IOGP's Competition Law Guidelines (November 2020).

This second edition cancels and replaces the first edition published in December 2018.

Due to technical writing requirements leading to extensive changes, this second edition should be treated as a new document.

ABOUT THE REDLINE VERSION

This Redline version aims at comparing Version 2.0 to Version 1.0 but may not capture all changes.

The Redline version is not a specification document. It is a mark-up copy provided for information only. The user must refer to the official published version.

Table of Contents

	Foreword	1
	Introduction	3
1	Scope	5
2	Normative references	5
3	Terms and definitions	5
	<conformity assessment>	6
	<conformity assessment>	6
	<conformity assessment> review	6
4	Symbols and abbreviations	6
5	Quality requirements	7
	5.1 Quality management system.....	7
	5.2 Conformity assessment system (CAS)	7
6	Certification and traceability	7
7	Evidence — conformance records	8
	Annex A (normative) Purchaser conformity assessment requirements	9
	Annex B (normative) Certification traceability and requirements	11

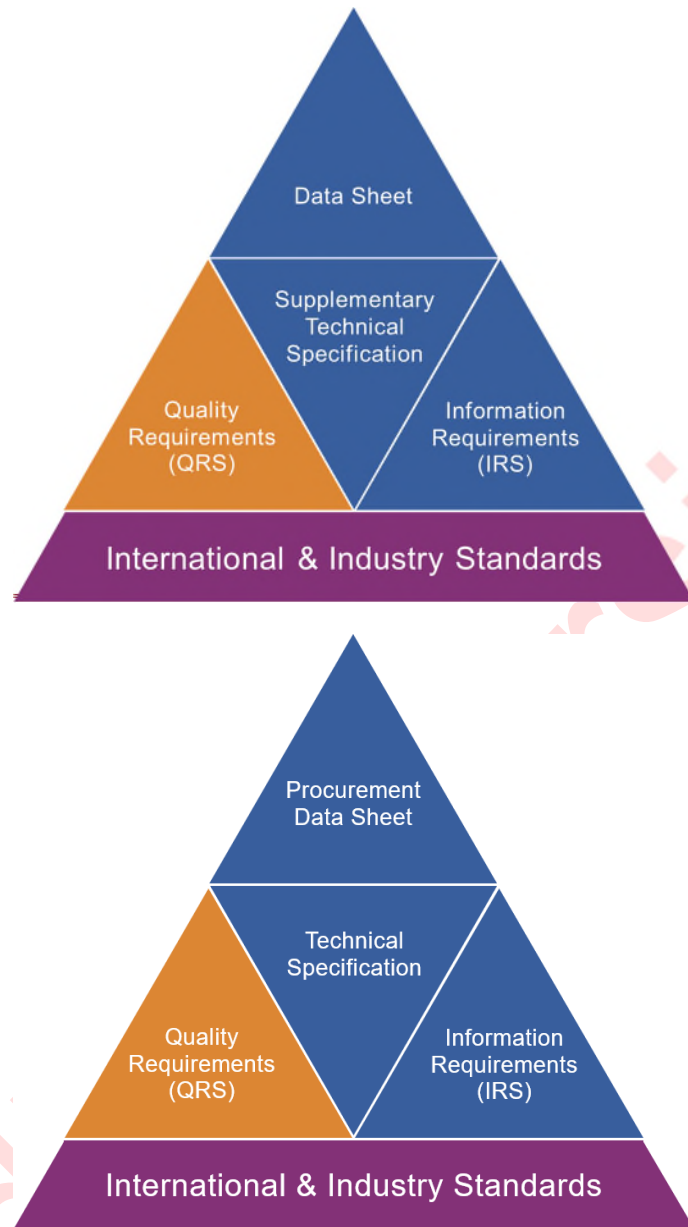
Redline Version

Introduction

The purpose of this quality requirements specification (QRS) is to ~~define~~ specify quality management requirements and the proposed extent of purchaser intervention activities for the ~~supply~~ procurement of unfired, fusion welded pressure vessels in accordance with IOGP S-619 for ~~use~~ application in the petroleum and natural gas industries.

~~The QRS includes a~~ Purchaser intervention activities are identified through the selection of one of four conformity assessment system (CAS) ~~which specifies standardized user interventions against quality management activities at four different~~ levels, based on a risk and criticality assessment. The applicable CAS level is specified by the purchaser in the ~~equipment datasheet~~ procurement data sheet or purchase order.

This QRS shall be used in conjunction with the ~~supplementary~~ specification (~~S-619~~), IOGP S-619), the procurement data sheet (IOGP S-619D) and the information requirements ~~(specification (IOGP S-619L) and data sheets (S-619D))~~ which together comprise the full set of specification documents. The introduction section in the ~~supplementary requirements~~ specification provides further information on the purpose of each of these documents and the order of precedence for their use.



JIP33 Specification for Procurement Documents
~~Supplementary Technical~~ **Quality Requirements Specification**

1 Scope

~~The purpose of this specification is~~ To specify quality management requirements for the supply of unfired fusion welded pressure vessels to IOGP S-619 including:

- a) ~~manufacturer~~ supplier quality management system requirements;
- b) ~~customer~~ purchaser conformity assessment (surveillance and inspection) activities;
- c) traceability requirements;
- d) ~~evidence of conformance~~.

2 Normative references

For the purpose of this document, the documents referenced in IOGP S-619 and those listed below, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9001:2015	Quality management systems — Requirements
API Specification Q1	Specification for Quality Management System Requirements for Manufacturing Organisations for the Petroleum and Natural Gas Industry
S-619	Specification for unfired, fusion welded pressure vessels
API Specification Q1,	<i>Specification for Quality Management System Requirements for Manufacturing Organizations for the Petroleum and Natural Gas Industry</i>
IOGP S-619 ,	<i>Specification for unfired, fusion welded pressure vessels</i>
ISO 9001,	<i>Quality management systems — Requirements</i>
ISO 29001,	<i>Petroleum, petrochemical and natural gas industries — Sector-specific quality management systems — Requirements for product and service supply organizations</i>

3 Terms and definitions

For the purpose of this document, the terms and definitions given in IOGP S-619 and ISO 9000:~~2015~~ (normative to ISO 9001:~~2015~~), and the following shall apply. ~~To align with the terminology used in S-619 the term “purchaser” is used in place of “customer” and the term “vendor” in place of “supplier”.~~

3.1

conformity assessment

demonstration that specified requirements ~~relating to a product, process, system, person or body~~ are fulfilled.

Note 1 to entry: Conformity assessment (or assessment) includes but is not limited to review, inspection, verification and validation activities.

Note 2 to entry: Assessment activities may be undertaken at a ~~vendor or supplier/sub-vendor's~~ supplier's premises, virtually by video link, desktop sharing, etc. or by review of information ~~formally submitted for acceptance or for information.~~

3.2

conformity assessment system

~~(CAS)~~

~~Systems providing system that provides different levels of assessment of the vendor's control activities by the purchaser (second party) or independent body (third party) based on evaluation of the vendor's capability to conform interventions to the product or service specification assess and obligatory verify supplier conformance to specified requirements. The applicable~~

Note 1 to entry: CAS ~~level is specified by the purchaser in the data sheet.~~

~~NOTE CAS A reflects~~ applies to the highest risk and associated extent of verification. CAS D is the lowest.

3.3

~~Conformity assessment hold point~~

~~(H)~~

<conformity assessment> point in the chain of activities beyond which an activity shall not proceed without the approval of the purchaser or purchaser's representative.

3.4

witness point

W

<conformity assessment -> ~~witness point (W)~~

point in the chain of activities that the ~~vendor~~ supplier shall notify the purchaser or purchaser's representative before proceeding.

Note 1 to entry: The operation or process may proceed without witness if the purchaser ~~or purchaser's representative~~ does not attend after the agreed notice period.

3.5

surveillance

S

<conformity assessment -> ~~surveillance (S)~~

observation, monitoring or review by the purchaser or purchaser's representative of an activity, operation, process, product or associated information.

3.6

review

R

<conformity assessment -> ~~review (R)~~

~~Review of the vendor's documentation by the purchaser or purchaser's representative~~ supplier's information to verify conformance to requirements.

~~NOTE Information review requirements are managed on a surveillance basis, and as such do not impose schedule constraints, unless specified as hold points in Annex A, or as conditions specified in the associated IRS~~

4 Symbols and abbreviations

For purposes of this document, the following ~~abbreviation applies~~ symbols and abbreviations apply.

~~CAS Conformity Assessment System~~

CAS conformity assessment system

IRS information requirements specification

QMS quality management system

QRS quality requirements specification (this document)

5 Quality requirements

5.1 Quality management system

The ~~vendor~~ supplier shall ~~demonstrate~~ operate and maintain a quality management system (QMS) that ~~the quality management arrangements established for the supply of products or services conform to~~ conforms with ISO 9001:2015, ISO 29001, API Specification Q1 or an equivalent quality management system standard ~~agreed with the purchaser.~~

5.2 Conformity assessment system (CAS)

~~Quality plans or inspection and test plans developed as outputs to operational planning and control for the products or services shall define the specific controls to be implemented by the vendor and when applicable, sub-vendors, to ensure conformity with the specified requirements.~~

~~Controls will address both internally and externally sourced processes, products and services~~

5.2.1

The conformity assessment system (CAS) provides different levels of assessment of the supplier control activities. The CAS level is defined by the purchaser, using a risk-based approach, and included in the purchase order/contract. The defined CAS level may be adjusted by the purchaser during manufacture based on supplier performance and re-assessment of risk.

NOTE For industrial proven solutions, CAS level D is specified unless risk assessment indicates that a more stringent CAS level is required.

5.2.2

Quality plans and inspection and test plans shall include provisions for purchaser intervention activities based on the ~~purchaser's CAS; see Annex A, as specified~~ level selected in the procurement data sheet or purchase order. See Annex A.

~~Vendor~~ 5.2.3

Supplier performance in meeting the requirements ~~will~~ may be routinely assessed during execution of the scope and where appropriate, corrective action requested and ~~the level of~~ conformity assessment activities increased or decreased consistent with criticality and risk.

~~NOTE 1 For industrial well proven solutions CAS level D is specified unless risk assessment indicates that a more stringent CAS level is required.~~

~~NOTE 2 Irrespective of the CAS level defined by the purchaser, either, by reference to standard and specification requirements or in the scope, the vendor remains responsible for operational planning and control and demonstration of the conformity of products and services with the requirements (see ISO 9001, 8.1, 8.2).~~

~~6 Traceability~~

6 Certification and traceability

Material certification and traceability shall be ~~provided~~ maintained in accordance with Annex B. ~~Material inspection certificates shall be provided in accordance with Table 1 of ISO 10474 or Table A.1 of EN 10204.~~

~~8 Control of nonconforming products and services~~

~~Nonconformance with specified requirements identified by or to the vendor prior to or during the delivery of the products and services shall be corrected such that the specified requirements are satisfied or the purchaser's acceptance of the nonconformance agreed in accordance with purchase order conditions.~~

~~NOTE See ISO 9001, 8.2.3, 8.2.4, 8.5.6 and 8.7~~

7 Evidence — conformance records

Documents and information shall be provided for in accordance with the associated IRS.

Redline Version

Annex A (normative)

Purchaser conformity assessment requirements

This annex defines four ~~CAS~~ conformity assessment systems (CAS) or levels of purchaser assessment.

~~The vendor shall provide for the specified CAS when developing quality plans and inspection and test plans in accordance with Section 5.~~

	VENDOR CONTROL PURCHASER ASSESSMENT ACTIVITIES	CAS			
		A	B	C	D
1	Operational planning and control activities				
1.1	Quality plan (ISO 9001, 8.1 and ISO 10005) planning	H	H	R	-
1.2	Inspection and test plan (ISO 9001, 8.1 and ISO 10005) planning	H	H	R	R
1.3	Technical kick-off meeting †	H	WH W	W	-
1.4	Pre-production meeting and pre-inspection meeting	H	H	W	-
2.2	Welding book (WPS and WPQR) (code requirement) Control of external supply	H H	H H	R R	

2	Design and Development Activities							
2.3	Non-destructive examination procedure (code requirement) and detailed drawings (ISO 9001-8.3)	H H	H H	R R	R R	R R		
2.4	Heat treatment procedure (code requirement)	H H	H H	R R	R R	R R		
3	Materials and Component Manufacturing							
3.1	Inspection and identification of materials and consumables: certification (including heat treatment certification), chemical and mechanical properties, testing and conformity (code requirement) (IOGP S-619, 6, A.5.1, 5.2, A.10, B.1, 5.2.2, 5.2.3, 5.3, 5.4, 5.5, 5.6, 5.7, Annex A, Annex C.3, C.4, C.5, C.8, Annex D.1.1, D.1.2, D.1.3, D.6.4)	H	R W	R S				
3	Production and service provision							
3.21	Fabrication requirements (code requirement) -Component manufacture							
3.21.1	Cutting, fitting, assembly and marking of components (code requirement) (code requirement) (IOGP S-619, 4, 5, 6, 10.3.1, 10.3.2)	S	S	-	-			
3.1.2.2	Forming of pressure parts (code requirement) (IOGP S-619, 4.1.2, 6.1.8, 8.3.2, Annex B, Annex C, Annex D, Annex F)	W	S	-	-			
3.21.3	Set up, material traceability , tack welding, welding, fabrication and assembly of components (code requirements) (IOGP S-619, 4.1.9, 4.14.3, 4.7.1.4, 4.7.3, 4.7.4, 4.7.9, 6.1.4, 6.1.5, 6.1.6, 6.1.7, 6.2.1, 6.2.2, 8.2.2, 8.2.3, Annex A, Annex B, Annex D, Annex G, Annex H, Annex I)	W	S	S	-			
3.21.4	Repair of defects in materials (code requirement) or welds (IOGP S-619, 5.6 † , 6, 7.1.10, 6.1.11, 7.2.14) 8.1.1, Annex B, Annex D)	H	WH W	R W	R R			
3.21.5	Heat treatments (code requirement) (IOGP S-619, 4.8.5, 6.1.11, 6.1.4, 7, 8.1.1, 8.3.2, Annex A, Annex D, Annex H, Annex I)	W	R S	R S	-			
3.32	Inspection, testing and verification test activities ((code requirement))							

3.3.4	Welder qualifications (code requirement)	W W	W W	S S				
------------------	---	----------------	----------------	----------------	--	--	--	--

3.3.2	Non-destructive examination personnel qualifications (code requirement)	R	R	R	
3.3.3	Non-destructive examination personnel qualifications of personnel performing ultrasonic examination in lieu of radiographic examination (code requirement)	H	W	R	
3.3.4	Ferrite testing				
3.3.5	Production weld hardness testing				
3.3.6.2.1	Non-destructive examination of materials (code requirement; (IOGP S-619, 5.4.7.1, 5.2, 4.7.1.8, 9, A.4, A.5, B.3.11, C, 4.7.1, C.4, 6.1.7, 8.1.2, 8.1.3, 8.2.1, 8.2.4, 8.3.2))	W	SW	RS	-
3.3.7.2.2	Non-destructive examination of welds (code requirement; (IOGP S-619, 7.6.1.6, 7.2.8, 9, B.1.51, 8.1.2, 8.1.3, 8.2, B.3.5, B.2, 8.2.3.6, B, 8.3.8, B.3.9, B.3.10, B.3.11, Annex A, Annex B, Annex D.3, D.6.3, Annex G, Annex I))	HW	SW	RS	-
3.2.3	Positive material identification testing (IOGP S-619, 5.7)	W	W	S	-
3.3.8.2.4	Visual and dimensional inspection (including fabrication tolerances, out of roundness and peaking) of all of the vessel (code requirement; (IOGP S-619, 5.4.8.4, 7.6.1.4, 10, 9.6, Annex E, Annex J))	WH	SW	RS	-

3.3.9	Hydrostatic or pneumatic testing (code requirement; S-619.9, B.1.9, C.9, D.2.6)	W	R	R	=
3.3.10.5	Surface preparation for painting and coating (including intumescent fireproofing if applicable) (IOGP S-619, 9.7)	W	W	S	-
3.3.10.6	Painting, fire protection or lagging-Painting and coating inspection (IOGP S-619, 10.2.4, 10.3.3, 9.7, Annex D)	S	S	S	-
3.2.7	Insulation and fireproofing inspection (if applicable) (IOGP S-619, 5.2.3, Annex J)	S	S	S	-
3.2.8	Hydrostatic or pneumatic testing (IOGP S-619, Table 1 and Table 2)	H	W	W	-
4	Release of product or service				
4.1	Verify conformance to the purchase order including as applicable;				
4.1.1	Final inspection including nameplate and stamping (if applicable)	H	W	R W	-
4.1.2	Preservation, packing and storage (IOGP S-619, 10)	H	W	S	-
4.4.1.3	Release note Product release	H	H	H	H

4.3	Final documentation review; as per IRS	R	R	R	R
<p>Key H-is: Hold point R-is: review, S is surveillance, and W-is: Witness point. Note: Definitions for these terms are provided in Section 3 to this document. R: Review S: Surveillance</p>					

Annex B (normative)

Material Certification traceability and certification requirements

Item		Certificate type	Material Traceability level	Additional requirements
Pressure vessel	Pressure retaining and structural metals such as shell, heads, pipe fittings, davits, welded internal and external attachments, saddles, skirts and support legs.	3.1	Level II	Type 3.2 Certification is applicable as per the design requirements
	Welding consumables	2.2	Level III	Type 3.2 Certification is applicable as per the design requirements
	Removable internals	2.2	Level III	Type 3.2 Certification is applicable as per the design requirements

Explanatory notes:

~~Material~~ NOTE 1 Certificates

Inspection certificates shall be provided in accordance with ~~ISO10474~~ISO 10474 or ~~EN10204~~EN 10204.

~~A. "NOTE 2.1" Declaration of Compliance with the PO~~ Traceability

~~A document in which the Supplier declares that the products supplied are in compliance with the requirements of the PO, without inclusion of any test results.~~

~~B. "2.2" Test Report~~ A document in which the Supplier declares that the products supplied are in compliance with the requirements of the PO, and in which test results are supplied based on non-specific inspection and testing.

~~C. "3.1" Inspection Certificate~~ A document with test results based on specific inspection and testing, issued by the Supplier and validated by the Supplier's authorized inspection representative independent of the manufacturing department.

~~D. "3.2" Inspection Certificate~~ A document prepared by both the Supplier's authorized inspection representative, independent of the manufacturing department, and either the Customer nominated representative or the inspector designated by the regulations in which they declare that the products supplied are in compliance with the requirements of the order and for which test results are supplied.

~~E. Additionally, Customer has specified that all material product testing associated with "3.2" Inspection Certificates shall be performed in the presence of either a Customer nominated representative or the inspector designated by the regulations, and the resultant test report stamped as "Witnessed". Failure to adhere to this requirement may lead to rejection of all material(s) being qualified for production.~~

~~F. Level I~~ — Full traceability — Material is uniquely identified and its history tracked from manufacture through stockists (where applicable) to ~~Supplier~~the supplier and to actual position on the equipment with specific location defined on a material placement record. (the traceability to a specific location only applies to skids / packaged equipment, not to bulks)

).

~~B. Level II~~ — Type traceability ~~Supplier~~ — The supplier maintains a system to identify material throughout manufacture, with traceability to a material certificate.

~~C. Level III~~ — Compliance traceability ~~Supplier~~ — The supplier maintains a system of traceability that enables a declaration of compliance to be issued by the supplier.

Registered Office

City Tower
Level 14
40 Basinghall Street
London EC2V 5DE
United Kingdom
T +44 (0)20 3763 9700
reception@iogp.org

Brussels Office

Avenue de Tervuren 188A
B-1150 Brussels
Belgium
T +32 (0)2 790 7762
reception-europe@iogp.org

Houston Office

15377 Memorial Drive
Suite 250
Houston, TX 77079
USA
T +1 (713) 261 0411
reception-americas@iogp.org

| www.iogp.org

ersion