International Association of Oil & Gas Producers

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Quality Requirements for Medium-Voltage AC Contactors, Controllers, and Control Centers (UL)

Public Review Draft

JIP33 JOINT INDUSTRY PROGRAMME

Revision history

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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).

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Introduction

The purpose of this quality requirements specification (QRS) is to specify quality management requirements and the proposed extent of purchaser intervention activities for the procurement of medium-voltage AC contactors, controllers, and control centers in accordance with IOGP S-742 for application in the petroleum and natural gas industries.

Purchaser intervention activities are identified through the selection of one of four conformity assessment system (CAS) levels based on a risk and criticality assessment. The applicable CAS level is specified by the purchaser in the procurement data sheet (PDS) or purchase order.

The IOGP S-742 specification documents follow a common structure (as shown below) comprising a specification, also known as a technical requirements specification (TRS), a PDS, an information requirements specification (IRS) and this QRS. These four specification documents, together with the purchase order, define the overall technical specification for procurement.



JIP33 Specification for Procurement Documents
Quality Requirements Specification (QRS)

This QRS is to be applied in conjunction with the specification, the PDS and the IRS, referred to in this document as IOGP S-742, IOGP S-742D and IOGP S-742L respectively. Further information on the purpose of these documents and the order of precedence for their use is provided in the introduction of the specification.

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1 Scope

This QRS specifies quality management requirements for the supply of medium-voltage AC contactors, controllers, and control centers to IOGP S-742 including:

a) manufacturer quality management system (QMS) requirements;

b) purchaser conformity assessment (surveillance and inspection) activities;

c) traceability requirements.

2 Normative references

For the purpose of this document, the documents referenced in IOGP S-742 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.

API Specification Q1, *Quality Management System Requirements for Organizations Providing Products for the Petroleum and Natural Gas Industry*

IOGP S-742, *Supplementary Specification to UL 347 for Medium-Voltage AC Contactors, Controllers, and Control Centers*

ISO 9000:2015, *Quality management systems — Fundamentals and vocabulary*

ISO 9001:2015, *Quality management systems — Requirements*

ISO 29001, *Petroleum, petrochemical and natural gas industries — Sector-specific quality management systems — Requirements for product and service supply organizations*

UL 347, *Standard for Safety – Medium-Voltage AC Contactors, Controllers, and Control Centers*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purpose of this document, the terms and definitions given in IOGP S-742 and ISO 9000:2015 (normative to ISO 9001:2015) and the following shall apply.

3.1.1
conformity assessment
demonstration that specified requirements are fulfilled

Note 1 to entry: "Conformity assessment" is also referred to as "assessment".

Note 2 to entry: Conformity assessment includes review, inspection, verification and validation activities.

Note 3 to entry: Conformity assessment activities may be undertaken at manufacturer/sub-supplier premises, virtually by video link, desktop sharing, etc. or by review of information.

3.1.2
conformity assessment system
CAS
system that provides different levels of purchaser interventions to assess and verify manufacturer conformance to specified requirements

Note 1 to entry: CAS level A applies to the highest risk and associated extent of verification. CAS level D is the lowest.

3.1.3
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

3.1.4
witness point
W
<conformity assessment> point in the chain of activities at which the manufacturer 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 does not attend after the agreed notice period.

3.1.5
surveillance
S
<conformity assessment> observation, monitoring or review, by the purchaser or purchaser's representative, of an activity, operation, process, product or associated information

3.1.6
review
R
<conformity assessment> review of the manufacturer's records, procedures and supporting information to verify and/or validate conformance to requirements

3.2 Abbreviated terms

CAS	conformity assessment system
HMI	human machine interface
IRS	information requirements specification
ITP	inspection and test plan
PDS	procurement data sheet
QMS	quality management system
QRS	quality requirements specification
TRS	technical requirements specification

4 Quality requirements

4.1 Quality management system (QMS)

The manufacturer shall operate and maintain a quality management system (QMS) that conforms with ISO 9001, ISO 29001, API Specification Q1 or an equivalent QMS standard.

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4.2 Conformity assessment system (CAS)

4.2.1

The CAS provides different levels of assessment of manufacturer 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 the manufacturer's 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.

4.2.2

Quality plans and inspection and test plans shall include provision for purchaser intervention activities based on the CAS level selected in the PDS or purchase order. See Table A.1.

4.2.3

The manufacturer's performance in meeting the requirements may be routinely assessed during execution of the scope and, where appropriate, corrective action requested, and conformity assessment activities may be increased or decreased consistent with criticality and risk.

4.2.4

If any subcontracted or scope of supply occurs outside of the primary manufacturer location, it shall include interventions within the primary inspection and test plan (ITP) or secondary ITP. It is discouraged to use "hold" (H) within Table A.1, section 3 and recommended to use "surveillance" (S).

5 Certification and traceability

The manufacturer shall maintain traceability of sub-assembly and major components to the original component manufacturer tag / serial number and where applicable, associated certification.

6 Evidence — conformance records

Documents and information shall be provided for in accordance with IOGP S-742L.

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Annex A
(normative)
Purchaser conformity assessment requirements

Table A.1 defines four CAS levels or levels of purchaser assessment.

Table A.1 — Purchaser conformity assessment requirements

Purchaser assessment activities		CAS			
		A	B	C	D
1	**Operational planning and control activities**				
1.1	Pre-production planning (meeting)	H	W	R	-
2	**Design and development activities**				
2.1	Type testing (if type test certificates are not available) (IOGP S-742, 6.1, Table 6)	H	H	H	-
3	**Externally provided products and services (outsourced)**				
3.1	External supply scope, risk assessment and controls	H	W	S	-
4	**Production and service provision**				
4.1	Inspection and test activities as per IOGP S-742				
4.1.1	Verification of incoming materials (type, condition and quantity) (IOGP S-742, 6.1, 5.213.1, 5.213.2)	W	S	-	-
4.1.2	Visual and dimensional checks (IOGP S-742, 6.1, 5.3.203, 5.10.204, 5.12.201, 5.14.201, 5.102.202, 5.102.203, 5.102.208, 5.102.209, 5.102.210, 5.205.1, 5.210, 5.213.1, 5.213.2, 5.215.1, 5.215.3, 5.221.1)	H	W	S	-
4.1.3	Painting inspection (IOGP S-742, 6.1, 2.2.5.1)	W	S	S	-
4.2	Assembly				
4.2.1	Verification of assembly (including review of quality records) (IOGP S-742, 6.1, 2.2.5.1, 5.10.204, 5.102.202, 5.102.208, 5.102.209, 5.102.210, 5.12.201, 5.14.201, 5.205.1, 5.221.1, 5.221.2, 5.3.203)	W	S	S	-
4.3	Final tests, including factory acceptance test (FAT)				
4.3.1	Power frequency withstand and vacuum integrity test (IOGP S-742, 6.1, 6.2.202.1, 7.1, 7.4)	H	H	W	R
4.3.2	Operation of controller	H	H	W	R
4.3.3	Mechanical operation tests (IOGP S-742, 6.1, 5.221.1.3)	H	H	W	R
4.3.4	Function testing all devices. NOTE For hard wired devices, this verifies operation per the schematic. For devices that control via communication, this verifies through test or simulation proper control over a network from a system controller. This also includes function test of local human machine interface (HMI), if applicable. (IOGP S-742, 6.1, 5.206.4.7)	H	H	W	R
4.3.5	Protective relay and metering functionality tests (IOGP S-742, 6.1, 5.215.3.4)	H	H	W	R

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Table A.1 *(continued)*

Purchaser assessment activities		CAS			
		A	**B**	**C**	**D**
4.3.6	Testing of auxiliary equipment provided as part of the system design such as condition-based monitoring	H	H	W	R
5	**Final inspection**				
5.1	Verify handling, packing, preservation and storage (if applicable) (IOGP S-742, 6.1, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8)	W	S	S	-
5.2	Release equipment for shipment (IOGP S-742, 6.1, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.9)	H	H	H	H

Key

- \- No intervention performed
- H Hold point
- W Witness point
- R Review
- S Surveillance

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IOGP Headquarters

Level 6, 3 Moorgate Place, London, EC2R 6EA, United Kingdom
T: +44 20 4570 6879
E: reception@iogp.org

IOGP Europe

T: +32 2 882 16 53
E: reception-europe@iogp.org

www.iogp.org