International Association of Oil & Gas Producers

SPECIFICATION
S-747Q

December
2021

# Quality Requirements for High-voltage AC Drive Systems



JIP33
JOINT INDUSTRY PROGRAMME

**Revision history**

| VERSION | DATE | PURPOSE |
|---|---|---|
| 0.1 | December 2021 | Issued for Public Review |



## 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



### Copyright notice

# 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 high-voltage AC drive systems in accordance with IOGP S-747 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 or purchase order.

This QRS shall be used in conjunction with the specification (IOGP S-747), the procurement data sheet (IOGP S-747D) and the information requirements specification (IOGP S-747L) which together comprise the full set of specification documents. The introduction section in the 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**
**Quality Requirements Specification**

# 1 Scope

To specify quality management requirements for the supply of high-voltage AC drive systems to IOGP S-747 including:

a) supplier quality management system 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-747 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, *Specification for Quality Management System Requirements for Manufacturing Organizations for the Petroleum and Natural Gas Industry*

IOGP S-747, *Supplementary Specification to IEC 61800-2 High-voltage AC Drive Systems*

ISO 9001, *Quality management systems — Requirements*

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

# 3 Terms and definitions

For the purpose of this document, the terms and definitions given in IOGP S-747 and ISO 9000 (normative to ISO 9001), and the following shall apply.

**3.1**
**conformity assessment**
demonstration that specified requirements 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 supplier/sub-supplier's premises, virtually by video link, desktop sharing, etc. or by review of information.

**3.2**
**conformity assessment system**
**CAS**
system that provides different levels of purchaser interventions to assess and verify supplier conformance to specified requirements

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

**3.3**
**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

**3.4**
**witness point**
**W**
<conformity assessment> point in the chain of activities that the 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 does not attend after the agreed notice period.

**3.5**
**surveillance**
**S**
<conformity assessment> observation, monitoring or review by the purchaser or purchaser's representative of an activity, operation, process, product or associated information

**3.6**
**review**
**R**
<conformity assessment> review of the supplier's information to verify conformance to requirements

# 4 Symbols and abbreviations

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

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

## 5.2 Conformity assessment system (CAS)

### 5.2.1

The conformity assessment system (CAS) provides different levels of assessment of the supplier's 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 provision for purchaser's intervention activities based on the CAS level selected in the procurement data sheet or purchase order. See Annex A.

**5.2.3**

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

## 6 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. See ISO 9001, 8.5.2.

## 7 Evidence — conformance records

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

# Annex A
(normative)
# Purchaser conformity assessment requirements

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

| | PURCHASER ASSESSMENT ACTIVITIES | CAS | | | |
|---|---|---|---|---|---|
| | | A | B | C | D |
| **1** | **Operational planning and control activities** | | | | |
| 1.1 | Kick-off meeting for planning of design, review, production and testing activities (IOGP S-747, 4.1) | H | H | H | - |
| **2** | **Design and development activities** | | | | |
| 2.1 | Design review meeting for finalizing the design and release for production (IOGP S-747, 4.1) | H | H | R | - |
| **3** | **Production and service provision** | | | | |
| 3.1 | Inspection and test activities | | | | |
| 3.1.1 | In-process testing of components/sub-assemblies and review of test reports/results (IOGP S-747, 5.1, 5.3.6.2.1, 5.3.6.2.6.4, 5.4.1.4.1.2, 5.4.1.4.1.3, 5.4.2.2, 5.5, 5.6, 5.7, 5.9.1, 5.9.2.1.1, Table 11, 6.5.1, 8.1.2, 8.2.1.6, 8.2.1.7, 8.2.4.1, 8.2.4.4, 8.2.4.5, 8.3.1.2, 8.3.2.2, 8.3.3.3.1, 8.3.3.3.3, 8.3.4.1, 8.3.4.2, 8.3.5.1, 8.3.5.3, 8.3.5.5, 8.3.5.6, 8.3.6, 8.3.7, 8.3.8, 8.4.2.1, 9.1.1, 9.2.2.1, 9.2.2.2, 9.2.2.3, 9.2.6.2, 9.3.1, 9.4.11, Table 22, Table 23, Table 24, Table 25) | H | W | R | - |
| 3.1.2 | Test of BDM/CDM/PDS and identified PDS components in accordance with Table 22 (IOGP S-747, 5.1, 5.6, 5.7, 7.1, 7.2, 5.2.4.3, 5.4.1.4.1.2, 5.4.1.4.1.3, 5.4.2.2, 5.4.3, 5.4.4.1, 5.9.1, 5.9.2.1.1, 6.5.1, 7.5.1, 8.2, 8.3, 8.4, 8.5, 8.6, 9.1, 9.2, 9.3, 9.4, Table 11, Table 22, Table 23, Table 24, Table 25) | H | W | W | W |
| **4** | **Release of product or service** | | | | |
| 4.1 | Verify conformance to the purchase order including as applicable | | | | |
| 4.1.1 | Packing, preservation and storage of BDM/CDM before release (IOGP S-747, 7.5.1, 10.1, 10.2, 10.3, 10.4) | W | W | W | W |
| 4.1.2 | Release of the item for dispatch (IOGP S-747, 4.1) | H | H | H | H |

**Key**
H: Hold point
W: Witness point
R: Review
S: Surveillance

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