

Supplementary Specification to PIP ELSAP04 AC Uninterruptible Power Supply (UPS) System

Revision history

VERSION	DATE	PURPOSE
1.0	November 2020	Issued for Use

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).

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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 2014).

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Introduction

The purpose of this specification is to define a minimum common set of requirements for the procurement of uninterruptible power supply (UPS) systems for North America projects in accordance with PIP ELSAP04, October 2015, for application in the petroleum and natural gas industries.

This specification follows a common document structure comprising the four documents as shown below, which together with the purchase order define the overall technical specification for procurement.



JIP33 Specification for Procurement Documents Supplementary Technical Specification

This specification is to be applied in conjunction with the supporting data sheet, quality requirements specification (QRS) and information requirements specification (IRS) as follows.

IOGP S-734: Supplementary Specification to PIP ELSAP04 AC Uninterruptible Power Supply (UPS) System

This specification defines the technical requirements for the supply of the equipment and is written as an overlay to PIP ELSAP04, following the PIP ELSAP04 section structure. Sections from PIP ELSAP04 not amended by this specification apply as written to the extent applicable to the scope of supply.

Modifications to PIP ELSAP04 defined in this specification are identified as Add (add to section or add new section), Replace (part of or entire section) or Delete.

IOGP S-734D: Data Sheet for AC Uninterruptible Power Supply (UPS) System (PIP ELSAP04)

The data sheet defines application specific requirements, attributes and options specified by the purchaser for the supply of equipment to the technical specification. The data sheet may also include fields for supplier provided information attributes subject to purchaser's technical evaluation. Additional purchaser supplied documents may also be incorporated or referenced in the data sheet, to define scope and technical requirements for enquiry and purchase of the equipment.

**IOGP S-734Q: Quality Requirements for AC Uninterruptible Power Supply (UPS) System
(PIP ELSAP04)**

The QRS defines quality management system requirements and the proposed extent of purchaser conformity assessment activities for the scope of supply. Purchaser conformity assessment activities are defined through the selection of one of four generic conformity assessment system (CAS) levels on the basis of evaluation of the associated service and supply chain risks. The applicable CAS level is specified by the purchaser in the data sheet or in the purchase order.

**IOGP S-734L: Information Requirements for AC Uninterruptible Power Supply (UPS) System
(PIP ELSAP04)**

The IRS defines the information requirements, including contents, format, timing and purpose to be provided by the supplier. It may also define specific conditions which invoke information requirements.

The terminology used within this specification and the supporting data sheet, QRS and IRS follows that of PIP ELSAP04 and is in accordance with ISO/IEC Directives, Part 2 as appropriate.

The data sheet and IRS are published as editable documents for the purchaser to specify application specific requirements. The supplementary specification and QRS are fixed documents.

Any conflicts among the referenced documents shall be identified to the purchaser in writing for resolution. The order of precedence (highest authority listed first) of the documents shall be:

- a) regulatory requirements;
- b) contract documentation (e.g. purchase order);
- c) single line diagrams and associated drawings;
- d) purchaser defined requirements (data sheet, QRS, IRS);
- e) this specification;
- f) PIP ELSAP04.

2 References

2.1 Process Industry Practices

Delete from section

PIP ELSAP04D, *Process Industry Practice (PIP ELSAP04D) Data Sheet for Uninterruptible Power Supply (UPS) System*

2.2 Industry Codes and Standards

Add to section

IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*

IEEE 519, *Recommended Practice and Requirements for Harmonic Control in Electric Power Systems*

IEEE 1188, *Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications*

IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*

ASCE/SEI 7-16, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*

4 Requirements

Replace all references to "PIP ELSAP04D" with

IOGP S-734D

4.1 General

4.1.4

Add new section

4.1.4.1

The operational life of the UPS and its components at the rated load shall be in accordance with the requirements detailed in Table 3.

Table 3. Operating Life of the UPS and its Components

Components	Minimum operation life (years)
Rectifier unit, inverter unit and static switch unit	20
Cooling fans	5
DC Capacitors	10

Add new section

4.1.4.2

The UPS shall have a reliability integrity level 1 (RIL-1) as per IEC 62040-3, Annex K.

4.2 Site Conditions

4.2.5

Replace section with

UPS shall be designed for an electrically unclassified area.

Add new section

4.2.6

If seismic design is specified, the UPS shall be designed to comply with the requirements of ASCE/SEI 7-16.

4.3 Electrical Characteristics

Table 1. Electrical Characteristics

Add item 6 to Table 1, Section A

	Ferroresonant	Pulse-width Modulated
A. Input		
6. AC input supply voltage total harmonic distortion (THDv)	≤ 8% as per IEEE 519	≤ 8% as per IEEE 519

In Table 1, replace Section D items 9 and 10 with

	Ferroresonant	Pulse-width Modulated
D. Output		
9. Overload (inverter only, without transfer to bypass)	a. 100% continuously b. 125% for 10 minutes c. 150% for 1 minute d. 200% for 100 milliseconds	a. 100% continuously b. 125% for 10 minutes c. 150% for 1 minute d. 200% for 100 milliseconds
10. Overload/fault-clearing current capability on bypass source, including static transfer switch	a. 100% continuously b. 125% for 10 minutes c. 150% for 1 minute d. 200% for 100 milliseconds e. 1000% for 50 milliseconds	a. 100% continuously b. 125% for 10 minutes c. 150% for 1 minute d. 200% for 100 milliseconds e. 1000% for 50 milliseconds

4.10 Remote Maintenance Bypass Switch (RMBS)

Add new section

4.10.5

The RMBS shall prevent out of synchronization transfers and provide visual indication of synchronization.

Add new section

4.10.6

The RMBS shall have a three-position switch (Normal, Test and Bypass) capable of being locked in the Bypass position.

4.20 Inspection and Testing

4.20.6

10. Load transfer tests

Add new list item k.

- k. Simulation of voltage and frequency variation of bypass supply to check the tolerance and functionality of unsynchronized operation.

4.20.7

In first sentence, replace "4.21.6" with

4.20.6

4.20.8

Replace first sentence with

The requirements for witnessing factory and functional tests are defined in IOGP S-734Q and in accordance with the criticality assessment system (CAS) level selected in IOGP S-734D.

4.22 Documentation

4.22.3

Replace section with

The requirements for documentation are defined in IOGP S-734L.

4.22.4

Delete section 4.22.4

4.22.5

Delete section 4.22.5

4.22.6

Delete section 4.22.6

4.22.7

Delete section 4.22.7

Delete Table 2

4.23 Conflict Resolution

Replace section with

Conflict resolution shall be as specified in the introduction of this specification.

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