Base Load Power Hub (BLPH)

Technical Specification for LV Motors

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1 INTRODUCTION

PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.5.3 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

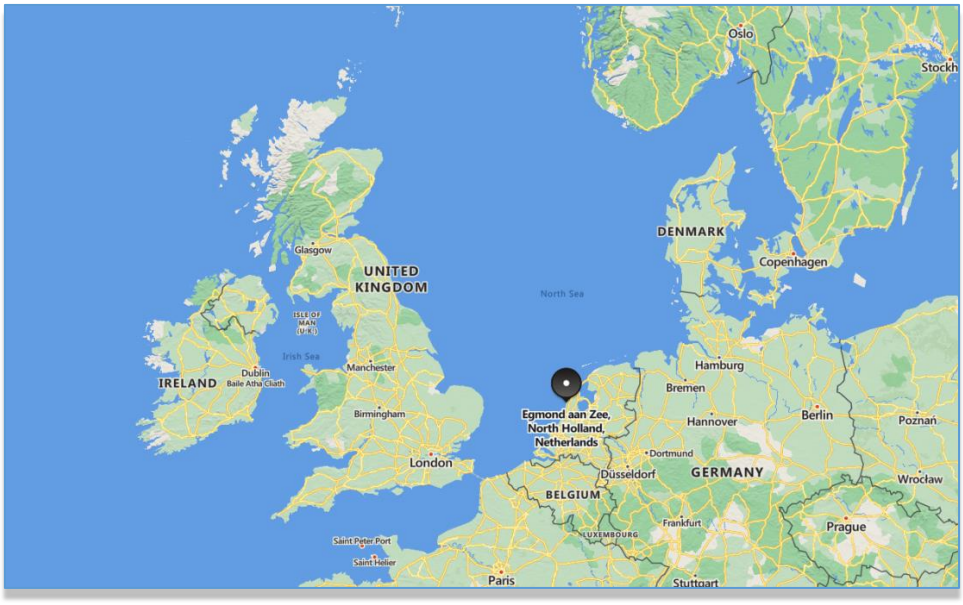


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map

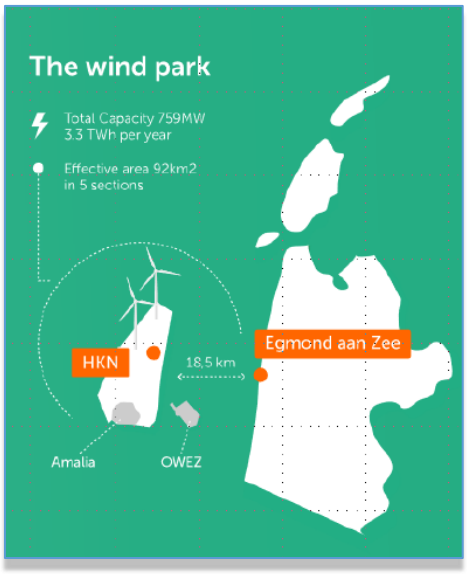


Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.5.4 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

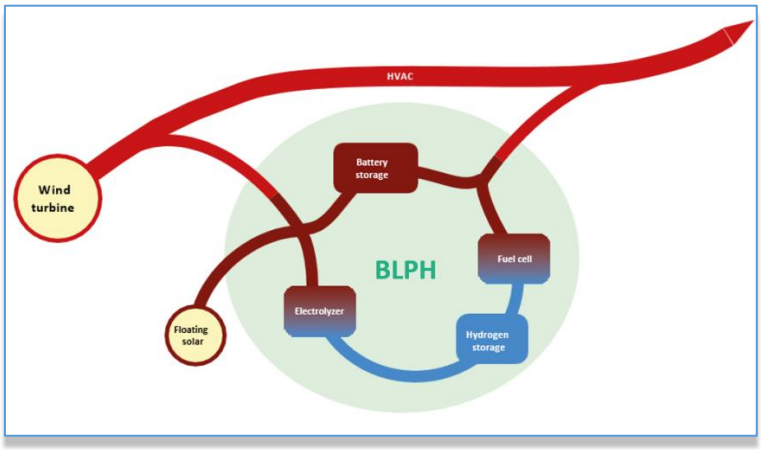


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT SCOPE

This specification covers the general criteria, the scope of work and minimum requirement for the design, material selection, construction, supply, inspection, testing, documentation and preparation for shipment of LV motors. Technical requirements of this specification are based upon considerations to performance, and functionality.

Any failure by the Vendor to take exception to any part of this specification in the initial bid proposal shall indicate complete compliance to the specification.

It shall be the Vendor's responsibility to be, or to become, knowledgeable of the requirements of the standards and codes referenced in section 4.

The LV motor manufacturing shall follow the International Standard IEC 60034 Rotating electrical machines – Part-1: Rating and performance, as well as the specifications indicated in the following chapters of this document.

Related to the quality assurance and test shall be apply the Quality requirements in Annex III.

The Documents that shall be supplied along with the technical proposal and during the manufacturing phase are indicated in the information requirements in Annex IV.

REFERENCES

Doc. No.	Description
S-703	Supplementary Specification to IEC 60034-1 Low Voltage Three Phase Cage Induction Motors
S-703D	Data sheet for Low Voltage Three Phase Cage Induction Motors
S-703Q	Quality Requirements for Low Voltage Three Phase Cage Induction Motors
S-703L	Information Requirements for Low Voltage Three Phase Cage Induction Motors
123A90-PML-QHSE-PRO-00113	Vendor Final Document Requirements & Management
K559-2254-PM-PHI-001	Equipment and System Tag Numbering

Table 1 - Reference Documents

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DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	CROSSWIND
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project
INSPECTION AUTHORITY:	The organization representing the Owner or Vendor /Contractor that verifies that the equipment and facilities have been designed, constructed, inspected and tested in accordance with the requirements of this specification and the Purchase Order/Contract.
INSPECTOR:	A qualified individual representing the Owner, Vendor/Contractor or the assigned Inspection Authority, who verifies that the equipment and facilities have been designed, constructed, inspected and tested in accordance with the requirements of this specification and the Purchase Order/Contract.
VENDOR:	Individual, firm or manufacturer that provide Materials/Equipment to COMPANY in accordance with this specification and terms of the Purchase Order.
IOGP:	International Association of Oil and Gas Producers
LV:	Low Voltage
IP:	Ingress Protection
VFD / VSD:	Variable Frequency Drive / Variable Speed Drive
kW / HP:	Kilo Watt / Horse Power
RPM:	Revolutions Per Minute
IDS:	Inspection Data Sheet
DDS:	Document Data Sheet

Table 2 - Definitions and Abbreviations

3 GENERAL CONDITIONS

LANGUAGE

All correspondence, engineering documents and manuals shall be in the English language.

4 APPLICABLE CODES AND STANDARDS

The following documents list shall constitute an integral part of this specification.

IEC - International Electro technical Committee (latest edition shall be applied).

- IEC 60034-1 Rotating electrical machines – Part-1 : Rating and performance
- IEC 60034-5 Rotating electrical machines : Part 5 Degrees of protection provided by the integral design of rotating electrical machines (IP CODE) – Classification
- IEC 60034-8 Rotating electrical machines - Part 8: Terminal markings and direction of rotation
- IEC 60085 Electrical insulation – Thermal evaluation and designation
- IEC 60529 Degrees of protection provided by enclosures (IP Code)

5 AMENDMENT / SUPPLEMENT TO IOGP S-703

The equipment shall be provided in accordance with requirement mentioned in IOGP -S-703 COMPANY specification that it is a supplementary of IEC 60034-1 Low Voltage Three Phase Cage Induction Motors.

Vendor shall read IOGP-S 703 specification (ATT-01) in conjunction with next sheets.

Vendor shall comply:

- with requirement on clauses of IOGP-S-703 specification (ANNEX-I);
- with additional and amended requirements to IOGP-S-703 based on the definitions in accordance with Section. 2.2 DEFINITIONS AND ABBREVIATIONS of this specification.
- The present document shall be read in parallel with the IOGP S-703.

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6 SITE CONDITIONS

The Metrological and Oceanographic Data are as given below (source: HKN2018 data @ 1979-2018)

Description	Value	Unit
Ambient Conditions		
Ambient Temperature (min/nom/max) – hourly @ +10m	-8.4 / 10.5 / 25.0	° C
Atmospheric Pressure (nominal) – hourly @ +10m	1013.7	mbar
Specific Humidity (min/nom/max) – hourly @ +10m	4.2 / 6.5 / 9.5	x 10^{-3}
Wind conditions		
Annual average wind speed (at 100m)	9.56	m/s
Extreme Wind Speed for 1-Year Recurrence Period (at 100 m)	33.1	m/s
Extreme Wind Speed for 50-Year Recurrence Period (at 100 m)	41.0	m/s
Marine conditions		
Sea Water Temperature (min/max)	1.2 / 20.2	° C
Average Sea Water Density	1025	Kg/m^3

Table 3 - Metrological and Oceanographic Data

6.8 DEGREE OF INGRESS PROTECTION

6.8.1

(amend)

For motors minimum required IP rating is IP56, for outdoor offshore installations, in accordance with IEC 60529.

For submerged electric motors and electric drives of seal-less pumps, IP68 for the applicable parts.

11.3 MOTOR CONSTRUCTION

11.3.4 Terminal Box

11.3.4.1

(amend) Cable entries shall be from two directions only: bottom, or side.

7 END OF AMENDMENT / SUPPLEMENT TO IOGP S-703

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----------End of IOGP-S-703----------

8 TAGGING PROCEDURE

All equipment shall be tagged as per the "Equipment and System Tag Numbering" Doc. No. K559-2254-PM-PHI-001.

For all the components which are part of the Main Item to be supplied, as applicable like: control relays, measurement instruments, cables, terminal boxes, heaters, etc., the manufacturer tagging procedure shall be submitted for approval prior the construction.

9 EQUIPMENT IDENTIFICATION

Corrosion-resistant identification plate shall be fixed by means of rivets or screws to the motor. The inscriptions shall be engraved on one or more nameplates, with the minimum information as required in IEC / NEMA standards.

The inscriptions shall be black on light background.

The plate shall, as a minimum, carry the following information:

- The Vendor's/Contractor's name or trademark.
- Power (kW / HP)
- Voltage, Current, Frequency
- Speed (RPM)
- Voltage Insulation levels
- Service factor
- Power factor
- Type of protection, i.e, the IP number (e.g. IP 56)
- Weight
- Dimension

10 SPECIAL TOOLS

VENDOR shall provide a detailed special tools list for CONTRACTOR review and reference.

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All special tools required for erection, pre-commissioning, commissioning and start-up, operation and maintenance activities shall be provided by VENDOR as part of the supply.

Any package lifting kit required for transportation and site erection of the equipment shall be provided by VENDOR.

Any equipment necessary to perform the Pre-Commissioning and Commissioning activities shall be provided by the VENDOR as part of the supply and shall not be returnable.

11 SPARE PARTS

As applicable VENDOR shall include in its quotation a priced list of spare parts suggested for the period of commissioning, start-up and final performance / acceptance test.

Supply of the suggested spare parts for commissioning, start-up and final performance/ acceptance test shall be included in the base VENDOR scope of work.

If additional spares are required during this period, VENDOR shall supply them on his account released by CONTRACTOR satisfaction.

Typology and quantity of the suggested spare parts shall be based on the VENDOR experience and is subject for CONTRACTOR's approval.

VENDOR shall ensure spare availability for at least 10 years form final acceptance certificates released by CONTRACTOR.

The spare parts offered shall be new and original supply from the same equipment Manufacturer.

VENDOR shall submit also a recommended priced spare part list for two (2) years operation.

VENDOR shall analyse the life expectancy of the components of equipment, based on Manufacturer Maintenance Manual; and shall evaluate carefully the required spare parts and quantity. COMPANY will purchase such spares separately.

VENDOR shall fill out the spare part list on project template that will be sent during detailed engineering phase.

12 CIVIL REQUIREMENT

Vendor shall provide all loads on foundation (Shears, Moment, and Vertical Load) for the equipment included in the scope of supply.

Vendor shall specify the dimensions of required ancillaries and supports if any.

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13 WARRANTY

Vendor shall guarantee the equipment in term of design, materials and workmanship for two (2) years after being placed in service. The equipment shall be guaranteed to operate satisfactorily at rated conditions and all other conditions within the specified range as indicated in the relevant data sheet and applicable codes/specifications referenced at clause 4.

All equipment and materials within Vendor scope of work shall be designed for a 25 years Design Life.

14 MAKE GOOD

In case of any equipment and/or components are to demonstrate do not meet the required performance guarantees at the operating/design conditions, VENDOR shall provide at its care and cost any necessary corrective action to comply with the required performance values.

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15 ANNEX I: "SUPPLEMENTARY SPECIFICATION TO IEC 60034-1 LOW VOLTAGE THREE PHASE CAGE INDUCTION MOTORS"

16 ANNEX II: "DATA SHEET FOR LOW VOLTAGE THREE PHASE CAGE INDUCTION MOTORS"

17 ANNEX III: "QUALITY REQUIREMENTS FOR LOW VOLTAGE THREE PHASE CAGE INDUCTION MOTORS"

18 ANNEX IV: "INFORMATION REQUIREMENTS FOR LOW VOLTAGE THREE PHASE CAGE INDUCTION MOTORS"

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International Association of Oil & Gas Producers

SPECIFICATION
S-703

March
2020

Supplementary Specification to IEC 60034-1 Low Voltage Three Phase Cage Induction Motors

JIP33
JOINT INDUSTRY PROGRAMME

Revision history

VERSION	DATE	PURPOSE
1.0	March 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 low voltage three phase cage induction motors in accordance with IEC 60034-1, Edition 13.0, 2017, Rotating electrical machines – Part 1: Rating and performance, 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-703: Supplementary Specification to IEC 60034-1 Low Voltage Three Phase Cage Induction Motors

This specification defines the technical requirements for the supply of the equipment and is written as an overlay to IEC 60034-1, following the IEC 60034-1 clause structure. Clauses from IEC 60034-1 not amended by this specification apply as written to the extent applicable to the scope of supply.

Modifications to IEC 60034-1 defined in this specification are identified as *Add* (add to clause or add new clause), *Replace* (part of or entire clause) or *Delete*.

IOGP S-703D: Data Sheet for Low Voltage Three Phase Cage Induction Motors

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-703Q: Quality Requirements for Low Voltage Three Phase Cage Induction Motors

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-703L: Information Requirements for Low Voltage Three Phase Cage Induction Motors

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 IEC 60034-1 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.

The order of precedence (highest authority listed first) of the documents shall be:

a) regulatory requirements;

b) contract documentation (e.g. purchase order);

c) purchaser defined requirements (data sheet, QRS, IRS);

d) this specification;

e) IEC 60034-1.

1 Scope

Add new subclause

1.1 General

This specification amends and supplements IEC 60034-1, Edition 13.0, 2017 for the design, materials, fabrication and testing of low voltage AC squirrel cage induction motors for petroleum, chemical and other severe-duty industry applications.

Add new subclause

1.2 Motors included in scope

Included in the scope of this specification are electric motors that:

– are of a wire-wound a.c. squirrel cage induction type;

– have a rated power from 0,12 kW to 500 kW;

– have a rated voltage above 50 V up to 1 kV;

– have 2, 4, 6 or 8 poles;

– are air cooled;

– are for single-speed use;

– are converter fed.

NOTE The values of rated voltage and the number of poles align with the ranges in IEC 60034-30.

Add new subclause

1.3 Motors excluded from scope

Excluded from the scope of this specification are electric motors that are:

– rated at a voltage exceeding 1 kV a.c.;

– rated at a power exceeding 1 000 kW.;

– fitted with sleeve bearings;

– submersible, sub-sea, canned or hermetically sealed motors;

– d.c. motors;

– single phase motors;

– synchronous motors;

– motor operated valve actuators.

Add new subclause

1.4 Extended use of this specification

This specification may be used as a basis for the purchase of electrical machines which are outside the immediate scope of this specification, with those clauses that remain relevant for motors of a similar construction and cooling method, such as:

– motors which have a rated power between 500 kW and 1000 kW;

– reluctance motors;

– permanent magnet motors;

– motors with 10 poles or more;

– induction generators;

– close-coupled motors;

– two speed motors.

Those parameters which are outside the scope of this specification are subject to agreement between the purchaser and the manufacturer.

2 Normative references

Add to clause

IEC 60034-7, *Rotating electrical machines - Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM Code)*

IEC 60034-9: 2007, *Rotating electrical machines - Part 9: Noise limits*

IEC 60034-14: 2018, *Rotating electrical machines - Part 14: Mechanical vibration of certain machines with shaft heights 56 mm and higher - Measurement, evaluation and limits of vibration severity*

IEC TS 60034-30-2, *Rotating electrical machines - Part 30-2: Efficiency classes of variable speed AC motors (IE-code)*

IEC 60079 (all parts), *Explosive atmospheres*

IEC 60423: 2007, Conduit systems for cable management – Outside diameters of conduits for electrical installations and threads for conduits and fittings

IEC 61800-2:2015, *Adjustable speed electrical power drive systems – Part 2: General requirements – Rating specifications for low voltage adjustable speed a.c. power drive systems*

IEC 62262, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

ISO 281, *Rolling bearings - Dynamic load ratings and rating life*

ISO 1680, *Acoustics - Test code for the measurement of airborne noise emitted by rotating electrical machines*

ISO 5753-1: 2009, *Rolling bearings — Internal clearance — Part 1: Radial internal clearance for radial bearings*

ISO 12944-1, *Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Part 1: General introduction*

ISO 12944-2, *Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Part 2: Classification of environments*

ISO 21940-11, *Mechanical vibration - Rotor balancing - Part 11: Procedures and tolerances for rotors with rigid behaviour*

ISO 21940-32, *Mechanical vibration - Rotor balancing - Part 32: Shaft and fitment key convention*

3 Terms and definitions

Add new term

3.34
converter-fed motor
electric motor fed from a frequency converter independent of whether it is specifically designed for converter supply or whether it is an electrical machine within the scope of IEC 60034-12 which is designed originally for main supply

Note 1 to entry: This definition is taken from IEC TS 60034-25 and for the purposes of this specification, replaces the term "electrical machine" with the term "motor".

[SOURCE: IEC TS 60034-25: 2014, 3.5, modified: Note 1 to entry added and other modifications indicated in italics]

Add new term

3.35
D-end
drive end of a *motor*, that end of the *motor* which accommodates the shaft end

Note 1 to entry: This can also be expressed as DE.

Note 2 to entry: This definition is taken from IEC 60050-411 and for the purposes of this specification, replaces the term "machine" with the term "motor".

[SOURCE: IEC 60050-411: 1996, 411-43-36, modified: Note 1 to entry added and other modifications indicated in italics]

Add new term

3.36
N-end
non-drive end of a *motor*, that end of the *motor* opposite to the drive end

Note 1 to entry: This can also be expressed as NDE.

Note 2 to entry: This definition is taken from IEC 60050-411 and for the purposes of this specification, replaces the term machine with the term motor.

[SOURCE: IEC 60050-411: 1996, 411-43-37, modified: Note 1 to entry added and other modifications indicated in italics]

Add new term

3.37
notified body
organization designated by a European Union country to assess the conformity of equipment for use in potentially explosive atmospheres before being placed on the market

Note 1 to entry: These bodies carry out tasks related to conformity assessment procedures set out in the applicable legislation, when a third party is required.

Note 2 to entry: The European Commission publishes a list of such notified bodies.

Note 3 to entry: Notified bodies can certify to European Directive 2014/34/EU.

Add new term

3.38
certification body
organization having successfully completed the IECEx assessment process and approved to operate within the IECEx Certified Equipment Scheme

5 Rating

5.5 Rated output

5.5.3 Motors

Replace first sentence with

The motor rated output is the mechanical power available at the shaft and shall be expressed in kilowatts (kW).

6 Site conditions

Add new subclause heading

6.8 Degree of ingress protection

Add new subclause

6.8.1

For exterior locations, motors shall have a minimum degree of ingress protection of IP55, in accordance with IEC 60034-5.

NOTE For interior locations, the requirement for a degree of ingress protection lower than IP55 may be evaluated by the user.

Add new subclause

6.8.2

On frame sizes 160 and above, a condensation drain hole with a removable plug shall be provided at the motor enclosure low point, when mounted at the designated orientation.

Add new subclause

6.9 Degree of impact protection

The motor enclosure and terminal boxes shall have a minimum degree of protection against harmful external mechanical impacts of IK08 in accordance with IEC 62262.

7 Electrical operating conditions

7.1 Electrical supply

Replace second sentence of third paragraph with

In this case, the insulation system including terminal box terminals shall be suitable for IVIC C for phase-to-phase and IVIC B for phase-to-ground.

7.2 Form and symmetry of voltages and currents

7.2.1 AC motors

7.2.1.1

Add to subclause

Single-speed motors shall be rated to operate on a supply voltage having a power quality defined in the data sheet.

8 Thermal performance and tests

8.1 Thermal class

Replace first paragraph with

The motor insulation system shall be thermal class 155 (F) in accordance with IEC 60085 without exceeding thermal class 130 (B) temperature limits at the motor rated output at maximum ambient air temperature.

NOTE Where the application requires motor insulation thermal class 180 (H) in accordance with IEC 60085 without exceeding class 155 (F) limits at the motor rated output at maximum ambient air temperature, this can be selected in the data sheet.

Add to subclause after first paragraph

For converter-fed motors, the total losses including additional losses within the operating envelope due to a non-sinusoidal power supply shall not cause thermal class 130 (B) temperature limits to be exceeded at the rated output.

8.6 Determination of winding temperature

8.6.1 Choice of method

Replace first paragraph with

For measuring motor winding temperature, the resistance method defined in 8.5.2 shall be applied (see also 8.6.2.3.3).

9 Other performance and tests

9.1 Routine tests

Replace third and fourth sentences of first paragraph with

The motor shall be fully assembled with the exception of parts to be removed to facilitate testing.

Add new subclause heading

9.12 Single-speed motor starting, re-starting and re-acceleration

Add new subclause heading

9.12.1 Starting

Add new subclause

9.12.1.1

Motor starting performance shall be in accordance with IEC 60034-12 design N designation.

NOTE Where locked rotor apparent power requirements in accordance with IEC 60034-12 Table 2 cannot be achieved, design NE may be provided.

Add new subclause

9.12.1.2

For motors with a rated power greater than 110 kW, the declared locked rotor current shall not exceed 7.5 times the rated current.

NOTE For motors rated 110 kW or less, the maximum locked rotor apparent power shall be in accordance with IEC 60034-12.

Add new subclause

9.12.1.3

At 80 % of rated voltage at the motor terminals, by means of direct-on-line starting, the motor shall achieve rated speed at rated load, without exceeding maximum temperature rise.

Add new subclause

9.12.2 Re-starting

Motors shall withstand the following, without exceeding the steady state temperature at rated load:

– three starts in succession from cold conditions, coasting to rest between starts;

– two starts from hot at rated conditions.

Add new subclause

9.12.3 Re-acceleration

Motors shall withstand re-acceleration with 100 % residual voltage and in total phase opposition to the supply voltage.

Add new subclause heading

9.13 Noise

Add new subclause

9.13.1

Without secondary noise abatement measures, the motor maximum A-weighted sound power level (LWA) at no-load and rated speed shall not exceed the values defined in IEC 60034-9, Table 2.

Add new subclause

9.13.2

Noise measurements shall be in accordance with ISO 1680.

Add new subclause heading

9.14 Motor efficiency

Add new subclause

9.14.1

All duty type S1 motors for single-speed use shall have a minimum rated efficiency class of IE3 in accordance with IEC 60034-30-1.

Add new subclause

9.14.2

All converter-fed motors shall have a minimum rated efficiency class of IE2 in accordance with IEC TS 60034-30-2.

10 Rating plates

10.1 General

Add new subclause

10.1.1

Rating and marking plates shall be made of 316L stainless steel.

Add new subclause

10.1.2

Rating and marking plates shall be attached to a non-removable part of the motor frame with stainless steel 316L fixings.

Add new subclause

10.1.3

Rating and marking plates shall have the required information (see 10.2) stamped or engraved.

10.2 Marking

Replace list item aa) with

aa) The total mass of the motor, if exceeding 25 kg.

Add new list item ee)

ee) D-end and N-end bearing type.

11 Miscellaneous requirements

11.1 Protective earthing of motors

Replace third paragraph with

Motors of all frame sizes shall have a terminal for the earthing conductor fitted internally within the terminal box.

Add to subclause after third paragraph

Motors of frame size greater than 71 shall have an ISO metric thread earthing terminal fitted externally on the frame body.

Add new subclause heading

11.3 Motor construction

Add new subclause heading

11.3.1 Housing

Add new subclause

11.3.1.1

For motors with a rated power greater than 0.55 kW, frames, stator end-shields and bearing housings shall be constructed from cast iron.

Add new subclause

11.3.1.2

Fan covers shall be constructed from ferrous metal.

Add new subclause

11.3.1.3

Motors with a fully assembled mass greater than 25 kg shall be provided with frame mounted lifting lugs or lifting eye bolts.

Add new subclause heading

11.3.2 Rotor

Add new subclause

11.3.2.1

Rotors shall be balanced with a half-key fitted in the shaft key-way in accordance with IEC 60034-14 and ISO 21940-32.

Add new subclause

11.3.2.2

Rotors shall be balanced in accordance with ISO 21940-11 to meet the limits of maximum vibration magnitude specified in the data sheet, in accordance with IEC 60034-14, Table 1.

NOTE For converter-fed motors, maximum vibration magnitude is applicable throughout the speed range defined in the data sheet.

Add new subclause

11.3.2.3

Both rotor shaft ends shall be provided with an ISO metric threaded hole to facilitate removal of couplings and bearing races.

Add new subclause heading

11.3.3 Fan

Add new subclause

11.3.3.1

Where a corrosivity category of CX has been specified in the data sheet, fan impellers shall not be constructed from aluminium.

Add new subclause

11.3.3.2

Where fan balancing is required, fans external to the stator frame end shields shall be individually balanced prior to fitting to the rotor shaft.

Add new subclause

11.3.3.3

Fan impellers external to the stator frame shall be keyed to the rotor shaft.

Add new subclause heading

11.3.4 Terminal box

Add new subclause

11.3.4.1

The line conductor terminal box shall permit cable entry from at least three directions, 90° apart, excluding the motor drive end.

Add new subclause

11.3.4.2

Terminal boxes shall be of the same material as the motor frame.

Add new subclause

11.3.4.3

Threaded gland entries shall have a metric thread in accordance with IEC 60423, Table 1.

Add new subclause

11.3.4.4

Gland entries shall be fitted with blanking plugs to maintain the ingress protection rating of the motor during transportation and storage.

Add new subclause

11.3.4.5

Where single core line conductor cable entries have been specified, gland plates shall be of a non-magnetic material.

Add new subclause

11.3.4.6

For converter-fed motors, provisions for 360° high frequency earthing shall be provided where cables enter the terminal box.

Add new subclause

11.3.4.7

For converter-fed motors, conductive gaskets shall be provided.

Add new subclause heading

11.3.5 Bearings

Add new subclause

11.3.5.1

Motors with a frame size 132 or less shall have grease lubricated anti-friction bearings, packed and sealed for life.

Add new subclause

11.3.5.2

Bearings shall be C3 type in accordance with ISO 5753-1, Table 1, Group 3.

Add new subclause

11.3.5.3

Horizontally mounted motor bearings shall have a minimum L_{10h} bearing design lifetime of 50 000 hours in accordance with ISO 281 when the radial and axial load values defined in the data sheet are not exceeded.

Add new subclause

11.3.5.4

Vertically mounted motor bearings shall have a minimum L_{10h} bearing design lifetime of 40 000 hours in accordance with ISO 281 when the radial and axial load values defined in the data sheet are not exceeded.

Add new subclause

11.3.5.5

Where specified in the data sheet, stainless steel SPM (shock pulse monitoring) nipples shall be provided on the D-end and N-end of the motor.

Add new subclause

11.3.5.6

For converter-fed motors with a frame size of 160 or greater, the N-end bearing shall be insulated from the rotor shaft to prevent circulating currents.

Add new subclause heading

11.3.6 Space heaters

Add new subclause

11.3.6.1

Motors shall only be provided with space heaters where specified in the data sheet.

NOTE When advised by the manufacturer that space heaters are necessary for the specified site conditions, motors may be provided with space heaters.

Add new subclause

11.3.6.2

Space heaters shall be rated for operation at the heater supply a.c. voltage specified in the data sheet.

Add new subclause

11.3.6.3

Space heaters shall maintain the surface temperature of the stator windings at not less than 5 K above ambient air temperature to maintain the integrity of the insulation system at minimum ambient air temperature.

Add new subclause

11.3.6.4

Where space heater terminals are incorporated in the motor line conductor terminal box, a dedicated separate space heater earth terminal shall be provided within the terminal box.

Add new subclause

11.3.6.5

A label shall be fixed externally to the terminal box containing the heater terminals, warning that heater terminals may be live when the motor is isolated.

Add new subclause

11.3.6.6

Where space heater terminals are incorporated in the motor line conductor terminal box, the space heater terminals shall be rated a minimum of IP2X.

Add new subclause heading

11.4 Mounting

Add new subclause

11.4.1 Mounting arrangement

Motors shall have a mounting arrangement in accordance with one of the following, defined in IEC 60034-7:

– for horizontal shaft, foot mounted motors with one cylindrical shaft extension: IM B3 (IM 1001);

– for horizontal shaft, flange mounted motors with one cylindrical shaft extension: IM B5 (IM 3001);

– for vertical shaft, foot mounted motors with one cylindrical shaft extension: IM V6 (IM 1031);

– for vertical shaft, flange mounted motors with one cylindrical shaft extension: IM V1 (IM 3011);

– for vertical shaft, foot mounted motors with one flanged shaft extension: IM V6 (IM 1035);

– for vertical shaft, flange mounted motors with one flanged shaft extension: IM V1 (IM 3015).

NOTE For applications not described above, other mounting arrangements may be specified.

Add new subclause

11.4.2 Vertically mounted motors

Vertically mounted motors with a downward facing drive-end shaft shall be provided with a canopy over any upward facing air inlets.

Add new subclause

11.5 Methods of cooling

Motors intended for outdoor use shall be of a totally enclosed fan-cooled design.

Add new subclause heading

11.6 Surface finish

Add new subclause

11.6.1

For onshore applications, the protective paint system corrosivity category shall be a minimum of C3 in accordance with ISO 12944-2.

Add new subclause

11.6.2

For offshore exterior applications, the protective paint system corrosivity category shall be CX in accordance with ISO 12944-2.

Add new subclause

11.6.3

The protective paint system durability category shall be a minimum of “medium” in accordance with ISO 12944-1.

Add new subclause heading

11.7 Temperature monitoring

Add new subclause

11.7.1

For single-speed motors with a frame size greater than 315 and all converter-fed motors, one PTC thermistor shall be embedded in each stator phase winding hot spot.

NOTE For single-speed motors with a frame size greater than 315, where the user has evaluated that temperature monitoring is not required, this may be specified.

Add new subclause

11.7.2

For motors with a frame size of 160 or greater, temperature monitoring devices shall be wired to a separate terminal box mounted on the motor frame.

Add new subclause heading

11.8 Additional requirements for converter-fed motors

Add new subclause

11.8.1

Where a converter-fed motor is required the motor shall comply with IEC TS 60034-25.

Add new subclause

11.8.2

For converter-fed motors the stated continuous motor output ratings shall be in accordance with IEC 61800-2, 4.3.3.2.

Add new clause heading

15 Motors intended for use in potentially explosive atmospheres

Add new subclause heading

15.1 General

Add new subclause

15.1.1

Motors for use in potentially explosive atmospheres shall be in accordance with IEC 60079 series.

Add new subclause

15.1.2

Motors with a defined equipment protection level of EPL Ga, EPL Gb or EPL Gc shall be supported with an equipment certificate issued by a notified body or certification body, to the scheme specified in the data sheet.

Add new subclause

15.1.3

Motors shall be certified for use in gaseous atmospheres for temperature group T3 as a minimum and for gases in group IIB as a minimum.

Add new subclause

15.1.4

Motors shall be designed, constructed, tested and marked to one of the following:

– Ex db the motor shall comply with IEC 60079-1;

– Ex db eb the motor shall comply with IEC 60079-1 and IEC 60079-7;

– Ex eb the motor shall comply with IEC 60079-7;

– Ex ec the motor shall comply with IEC 60079-7.

Add new subclause heading

15.2 Flameproof (type Ex db)

Add new subclause

15.2.1

On motors with a defined equipment protection level of Ex db eb, all terminal boxes shall have an equipment protection level of Ex eb.

Add new subclause

15.2.2

A drain fitted with a certified drain plug shall be provided at the motor enclosure low points when mounted at the designated IM orientation.

Add new subclause

15.3 Converter-fed motors

Where type test certification is unavailable for the duty of a converter-fed motor, means of temperature control by embedded temperature sensors for limiting the surface temperature of the motor housing shall be provided.

Registered Office
City Tower
40 Basinghall Street
14th Floor
London EC2V 5DE
United Kingdom

T +44 (0)20 3763 9700
F +44 (0)20 3763 9701
reception@iogp.org

Brussels Office
Bd du Souverain,165
4th Floor
B-1160 Brussels
Belgium

T +32 (0)2 566 9150
F +32 (0)2 566 9159
reception@iogp.org

Houston Office
10777 Westheimer Road
Suite 1100
Houston, Texas 77042
United States

T +1 (713) 470 0315
reception@iogp.org

www.iogp.org



International Association of Oil & Gas Producers

SPECIFICATION
S-703D

March
2020

Data Sheet for Low Voltage Three Phase Cage Induction Motors

JIP33
JOINT INDUSTRY PROGRAMME

Revision history

VERSION	DATE	PURPOSE
1.0	March 2020	Issued for Publication

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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Data sheet for
Low Voltage Three Phase
Cage Induction Motors

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.

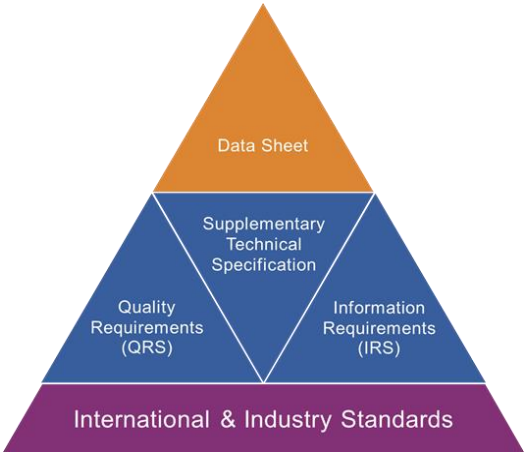
The JIP33 work groups performed their activities in accordance with IOGP's Competition Law Guidelines (November 2014).

Data Sheet for
Low Voltage Three Phase
Cage Induction Motors

Introduction

The purpose of this equipment data sheet is to define buyer specific requirements for the procurement of low voltage three phase cage induction motors, in accordance with IOGP S-703, for application in the petroleum and natural gas industries. The data sheet provides project specific requirements where the supplementary specification and its parent standard require the purchaser to define an application specific requirement. It also includes information required by the purchaser for technical evaluation purposes. Additional purchaser supplied documents are also listed in the data sheets, to define scope and technical requirements for enquiry and purchase of the equipment.

This data sheet shall be used in conjunction with the supplementary requirements specification IOGP S-703, information requirements specification IOGP S-703L and quality requirements specification IOGP S-703Q 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
Data Sheet

Row	S-703D Data Sheet for Data Sheet for Low Voltage Three Phase Cage Induction Motors Single-speed Motor					Issue
2	Tag No. :					
3	Service :					
4	Ref. Clause	Description			Additional notes	
5		**General**				
6		Manufacturer :	Input Data			
7		Model number :	Input Data			
8		Serial number :	Input Data			
9		Order status :	for purchase			
10		Conformity Assessment System (CAS) level :	D			
11		Frame size :	Input Data			
12		**Duty**				
13	4.1, 4.2.1, 4.2.10, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.2.6, 4.2.7, 4.2.8, 4.2.9, 5.1, 5.3, 5.5.2	Duty type :	S1			
14		Number of poles :	2, 4, 6 or 8			
15		Duty point shaft power :	Input Data	kW		
16		Direction of rotation :	clockwise			
17		Load drive :	direct			
18	11.3.5.3, 11.3.5.4	External radial loading on the motor shaft end :	Input Data	N		
19	11.3.5.3, 11.3.5.4	External axial loading on the motor shaft end :	Input Data	N		
20		Moment of inertia of the load (Jext) :	Input Data	kg·m²		
21		**Rating**				
22	11.8.2, 5.5.3, 5.8	Rated power output :	Input Data	kW		
23		Full load current (FLC) :	Input Data	A		
24		**Site conditions**				
25	6.1	Location environment :	offshore – fixed			
26	6.1, 6.2	Altitude :	not more than 1000	m		
27	6.1, 6.3	Maximum ambient air temperature :	25	°C		
28	6.1, 6.4	Minimum ambient air temperature :	-8.4	°C		
29	6.6	Transport and storage conditions :	within defined site conditions			
30	6.6	Standstill period :	≤ 6 months			
31	6.1, 6.3	Maximum relative humidity :	95	%		
32	6.8.1	Motor enclosure ingress protection :	IP56			
33	6.9	Impact protection :	IK08			
34		**Electrical operating conditions**				
35		Motor rated voltage :	400	V		
36		Motor rated frequency :	50	Hz		
37	7.3, 9.12.1.3, Figure 12	Maximum operating voltage limit :	10	%		
38	7.3, 9.12.1.3, Figure 12	Minimum operating voltage limit :	-10	%		
39	7.3, Figure 12	Maximum operating frequency limit :	2	%		
40	7.3, Figure 12	Minimum operating frequency limit :	-2	%		
41	7.2.1.1	Power supply quality :	as per IEC 60034-1 section 7.2.1			
42		**Thermal performance**				
43	8.1	Thermal class :	F			
44	8.1	Temperature rise class :	B			
45		**Starting performance**				
46	9.12.1.1	Starting designation :	N			
47	9.5	Pull-up torque :	Input Data	pu of FLT		
48	9.12.1.2	Declared locked rotor current tolerance :	20	%		
49	9.12.1.2	Declared locked-rotor current at 100% rated voltage :	Input Data	pu of FLC		
50	9.12.1.2	Declared locked-rotor current at 80% rated voltage :	Input Data	pu of FLC		
51	Table 21	Declared locked-rotor torque at 100% rated voltage :	Input Data	N·m		
52	Table 21	Declared locked-rotor torque at 80% rated voltage :	Input Data	N·m		
53		Declared locked-rotor power factor at 100% rated voltage :	Input Data			
54		Moment of inertia of the motor (Jm) :	Input Data	kg·m²		
55		Maximum permissible starting time at 100% rated voltage :	Input Data	s		
56		Maximum permissible starting time at 80% rated voltage :	Input Data	s		
57		Data for protection setting/power modelling :	Not required			
58		**Operating performance**				
59	9.6, Table 18	Rated full load speed :	Input Data	r/min		
60		Rated full load torque :	Input Data	N·m		
61		Rated breakdown torque :	Input Data	pu of FLT		
62	9.14.1, 9.14.2	Efficiency :	IE3			
63	9.14.1, 9.14.2	Efficiency at 100% rated output :	Input Data	%		
64		Efficiency at 75% rated output :	Input Data	%		
65		Efficiency at 50% rated output :	Input Data	%		
66		Power factor at 100% rated output :	Input Data	pu		
67		Power factor at 75% rated output :	Input Data	pu		
68		Power factor at 50% rated output :	Input Data	pu		
69		**Noise**				
70	9.13.1, 9.13.2	Purchaser maximum permissible noise limit :	as per IEC 60034-9	db(A)		
71	9.13.1, 9.13.2	Maximum declared motor sound power level at no-load :	Input Data	db(A)		
72	9.13.1, 9.13.2	Maximum expected motor sound power level at full load :	Input Data	db(A)		
73	9.13.1, 9.13.2	Noise level test of one motor from this order batch :	No			

Row	S-703D Data Sheet for Data Sheet for Low Voltage Three Phase Cage Induction Motors Single-speed Motor					Issue
2	Tag No. :					
3	Service :					
4	Ref. Clause	Description			Additional notes	
74		**Machine construction**				
75		Motor weight :	Input Data	kg		
76		Stainless steel fixings :	required			
77		**Rotor**				
78	11.3.2.2	Maximum vibration magnitude :	grade A			
79		**Fan**				
80	11.3.3.1	Fan impeller material :	GRP			
81	11.3.3.2	Fan direction of rotation :	Select			
82		**Terminal box**				
83		Location :	top			
84	6.8.1	Ingress protection of all terminal box(es) :	IP56			
85	11.3.4.3, 11.3.4.5	Line conductor terminal box cable gland entries :	Input Data			
86		Line conductor cross-section area :	Select	mm²		
87		Large terminal box :	not required			
88		**Bearings**				
89	11.3.5.1, 11.3.5.3	D-end bearing type :	Input Data			
90	11.3.5.1, 11.3.5.3	N-end bearing type :	Input Data			
91	11.3.5.2	Internal clearance :	C3			
92	11.3.5.1	Lubrication specification :	Input Data			
93		**Space heaters**				
94	11.3.6.1	Heater requirement :	not required - unless advised by manufacturer			
95	11.3.6.2	Supply voltage :	200-240	V		
96	11.7.2	Separate terminal box :	not required - unless advised by manufacturer			
97	11.3.6.5	Warning label language :	English			
98		**Mounting**				
99	11.4.1, 11.4.2	Mounting arrangement :	IM B3 (IM 1001)			
100		**Cooling**				
101	11.5	Cooling method :	IC4A1A1			
102		**Vibration**				
103	11.3.5.5	Vibration monitoring :	none			
104	11.3.2.1, 11.3.2.2	Vibration level test report :	not required			
105		Shock pulse monitoring connection :	Input Data			
106		**Surface protection**				
107	11.6.1, 11.6.2	Surface protection corrosivity category :	CX			
108	11.6.3	Surface protection durability category :	medium (M) 7 to 15 years, high (H) 15 to 25 years			
109		Surface finish :	manufacturer's standard			
110		Paint colour :	Manufacturer's standard			
111		**Temperature monitoring**				
112	11.7.1, 11.7.2	Winding temperature detection :	Pt100 - see comment			
113		**Motors intended for use in potentially explosive atmospheres**				
114		Motor to be rated for use in potentially explosive atmosphere :	no			
115	15.1.1, 15.1.2	Hazardous area equipment certifying body :	ATEX Directive, IECEx			
116	15.1.1, 15.1.3	Temperature group :	T1		If required by ATEX Classification area	
117	15.1.1, 15.1.3	Gas group :	IIC or IIB + H2		If required by ATEX Classification area	
118	15.1.2, 15.1.3	Equipment protection level :	EPL Gc,		If required by ATEX Classification area	
119	15.1.4, 15.2.1	Motor classification :	Ex ec		If required by ATEX Classification area	
120		**Miscellaneous**				
121		Provision for IoT hardware installation :	not required			

Row	S-703D Data Sheet for Data Sheet for Low Voltage Three Phase Cage Induction Motors Converter-fed Motor					Issue
2	Tag No. :					
3	Service :					
4	Ref. Clause	Description			Additional notes	
5		**General**				
6		Manufacturer :	Input Data			
7		Model number :	Input Data			
8		Serial number :	Input Data			
9		Order status :	for purchase			
10		Conformity Assessment System (CAS) level :	D			
11		Frame size :	Input Data			
12		**Duty**				
13	4.1, 4.2.1, 4.2.10, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.2.6, 4.2.7, 4.2.8, 4.2.9, 5.1, 5.3, 5.5.2	Duty type :	S1			
14		Number of poles :	2, 4, 6 or 8			
15		Duty point shaft power :	Input Data	kW		
16		Direction of rotation :	clockwise			
17		Load drive :	direct			
18	11.3.5.3, 11.3.5.4	External radial loading on the motor shaft end :	Input Data	N		
19	11.3.5.3, 11.3.5.4	External axial loading on the motor shaft end :	Input Data	N		
20		Moment of inertia of the load (Jext) :	Input Data	kg·m²		
21		**Rating**				
22	11.8.2, 5.5.3, 5.8	Rated power output :	Input Data	kW		
23		Full load current (FLC) :	Input Data	A		
24		**Site conditions**				
25	6.1	Location environment :	offshore – fixed			
26	6.1, 6.2	Altitude :	not more than 1000	m		
27	6.1, 6.3	Maximum ambient air temperature :	25	°C		
28	6.1, 6.4	Minimum ambient air temperature :	-8.4	°C		
29	6.6	Transport and storage conditions :	within defined site conditions			
30	6.6	Standstill period :	≤ 6 months			
31	6.1, 6.3	Maximum relative humidity :	95	%		
32	6.8.1	Motor enclosure ingress protection :	IP56			
33	6.9	Impact protection :	IK08			
34		**Thermal performance**				
35	8.1	Thermal class :	F			
36	8.1	Temperature rise class :	B			
37		**Starting performance**				
38		Moment of inertia of the motor (Jm) :	Input Data	kg·m²		
39		Data for protection setting/power modelling :	not required			
40		**Operating performance**				
41	9.6, Table 18	Rated full load speed :	Input Data	r/min		
42		Rated full load torque :	Input Data	N·m		
43		Rated breakdown torque :	Input Data	pu of FLT		
44	9.14.1, 9.14.2	Efficiency :	IE2			
45	9.14.1, 9.14.2	Efficiency at 100% rated output :	Input Data	%		
46		Power factor at 100% rated output :	Input Data	pu		
47		**Noise**				
48	9.13.1, 9.13.2	Purchaser maximum permissible noise limit :	as per IEC 60034-9	db(A)		
49	9.13.1, 9.13.2	Maximum declared motor sound power level at no-	Input Data	db(A)		
50	9.13.1, 9.13.2	Maximum expected motor sound power level at full	Input Data	db(A)		
51	9.13.1, 9.13.2	Noise level test of one motor from this order batch	No			
52		**Machine construction**				
53		Motor weight :	Input Data	kg		
54		Stainless steel fixings :	required			
55		**Rotor**				
56	11.3.2.2	Maximum vibration magnitude :	grade A			
57		**Fan**				
58	11.3.3.1	Fan impeller material :	GRP			
59	11.3.3.2	Fan direction of rotation :	Select			
60		**Terminal box**				
61		Location :	top			
62	6.8.1	Ingress protection of all terminal box(es) :	IP56			
63	11.3.4.3, 11.3.4.5	Line conductor terminal box cable gland entries :	Input Data			
64		Line conductor cross-section area :	Select	mm²		
65		Large terminal box :	not required			
66		**Bearings**				
67	11.3.5.1, 11.3.5.3	D-end bearing type :	Input Data			
68	11.3.5.1, 11.3.5.3	N-end bearing type :	Input Data			
69	11.3.5.2	Internal clearance :	C3			
70	11.3.5.1	Lubrication specification :	Input Data			
71		**Space heaters**				
72	11.3.6.1	Heater requirement :	not required - unless advised by manufacturer			
73	11.3.6.2	Supply voltage :	200-240	V		
74	11.7.2	Separate terminal box :	not required - unless advised by manufacturer			
75	11.3.6.5	Warning label language :	English			
76		**Mounting**				
77	11.4.1, 11.4.2	Mounting arrangement :	IM B3 (IM 1001)			
78		**Cooling**				
79	11.5	Cooling method :	IC4A1A1			
80		**Vibration**				
81	11.3.5.5	Vibration monitoring :	None			
82	11.3.2.1, 11.3.2.2	Vibration level test report :	not required			
83		Shock pulse monitoring connection :	Input Data			

Row	S-703D Data Sheet for Data Sheet for Low Voltage Three Phase Cage Induction Motors Converter-fed Motor					Issue
2	Tag No. :					
3	Service :					
4	Ref. Clause	Description			Additional notes	
84		**Surface protection**				
85	11.6.1, 11.6.2	Surface protection corrosivity category :	CX			
86	11.6.3	Surface protection durability category :	medium (M) 7 to 15 years, high (H) 15 to 25 years			
87		Surface finish :	manufacturer's standard			
88		Paint colour :	Manufacturer's standard			
89		**Temperature monitoring**				
90	11.7.1, 11.7.2	Winding temperature detection :	Pt100 - see comment			
91		**Converter-fed motor data**				
92	15.3	Converter manufacturer :	Input Data			
93	15.3	Converter model number :	Input Data			
94		Minimum operating speed :	Input Data	rpm		
95		Maximum operating speed :	Input Data	rpm		
96	9.6	Fine balancing above rated speed :	Not required			
97		**Motors intended for use in potentially explosive atmospheres**				
98		Motor to be rated for use in potentially explosive at	no			
99	15.1.1, 15.1.2	Hazardous area equipment certifying body :	ATEX Directive, IECEx			
100	15.1.1, 15.1.3	Temperature group :	T1		If required by ATEX Classification area	
101	15.1.1, 15.1.3	Gas group :	IIC or IIB + H2		If required by ATEX Classification area	
102	15.1.2, 15.1.3	Equipment protection level :	EPL Gc,		If required by ATEX Classification area	
103	15.1.4, 15.2.1	Motor classification :	Ex ec		If required by ATEX Classification area	
104		**Miscellaneous**				
105		Provision for IoT hardware installation :	not required			

Row	S-703D Data Sheet for Low Voltage Three Phase Cage Induction Motors	Issue
2	Tag No. : *Insert Tag Number*	
3	Service : *Insert Service Description*	
4	**PURCHASE ORDER SPECIFIC REQUIREMENTS**	
5	Delete this sheet if not required	
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Data Sheet for
Low Voltage Three Phase
Cage Induction Motors

Guidance on the use of this data sheet

To be used in conjunction with :
IOGP S-703 Supplementary Specification to IEC 60034-1 Low Voltage Three Phase Cage Induction Motors.

This data sheet is set-up to be used in electronic format by both the purchaser/user and the supplier/manufacturer.

This data sheet provides reference back to the parent standard or the supplementary specification where relevant.

Default values (if applicable) have been set according to essential minimum requirements as an integral part of this specification and should only be changed where specific justification can be provided.

The Supplement sheet is provided in an open format sheet for application of specific items not covered in the main part of the data sheet. This sheet is not intended to modify requirements defined in the supplementary requirements specification.
The data sheet includes a revision (issue) column on the right hand side for use by the purchaser/user. After the first issue, for each subsequent revision of the data sheet that is issued to suppliers for enquiry or purchase, the purchaser/user should use the issue column to denote that the data on a specific row has been updated since the previous revision. This will enable the supplier to easily identify where changes have been made.

Legend		
	Select	Supplier/manufacturer completed, pick list of pre-defined values (may be pre-populated with a default value).
	Input data	Supplier/manufacturer completed data entry.
	Select	Purchaser/user completed, pick list of pre-defined values (may be pre-populated with a default value).
	Input data	Purchaser/user completed data entry.
	Select	Either supplier/manufacturer or purchaser/user completed, pick list of pre-defined values (may be pre-populated with a default value).
	Input Data	Either supplier/manufacturer or purchaser/user completed data entry.
	Select	Selection of units from a pre-defined pick list.

Registered Office
City Tower
40 Basinghall Street
14th Floor
London EC2V 5DE
United Kingdom

T +44 (0)20 3763 9700
F +44 (0)20 3763 9701
reception@iogp.org

Brussels Office
Bd du Souverain,165
4th Floor
B-1160 Brussels
Belgium

T +32 (0)2 566 9150
F +32 (0)2 566 9159
reception@iogp.org

Houston Office
10777 Westheimer Road
Suite 1100
Houston, Texas 77042
United States

T +1 (713) 470 0315
reception@iogp.org

www.iogp.org



International Association of Oil & Gas Producers

SPECIFICATION
S-703Q

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Quality Requirements for Low Voltage Three Phase Cage Induction Motors

JIP33
JOINT INDUSTRY PROGRAMME

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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 quality requirements specification (QRS) is to define quality management requirements for the procurement of low voltage three phase cage induction motors in accordance with IOGP S-703, Supplementary Specification to IEC 60034-1 Low Voltage Three Phase Cage Induction Motors, for application in the petroleum and natural gas industries.

The QRS includes definition of a conformity assessment system (CAS) which specifies standardized purchaser interventions against quality management activities at four different levels. The applicable CAS level is specified by the purchaser in the equipment data sheet or purchase order.

This QRS shall be used in conjunction with the supplementary requirements specification (IOGP S-703), the information requirements specification (IOGP S-703L) and the equipment data sheet (IOGP S-703D) 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
Quality Requirements Specification

1 Scope

To specify quality management requirements for the supply of low voltage motors to IOGP S-703 Supplementary Specification to IEC 60034-1 Low Voltage Three Phase Cage Induction Motors including:

a) manufacturer quality management system requirements;

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

c) traceability requirements;

d) evidence of conformance;

e) factory acceptance.

2 Normative References

For the purpose of this document, the documents referenced in IOGP S-703 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*

IEC 60034-1:2017, *Rotating electrical machines - Part 1: Rating and performance*

IOGP S-703, *Supplementary Specification to IEC 60034-1 Low Voltage Three Phase Cage Induction Motors*

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-703 and ISO 9000 (normative to ISO 9001) and the following shall apply.

3.1 Conformity assessment

Demonstration that requirements relating to a product, process, system, person or body are fulfilled.

NOTE 1 Conformity assessment (or referred to as assessment) includes but is not limited to review, inspection, verification and validation activities.

NOTE 2 Assessment activities may be undertaken at a manufacturer/sub-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 different levels of assessment of the manufacturer's control activities by the purchaser (second party) or independent body (third party) based on evaluation of the manufacturer's capability to conform to the product or service specification and obligatory requirements.

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

3.3 Conformity assessment - Hold point (H)

Point in the chain of activities beyond which an activity shall not proceed without the approval of the purchaser / purchaser's representative.

3.4 Conformity assessment - Witness point (W)

Point in the chain of activities that the manufacturer shall notify the purchaser / purchaser's representative before proceeding. The operation or process may proceed without witness if the purchaser does not attend after the agreed notice period.

3.5 Conformity assessment - Surveillance (S)

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

3.6 Conformity assessment - Review (R)

Review of the manufacturer’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 symbols and abbreviations apply.

CAS Conformity assessment system

IRS Information requirements specification

QRS Quality requirements specification (this document)

5 Quality requirements

5.1 Quality management system

The supplier shall demonstrate that the quality management arrangements established for the supply of products and services conform to ISO 9001, ISO 29001, API Specification Q1 or an equivalent quality management system standard agreed with the purchaser.

5.2 Conformance assessment

5.2.1

Quality plans and inspection and test plans developed as outputs to operational planning and control for the products and services shall define the specific controls to be implemented by the manufacturer and when applicable, their sub-suppliers, to ensure conformance with the specified requirements.

5.2.2

Controls shall address both internally and externally sourced processes products and services.

5.2.3

Quality plans and inspection and test plans shall include provision for the purchaser conformity assessment system (CAS) as specified in the data sheet (see Annex A).

5.2.4

Manufacturer performance in meeting the requirements will 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.

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

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

6 Certification and traceability

The manufacturer shall maintain traceability of sub-assembly components to the original component manufacturer tag / serial number and where applicable, associated certification (see ISO 9001, 8.5.2).

7 Control of nonconforming products and services

Nonconformance with specified requirements identified by or to the manufacturer 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 non-conformance agreed in accordance with purchase order conditions (see ISO 9001:2015, 8.2.3, 8.2.4, 8.5.6 and 8.7).

8 Evidence (conformance records)

Plans, procedures, methods and resultant records shall be provided 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**				
1.1	Quality Planning (ISO 9001, 8.1 and ISO 10005)	H	R	-	-
1.2	Inspection and testing planning (ISO 9001, 8.1 and ISO 10005)	H	R	-	-
1.3	Pre-assessment/inspection planning	H	R	-	-
2	**Design and development activities**				
2.1	Type testing (defined in IOGP S-703, IR-29) 8.1, 11.3.6.3, 8.6.1, 9.12.1.2, 9.12.1.3, Table 21	R	R	-	-
2.2	Ex certificate 15.1.1, 15.1.2, 15.1.3, 15.1.4, 15.2.1, 15.2.2, 6.8.2	R	R	R	R
2.3	Design documentation review	H	R	-	-
3	**Control of external supply**				
3.1	External supply scope, risk assessment and controls (ISO 9001, 8.4)	S	R	-	-
4	**Inspection & testing**				
4.1	Routine testing 15.1.1, 15.1.2, 9.1, 9.2, Table 16, Table 17	H	W	R	-
4.2	Thermal performance testing 8.1	H	W	R	-
4.3	Optional vibration testing 11.3.2.2	H	W	R	-
4.4	Optional noise testing 9.13.1	H	W	R	-
5	**Release of product or service**				
5.1	Handling, preservation and packaging	S	R	-	-
5.2	Final information review as per IOGP S-703L	W	S	-	-
5.3	Declaration of conformity	R	R	R	R
5.4	Final inspection and equipment release	H	W	-	-

H is hold point, W is witness point, S is surveillance and R is review.

Note: Definitions for these terms are provided in Section 3 of this document.

Registered Office
City Tower
40 Basinghall Street
14th Floor
London EC2V 5DE
United Kingdom

T +44 (0)20 3763 9700
F +44 (0)20 3763 9701
reception@iogp.org

Brussels Office
Bd du Souverain,165
4th Floor
B-1160 Brussels
Belgium

T +32 (0)2 566 9150
F +32 (0)2 566 9159
reception@iogp.org

Houston Office
10777 Westheimer Road
Suite 1100
Houston, Texas 77042
United States

T +1 (713) 470 0315
reception@iogp.org

www.iogp.org



International Association of Oil & Gas Producers

SPECIFICATION
S-703L

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Information Requirements for Low Voltage Three Phase Cage Induction Motors

JIP33
JOINT INDUSTRY PROGRAMME

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S-703L Information Requirements for Low Voltage Three Phase Cage Induction Motors

Foreword

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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).

S-703L Information Requirements for Low Voltage Three Phase Cage Induction Motors

Introduction

The purpose of this information requirements specification (IRS) is to define Information requirements for the procurement of low voltage three phase cage induction motors, in accordance with IOGP S-703 for application in the petroleum and natural gas industries. This document defines the information requirements, including format, timing and purpose, for information to be provided by the manufacturer. It also defines the specific conditions which must be met for conditional information requirements to become mandatory. The information requirements listed in the IRS provide references to the source of the requirement.

This IRS shall be used in conjunction with the supplementary requirements specification IOGP S-703, quality requirements specification IOGP S-703Q and equipment data sheet IOGP S-703D 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
Information Requirements Specification

S-703L Information Requirements for Low Voltage Three Phase Cage Induction Motors

Supplier Instructions

In response to Invitation To Tender (ITT)

Tenderers to submit information as defined in column E - 'Submit At Proposal' in 'Requirements' sheet, in accordance with ITT instructions

On award of contract

Specified Information requirements shall be submitted in accordance with contract information submission instructions.
Suppliers to prepare and submit 'Supplier Master Information Schedule' (SMIS) incorporating information requirements in accordance with columns F - 'First Issue Post Purchase Order' in 'Requirements' sheet.
Supplier to demonstrate compliance with each information requirement either by providing document number cross reference to the Requirement in 'Supplier Master Information Schedule' (SMIS) and, if specified in the Contract, using column J 'Fulfilled by Document Number(s)' in the IRS Requirements Sheet.

On completion of scope

Supplier to validate that the information delivered meets the IRS requirements either through cross reference to the deliverable type in a as-built version of the 'Supplier Master Information Schedule' SMIS and, if specified in the Contract, by providing an as-built version of the IRS with column J 'Fulfilled by Document Number(s)' in Requirement sheet populated with the specific document numbers issued to the Purchaser.

IRS Structure Contents

1 'Front & Preliminaries' Tab

The 'Front & Preliminaries ' tab includes an IOGP Front sheet for the IRS followed by Acknowledgements, a Disclaimer, Copyright Notice, Foreword and Introduction

2 'Supplier Instructions' Tab

This 'Supplier Instructions' tab provides instructions that Suppliers are to follow in response to this IRS.

3 'Requirements' Tab

The 'Requirements' tab lists the suite of information requirements that are to be supplied during tendering and following award of the purchase order to deliver the purchase order scope.
The information requirements are grouped under three broad categories;
Management information requirements:
Key information requirements relating to planning, managing, assuring and reporting the execution of the technical scope. Note: Information requirements relating to contractual and administrative terms and conditions or regulatory obligations are to be supplied in accordance with the applicable purchase order or regulation.
Technical information requirements:
Technical information developed by the supplier or their sub suppliers, during the design and development, acquisition, manufacture, assembly and testing of the contracted scope.
Purchase Order Specific Information Requirements:
Information requirements specified by individual owners-operators in addition to those specified by IOGP-JIP33 to meet specific operational, project or legislative requirements.
Note: Information requirements relating to contractual and administrative terms and conditions or regulatory obligations are to be supplied in accordance with the applicable purchase order or regulation.
"The 'Requirements' tab includes columns A to L, including Column A for the relevant requirement code and Column B for the Requirement for the different Information Requirements (Data, Documents and/or Models) to be provided by suppliers, based on the parent standard, IOGP Specification or the specified parent industry Standard.
Condition Invoking Revoking Requirement Column C is included to allow any specific conditions to be identified that may require a additional deliverable(s).
Typical Deliverable Column D is provided for Purchaser to identify the deliverable type that the information would typically appear within; this also allows the Purchaser's Requisitioning Engineers to group the various Information Requirements by Deliverable Type.
Column E includes Submission Requirements (Yes or No) at Proposal, while columns F, G & H identify Issue Purpose (For Information or For Acceptance) and Durations (Period or Weeks/Months) for First Issue of the particular deliverable Post Purchase Order.
Required As Built, Fulfilled by Document Number(s), Translation Required and Remarks columns I, J, K & L are also included. Definitions for each column are contained in the rows above the columns: Abbreviations used for various submission requirements in Column H are shown in table 3.1 below:

Abbreviation	Description
WAD	Weeks After Delivery
WAI	Weeks After Inspection
WAO	Weeks After Order
WAO(Monthly)	Weeks After Order Monthly
WAT	Weeks After Test
WPTD	Weeks Prior To Delivery
WPTF	Weeks Prior to Fabrication
WPTT	Weeks Prior To Test

Table 3.1 - Information Submission Abbreviations

4 'Definitions' Tab

The 'Definitions' tab includes several columns A to F, including Column A for the relevant Code & Column B for the Requirement for the different Information (Data, Documents and/or Models) Requirements to be provided by Suppliers, all copied from the 'Requirements' tab.
Column C includes a full description of the Information Requirement based on the Parent Standard, IOGP Specification or an Industry Standard.
Column D gives a reference to the Parent Standard, IOGP Specification or an Industry Standard that the Information requirement is identified in.
Column E identifies the Requirement format as listed in Table 9.1 below.
Column F relates the CFIHOS discipline document type that could be used to classify the document having this IRS content.
Definitions for each column are contained in the rows above the columns:

5 Abbreviations and definitions

The following abbreviations, terms and definitions have been used in the various tabs of this workbook.

Buyer	Organisation placing a Contract or Purchase Order with Supplier for equipment or services on project; may be alternatively referred to as 'User' or 'Purchaser'
CFIHOS	Capital Facilities Information Hand Over Specification
Company	Project Operating Entity or the organisation Contractor is under contract to
Contractor	Project Contractor responsible for procuring equipment.
Information	Data, Documents and/or Models
IRS	Information Requirements Specification
PO	Purchase Order
QRS	Quality Requirements Specification
SMIS	Supplier Master Information Schedule
Supplier	Organisation supplying equipment or services to Company and/or Contractor on project; may alternatively be referred to as "Vendor", "Seller" or “Manufacturer”.

6 CFIHOS

The Information Requirements are also classified according to document classification published in v1.4 of Capital Facilities Information Hand Over Specification (CFIHOS). The objective of CFIHOS is to create a common information standards across the process industries. Further information on CFIHOS can be found at:
https://uspi.nl/index.php/projects/frameworks-methodologies/136-cfihos

7 Document Metadata

Typical Metadata for Information Deliverables to be provided by Suppliers is shown in Table 7.1 below

Property_Name	Definition
document number	The unique identifier for the Document according to the Owner/Operator Document numbering scheme.
revision code	A code used to identify the content of a document at a certain point in time according to the Owner/Operator Document Revision Coding scheme. It is used to track the evolution of a document during its lifecycle and is applied at time of release from Originator to reflect the document is frozen.
document title	Describes in a short and concise manner the content of the document. Remark: The title of the document usually appears on the front page of the document or in title block.
revision date	The date of the document revision.
originator company	Identifies the name of the Company who has generated the Document.
author	Author(s) of the current revision of the document. This should be an individual name, not a role, i.e. Initials and last name, not just initials
approved by	Name or UserID of the person who has approved the current revision of the document as per the document management approval workflow. This should be an individual name, not a role, i.e. Initials and last name, not just initials.
file name	The unique name of the electronic file (including the file extension).
originator document number	The unique identifier for the Document according to originator which doesn't necessarily conform to the Owner/Operator's document numbering scheme. Remark: One potential use is to allow Owner/Operator to identify duplicate documents provided by multiple subcontractors but from the same OEM.
originator document revision code	A code used to identify the content of a document at a certain point in time according to the originator which doesn't necessarily conform to the Owner/Operator's document revision coding scheme. Remark: One potential use is to allow Owner/Operator to identify duplicate documents provided by multiple subcontractors but from the same OEM.
document status code	A code used to indicate the life cycle status of the document. A code which identifies the state of the document within the publication lifecycle process. A document is classified by a single state, which changes as the document advances through this lifecycle.
language	Indicates the language that the document is written in.
discipline document type short code	Classifies the Document with a Discipline_Document_Type.
project code	A unique code used to identify the Project.
document comment	Indicates any additional Comment / Explanation for a Document Revision.
plant code	Identifies the Plant that the document is related to. This is a smaller subdivision than 'Site' but larger than 'Unit' or 'Area.'
export control classification	Indicate the Export Control Rule applicable for the Document (e.g., ECCN, EAR).
transmittal number	A unique transmittal identifier generated by the document control system of the company sending the transmittal.
security classification	Indicates internal Owner-Operator access restriction applicable for the Document.

Table 7.1 - Supplier Deliverable Metadata

8 Deliverable Formats

The format of the relevant Information Deliverable to be submitted by Supplier for Buyer/Contractor is to be as described in table 8.1 below. Where required to be 'As Built', deliverables are to be updated and handed over in the native format.

Format	Description
Hard Copy	Should be be electronically developed, but in particular and exceptional circumstances, say for legal reasons, may need to be handed over in printed paper format
Native	To be electronically developed and must be retained in the original application software format, with no embedded or linked files.
Portable Document Format (PDF)	To be electronically developed and must be in Optical Character Recognition (OCR) format which is text searchable & indexed. Embedded graphics in Joint Photographic Experts Groups(JPEG), Graphics Interchange Format (GIF) (suitably compressed) or Tagged Image File Format (TIFF) formats may be allowed but by exception only and with Purchaser's written approval.
Intelligent Vector (CAD)	Intelligent vector drawing Like CAD
Multi media (Film)	Multi media Like Film, Micro fiche, Video, Sound
Raster Image (Bitmap)	Raster Image like a bitmap
Structured Data (MS Apps)	Structured Data Like CSV file, MS-access, MS-Excel, Application Database
Technical Publication (Text)	Technical publication or Text

Table 8.1 – Deliverable Formats

S-703L Information Requirements for Low Voltage Three Phase Cage Induction Motors

Requirements

Column	Heading - Details and requirements
A	**Code** - a unique identifier for the Information Requirement assigned by IOGP JIP33 DigitalTool
B	**Requirement** - a short description of the Information Requirement based on the description in the Parent Standard, IOGP Specification or an Industry Standard Information Requirement Title.
C	**Condition Invoking Requirement** - describes special condition(s) under which the Information Requirement is required; e.g.. service offshore and weight greater than 1 tonne means information is required. NB: if blank, always required
D	**Typical Deliverable** - Purchaser to advise the short description of the Information Deliverable that would typically include this Information Requirement
E	**Submit With Proposal** - Yes or No, where 'Yes' means the Information Requirement is required to be submitted with Suppliers Proposal or 'No' is not required
F, G, H & I	**First Issue Post Purchase Order** - issue purpose ('For Information' or 'For Acceptance'), time in weeks for issue of the Information Requirement and Period defined after Purchase Order placement
J	**Required As Built** - Yes or No, where 'Yes' means the Information Requirement is required to be 'As Built' on completion or delivery of equipment or 'No' is not required 'As Built'
K	**Fulfilled by Information Deliverable Number(s)** – identifies which Information Requirement(s) listed in the Supplier Master Information Schedule (SMIS) addresses the Purchasers requirements. NB; it should be noted that one Information Deliverable can fulfil more than one Information Requirement.
L	**Translation Required** -Yes or No, where 'Yes' means the Information Requirement should be translated into a language(s) (to be advised) other than English and 'No' means to be provided in English
M	**Remarks** - may include bid clarification questions & decisions (specify author & date)

Col A	Col B	Col C	Col D	Col E	Col F	Col G	Col H	Col I	Col J	Col K	Col L	Col M
Code	**Requirement**	**Condition Invoking Requirement**	**Typical Deliverable**	**Submit At Proposal**	**First Issue Post Purchase Order**		**Issue for Approval**	**Issue for Construct.**	**Required As Built**	**Fulfilled by Document Number(s)**	**Translation Required**	**Remarks**
				(Yes/No)	Purpose	(Weeks)	(Weeks)	(Weeks)	(Yes/No)			
Contract Management Information Requirements												
S703-IR-1	Supplier master information schedule		Information Deliverables List	No	For Acceptance	2	6	8	Yes		-	
S703-IR-4	Quality plan	Required for CAS A and B as per S703-Q	Quality Plan	No	For Information	2	6	8	No		-	
S703-IR-6	Inspection and test plan	Required for CAS A and B as per S703-Q	Inspection and Test Plan (ITP)	No	For Information	4	8	10	No		-	
S703-IR-7	Handling, shipping, storage and preservation procedure		Handling, shipping and storage procedure	No	For Information	4	8	10	No		-	
S703-IR-8	Non-conformance records		Nonconformance History	No	For Acceptance	4	8	10	Yes		-	
S703-IR-9	Concession requests		Concession request	No	For Acceptance	4	8	10	Yes		-	
Technical Information Requirements												
S703-IR-19	General arrangement drawing		General arrangement diagram	Yes	For Information	2	6	8	No		No	Preliminary GA drawomg tp be submitted with proposal
S703-IR-22	Termination diagram	Where purchaser cable terminations are required in addition to that of the line conductors.	Termination diagram	No	For Acceptance	8	12	14	Yes		No	
S703-IR-20	Single-speed motor performance curves	To be provided motors for single-speed use with a rated power output â‰¥100 kW.	Motor performance curve	Yes	For Information	4	8	10	No			Provides the user with confirmation that the motor is capable of meeting the torque requirements of the driven load.
S703-IR-40	Converter-fed motors performance curves	Where purchaser confirms the motor is converter-fed.	Motor performance curve	Yes	For Information	4	4	10	No			Provides the user with confirmation that the motor is capable of meeting the torque requirements of the driven load.
S703-IR-33	Routine test procedure	Required only where tests in addition to those stated in IEC 60034-1 Table 16 have been specified by the purchaser in the data sheet	Test procedure	No	For Information	4	8	10	No			
S703-IR-24	Routine test report	Required for CAS A, B, and C as per S703-Q	Test report	No	For Information				-		-	
S703-IR-29	Type test report	Required for CAS A and B as per S703-Q	Type test report	Yes	For Information				-		-	
S703-IR-37	Noise type test report	Required for CAS A, B and C	Noise type test report	No	For Information				No			
S703-IR-39	Vibration test report	Required for CAS A, B and C	Vibration level test report	No	For Information				No			
S703-IR-41	Data for protection setting/power modelling	Data for protection setting/power modelling requested in the datasheet	Data for protection setting/power modelling	No	For Information				No			Provides the user with the information required to ensure the upstream system configuration is specified accordingly.

S-703L Information Requirements for Low Voltage Three Phase Cage Induction Motors

Requirements

Column	Heading - Details and requirements
A	**Code** - a unique identifier for the Information Requirement assigned by IOGP JIP33 DigitalTool
B	**Requirement** - a short description of the Information Requirement based on the description in the Parent Standard, IOGP Specification or an Industry Standard Information Requirement Title.
C	**Condition Invoking Requirement** - describes special condition(s) under which the Information Requirement is required; e.g.. service offshore and weight greater than 1 tonne means information is required. NB: if blank, always required
D	**Typical Deliverable** - Purchaser to advise the short description of the Information Deliverable that would typically include this Information Requirement
E	**Submit With Proposal** - Yes or No, where 'Yes' means the Information Requirement is required to be submitted with Suppliers Proposal or 'No' is not required
F, G, H & I	**First Issue Post Purchase Order** - issue purpose ('For Information' or 'For Acceptance'), time in weeks for issue of the Information Requirement and Period defined after Purchase Order placement
J	**Required As Built** - Yes or No, where 'Yes' means the Information Requirement is required to be 'As Built' on completion or delivery of equipment or 'No' is not required 'As Built'
K	**Fulfilled by Information Deliverable Number(s)** – identifies which Information Requirement(s) listed in the Supplier Master Information Schedule (SMIS) addresses the Purchasers requirements. NB; it should be noted that one Information Deliverable can fulfil more than one Information Requirement.
L	**Translation Required** -Yes or No, where 'Yes' means the Information Requirement should be translated into a language(s) (to be advised) other than English and 'No' means to be provided in English
M	**Remarks** - may include bid clarification questions & decisions (specify author & date)

Col A	Col B	Col C	Col D	Col E	Col F	Col G	Col H	Col I	Col J	Col K	Col L	Col M
Code	**Requirement**	**Condition Invoking Requirement**	**Typical Deliverable**	**Submit At Proposal**	**First Issue Post Purchase Order**		**Issue for Approval**	**Issue for Construct.**	**Required As Built**	**Fulfilled by Document Number(s)**	**Translation Required**	**Remarks**
				(Yes/No)	Purpose	(Weeks)	(Weeks)	(Weeks)	(Yes/No)			
S703-IR-42	Equivalent circuit diagram	Converter-fed motor with a frame size greater than 315	Equivalent circuit diagram	No	For Information				No			Provides the user with the basic elements resistance, inductance, and capacitance in a simple arrangement such that motor performance can be evaluated for network modelling.
S703-IR-35	Installation, operation and maintenance manual		Installation, operation and maintenance manual	No	For Information				No		No	Provides the user with information and guidance to ensure the equipment is utilized as per manufacturer's intent.
S703-IR-26	Electrical hazardous area equipment certification		Ex certification	No	For Information				No		No	
S703-IR-30	Declaration of conformity		Declaration of conformity	No	For Information				No		No	
S703-IR-44	IOGP S-703D Data Sheet		Data Sheet	Yes	For Acceptance				Yes		No	Preliminary information should be provided with proposal.
Purchase Order Specific Information Requirements												

S-703L Information Requirements for Low Voltage Three Phase Cage Induction Motors

Definitions

Column	Heading - Details and requirements
A	**Code** - a unique identifier for the Information Requirement assigned by IOGP JIP33 DigitalTool
B	**Requirement -** a short description of the Information Requirement that would typically provide the Information required, based on the description in the Parent Standard, IOGP Specification or an Industry Standard Title.
C	**Description** - an excerpt from the Parent Standard, IOGP Specification or Industry Standard.
D	**Reference** - reference to the Parent Standard, IOGP Specification or Industry Standard that the Information Deliverable is identified in.
E	**Format** - defines the required format of the relevant Information Requirement to be submitted by Supplier for Buyer/Contractor for information and acceptance as shown in Table 9.1 of Instructions Tab and selected from pick list.
F	**CFIHOS Discipline Document Type Code** - the CFIHOS discipline document type that could be used to classify the document having this IRS content.

Col A	Col B	Col C	Col D	Col E	Col F
Code	**Requirement**	**Description**	**Reference**	**Format**	**CFIHOS Discipline Document Type Code**
		Contract Management Information Requirements			
S703-IR-1	Supplier master information schedule	Schedule of specific information deliverables developed by the [Vendor] and accepted by the [Purchaser] to meet the information requirements defined in the agreed Information Requirements Specification (IRS). The schedule typically defines; a. information deliverable type, title/description b. unique identification (code/number) in the [Vendor's] format unless agreed otherwise in the contract. c. planned submission arrangements including; purpose, formats, timing, frequency Arrangements for managing submissions, tracking progress and updating the schedule during the execution of the contract scope will be in accordance with contractual agreements.	API 671, 13.1.1	Native	CFIHOS-70000099
S703-IR-4	Quality plan	Plan specifying the actions, responsibilities and associated resources to be applied by the [vendor], and when applicable [sub-vendors] or [manufacturers], to deliver the services or procured item(s) in conformance with the agreed requirements. ISO 9001 Clause 8.1 and ISO 10005 may be used to inform the development of quality plans for specific applications, processes or products. [API Spec Q2 may be used to inform the development of Service Quality Plans]	Contract Requirement	PDF	
S703-IR-6	Inspection and test plan	Tabular presentation of a quality plan typically used for process or product applications to define the specific sequence of operational activities, instructions, acceptance criteria records and associated [vendor], [purchaser] and independent conformity assessment activities. ISO 9001 Clause 8.1 and ISO 10005 may be used to inform the development of inspection and test plans for specific processes and products.	Contract Requirement	PDF	CFIHOS-70000180
S703-IR-7	Handling, shipping, storage and preservation procedure	Definition of practices to be followed during the; storage, transport, lifting and preservation of the equipment and materials included in the scope of supply to maintain their functionality and guarantees. Procedures typically define: a. packaging requirements; contents, identification, size, weight and number of packages/container (s), b. special packing/unpacking/handling requirements c. storage location and requirements, d. preservation requirements detailing inspection periods and required maintenance, materials required etc., both prior to installation and post installation, but prior to commissioning.	Contract Requirement, 6.6	PDF	CFIHOS-70000154
S703-IR-8	Non-conformance records	Details of non-conformances raised by or to the [vendor/sub-vendors] against technical requirements prior to or during the delivery of the products or services. Non-conformance is managed by the [vendor] in accordance with ISO 9001 Clause 8.7 and associated records typically include; description of non-conformance, analysis and disposition, correction implemented and details of any retesting or inspection taken to demonstrate subsequent conformance. Note: Instances where the proposed disposition is to accept a non-conforming condition are subject to agreement by the [purchaser] in accordance with the concession management protocols defined in the Contract.	Contract Requirement	PDF	CFIHOS-70000226
S703-IR-9	Concession requests	Formal submission seeking [purchaser] agreement to accept deviations from the contracted scope or technical requirements. Requests may be raised as a result of, as examples, material or service availability, obsolescence, innovation, non-conformance. Requests are typically raised as required during execution with a summary report detailing concessions raised, [purchaser] directions, agreed action status provided with progress reports and at contract closeout	Contract Requirement	PDF	CFIHOS-70000389

S-703L Information Requirements for Low Voltage Three Phase Cage Induction Motors

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Col A	Col B	Col C	Col D	Col E	Col F
Code	**Requirement**	**Description**	**Reference**	**Format**	**CFIHOS Discipline Document Type Code**
		Technical Information Requirements			
S703-IR-19	General arrangement drawing	A drawing showing overall dimensions, critical interface dimensions, part references and weight of assemblies, equipment and components. The drawing shall contain reference to main specifications and standards. For equipment / components the drawing may include cross sectional views. Document may contain the following information: • Main dimensions • Interface connections • Weight • Centre of gravity • Withdrawal/installation and maintenance space. • Installation and mounting details • Lifting arrangement	11.1, 11.3.1.1, 11.3.1.3, 11.3.2.3, 11.3.3.3, 11.3.4.1, 11.3.4.3, 6.8.2	PDF	CFIHOS-70000153
S703-IR-22	Termination diagram	A diagram for equipment, panels, junction boxes, etc. identifies all connections and cable terminations at input/output rails. Required for removal/hook up purposes and modifications. To include vendor interfaces.	11.3.4.2	PDF	CFIHOS-70000330
S703-IR-20	Single-speed motor performance curves	Motor performance curve shall include the following information: • Torque curve from 0 to 100% synchronous speed at 80% rated voltage expressed as a percentage of rated torque. • Torque curve from 0 to 100% synchronous speed at 100% rated voltage expressed as a percentage of rated torque. • Current curve from 0 to 100% synchronous speed at 80% rated voltage expressed as a percentage of rated current. • Current curve from 0 to 100% synchronous speed at 100% rated voltage expressed as a percentage of rated current. • Torque curve of the load from 0 to 100% synchronous speed expressed as a percentage of rated torque.		PDF	
S703-IR-40	Converter-fed motors performance curves	Provide motor performance curves for quadrant operation specified in the datasheet and as per IEC 61800-2: 2015 Table 4, Section 4.3.3.2 and Figure 8.		PDF	
S703-IR-33	Routine test procedure	Procedure documenting the manufacturers recommended testing activities and acceptance criteria according to applicable standards, specifications and requirements, to document the condition of the equipment as tested from factory. Procedure to define test set-up and test equipment.	9.2, Table 16, Table 17	PDF	
S703-IR-24	Routine test report	This document records and documents all results from the activities performed in routine tests in accordance with IEC 60034-1 Section 9. Mandatory content of information: - Date of testing; - Signature of person responsible for test; - Object identification (type, series number, etc.). - Measured values; - Statement of compliance. Optional content of information: - Test equipment / instruments used; - Reference to test procedure.	9.2, Table 16, Table 17	PDF	

S-703L Information Requirements for Low Voltage Three Phase Cage Induction Motors

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Col A	Col B	Col C	Col D	Col E	Col F
Code	**Requirement**	**Description**	**Reference**	**Format**	**CFIHOS Discipline Document Type Code**
S703-IR-29	Type test report	A document which provides a summary of tests of one or more machine made to a certain design to show that the design meets certain specifications. The report will include the specific year and edition of the IEC used to perform the type test for all discrete functional units provided. This shall include: Winding resistance - cold in accordance with IEC 60034-1 Table 16 Locked rotor current test in accordance with EC 60034-1 Table 21 Temperature rise test in accordance with IEC 60034-1 Section 8 Full load test in accordance with IEC 60034-1 Section 8 Breakdown torque test in accordance with EC 60034-1 Table 21 No-load test in accordance with IEC 60034-1 Table 16 Open circuit secondary induced voltage at standstill in accordance with IEC 60034-1 Table 16 Withstand voltage test in accordance with IEC 60034-1 Table 16	8.1, 11.3.6.3, 9.12.1.1, 9.12.1.2, 9.12.1.3, 9.13.1, 9.13.2, Table 21	PDF	
S703-IR-37	Noise type test report	A type test report detailing noise performance in accordance with IEC 60034-9.	9.13.1, 9.13.2	PDF	
S703-IR-39	Vibration test report	Vibration level test report stating maximum vibration levels of machine as defined in IEC 60034-14	11.3.2.1, 11.3.2.2	PDF	
S703-IR-41	Data for protection setting/power modelling	Additional information to facilitate power system modelling and/or protection device configuration. Final application specific information requirements to be agreed between purchaser and supplier.		PDF	
S703-IR-42	Equivalent circuit diagram	A function diagram providing information on the electric and magnetic behaviour of the motor. This shall apply the conventions for electric and magnetic circuits as specified in IEC 60375. See IEC TS 60034-25 Table 3 for electrical parameters to be included in the T-equivalent circuit diagram.		PDF	

S-703L Information Requirements for Low Voltage Three Phase Cage Induction Motors

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Code	**Requirement**	**Description**	**Reference**	**Format**	**CFIHOS Discipline Document Type Code**
S703-IR-35	Installation, operation and maintenance manual	The user of the product shall be provided with information regarding normal and safe operation/functioning. As appropriate, this should be completed by information regarding automatic and remote controlled products, exceptional functions/situations, indications to be observed, protection of persons and instructions for fault detection. Description of methods of installing a piece of equipment. The instruction material shall contain applicable information relating to the product itself as follows : Installation: • Installation refers to the mounting, setting, erection, etc. Operation: • detailed description of the product, its fittings, its guards and/or protective devices; • comprehensive range of applications for which the product is intended, taking into account variations of the original machine if appropriate; • warnings about reasonably foreseeable misuse; • instructions for setting and adjustment; • instructions for re-starting after an intervention; • diagrams showing the main functions of the product and especially the safety functions; • description of the initial operations required to bring the product to full working performance, with details of checks, methods of setting adjustable controls and what the setting should be; • maintenance tasks within the capability of the user during normal use; • identification and treatment of malfunctions; • details of any techniques that are likely to be new to users, for example with regard to information technologies; • storage and preservation of the product when not in use. Maintenance: The document shall include descriptions for both hardware and software regarding preventive maintenance, fault detection, fault diagnosis and fault isolation, rectification of faults and system operation. The instructions should include information concerning: • the nature and frequency of inspections; • safety precautions and warnings for maintenance carried out on running or live equipment; • information for fault diagnosis and identification; • instructions for repairs and adjustments; • description of built-in diagnostic systems to aid fault finding, when applicable; • drawings and diagrams enabling maintenance personnel to carry out their task rationally (especially fault-finding tasks); • regular checking of warning devices;		PDF	CFIHOS-70000228
S703-IR-26	Electrical hazardous area equipment certification	Attestation issued by a recognised notified body e.g. ATEX Directive, IECEx, EAC, certifying that a type test has satisfied specified criteria to enable that equipment to be used in a potentially explosive atmosphere.	11.3.3.1, 15.1.1, 15.1.2, 15.1.3, 15.1.4, 15.2.1, 15.2.2, 6.8.2	PDF	CFIHOS-70000160
S703-IR-30	Declaration of conformity	Declares conformance with all standards relating to the machine in it's region of use, and its duty as defined by the purchaser in the data sheet.	1.1	PDF	
S703-IR-44	IOGP S-703D Data Sheet	Document providing information on technical data and characteristics about material, products or systems and their environment for proper implementation. This document provides structured data form containing part number/model, design information, operational data and limitations of the equipment. Document will IOGP S-703D with supplier fields populated.	11.3.3.2, 11.3.5.1, 11.3.5.2, 11.3.5.3, 9.14.1, 9.14.2, 9.5	Native	CFIHOS-70000416
Purchase Order Specific Information Requirements					

Registered Office
City Tower
40 Basinghall Street
14th Floor
London EC2V 5DE
United Kingdom

T +44 (0)20 3763 9700
F +44 (0)20 3763 9701
reception@iogp.org

Brussels Office
Bd du Souverain,165
4th Floor
B-1160 Brussels
Belgium

T +32 (0)2 566 9150
F +32 (0)2 566 9159
reception@iogp.org

Houston Office
10777 Westheimer Road
Suite 1100
Houston, Texas 77042
United States

T +1 (713) 470 0315
reception@iogp.org

www.iogp.org

