International Association of Oil & Gas Producers

SPECIFICATION

IOGP S-703

July 2025

Version 2.0

Supplementary Specification to IEC 60034-1 for Low-voltage Three-phase Cage Induction Motors

JIP33 JOINT INDUSTRY PROGRAMME

Revision history

VERSION	DATE	PURPOSE
2.0	July 2025	Second Edition
1.0	March 2020	First Edition

Acknowledgements

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

Foreword

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

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

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

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

This second edition cancels and replaces the first edition published in March 2020. Due to technical writing requirements leading to extensive changes, this second edition should be treated as a new document.

Table of contents

List of tables

Introduction

The purpose of the IOGP S-703 specification documents 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 14.0, 2022, Rotating electrical machines – Part 1: Rating and performance, for application in the petroleum and natural gas industries.

The IOGP S-703 specification documents follow a common structure (as shown below) comprising a specification, also known as a technical requirements specification (TRS), a procurement data sheet (PDS), an information requirements specification (IRS) and a quality requirements specification (QRS). These four specification documents, together with the purchase order, define the overall technical specification for procurement.

JIP33 Specification for Procurement Documents
Supplementary Technical Requirements Specification (TRS)

This specification is to be applied in conjunction with the supporting PDS, IRS and QRS as follows.

IOGP S-703: Supplementary Specification to IEC 60034-1 for Low-voltage Three-phase Cage Induction Motors

This specification defines 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. Modifications to IEC 60034-1 defined in this specification are introduced by a description that includes the type of modification (i.e. *Add*, *Replace* or *Delete*) and the position of the modification within the clause.

NOTE Lists, notes, tables, figures, equations, examples and warnings are not counted as paragraphs.

IOGP S-703D: Procurement Data Sheet for Low-voltage Three-phase Cage Induction Motors (IEC)

The PDS defines application-specific requirements. The PDS is applied during the procurement cycle only and does not replace the equipment data sheet. The PDS may also include fields for supplier provided information required as part of the purchaser's technical evaluation. Additional purchaser-supplied documents may also be incorporated or referenced in the PDS to define scope and technical requirements for enquiry and purchase of the equipment.

IOGP S-703L: Information Requirements for Low-voltage Three-phase Cage Induction Motors (IEC)

The IRS defines information requirements for the scope of supply. The IRS includes information content, format, timing and purpose to be provided by the supplier, and may also define specific conditions that invoke the information requirements.

IOGP S-703Q: Quality Requirements for Low-voltage Three-phase Cage Induction Motors (IEC)

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 PDS or in the purchase order.

The specification documents follow the editorial format of IEC 60034-1 and, where appropriate, the drafting principles and rules of ISO/IEC Directives Part 2.

The PDS and IRS are published as editable documents for the purchaser to specify application-specific requirements. The TRS and QRS are fixed documents.

The order of precedence of documents applicable to the supply of the equipment, with the highest authority listed first, shall be as follows:

a) regulatory requirements;

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

c) purchaser-defined requirements (e.g. PDS, IRS and QRS);

d) this specification;

e) IEC 60034-1.

1 Scope

Add new subclause

1.1 Motors included in scope

The scope of this specification includes the following types of electric motors:

– with a wire-wound AC squirrel cage induction type;

– with a rated voltage above 50 V up to and including 1 kV AC;

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

– with air cooling;

– suitable for hazardous and non-hazardous area environments;

– for single-speed, converter duty or converter capable applications;

– with close-coupled pumps.

In this specification, the requirements for converter duty applications are also applicable to converter capable applications.

Add new subclause

1.2 Motors excluded from scope

The scope of this specification excludes the following types of electric motors:

– rated at a voltage exceeding 1 kV AC;

– form-wound squirrel cage;

– fitted with sleeve bearings;

– submersible, subsea, canned or hermetically sealed;

– DC motors;

– single phase;

– synchronous;

– with operated valve actuators.

Add new subclause

1.3 Extended use of this specification

This specification may be used as a basis for the purchase of electric motors that are outside the immediate scope of this specification. The extended use of this specification based on similar construction and cooling methods may include the following:

– motors with a rated power above 500 kW;

– reluctance motors;

– permanent magnet motors;

– induction generators;

– two-speed motors.

The requirements that are outside the scope of this specification are subject to agreement between the purchaser and the manufacturer.

2 Normative references

Add to first paragraph

The following documents are referred to in this specification, the PDS (IOGP S-703D) or the IRS (IOGP S-703L) in such a way that some or all of their content constitutes requirements of these specification documents.

Add to clause

IEC 60034-2-1:2024, *Rotating electrical machines – Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)*

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

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 60034-25:2022, *Rotating electrical machines – Part 25: AC electrical machines used in power drive systems – Application guide*

IEC 60072-1:2022, *Dimensions and output series for rotating electrical machines – Part 1: Frame numbers 56 to 400 and flange numbers 55 to 1080*

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 61000-2-4:2002 , *Electromagnetic compatibility (EMC) – Part 2-4: Environment – Compatibility levels in industrial plants for low-frequency conducted disturbances*

IEC 61800-2:2021, *Adjustable speed electrical power drive systems – Part 2: General requirements – Rating specifications for low voltage adjustable speed a.c. power drive systems*

IEEE 519:2014 , *IEEE Recommended Practice and Requirements for Harmonic Control in Electric Power Systems*

ISO 15, *Rolling bearings — Radial bearings — Boundary dimensions, general plan.*

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

ISO 492, *Rolling bearings - Radial bearings — Geometrical product specifications (GPS) and tolerance values*

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 12944-1:2017, *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 21940-11:2016 including AMD1:2022, *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*

Delete from clause

IEC TS 60034-25:2014, *Rotating electrical machines – Part 25: AC electrical machines used in power drive systems – Application guide*

Replace Clause 3 title with

3 Terms, definitions and abbreviated terms

Add new subclause 3.0 to start of clause

3.0 Abbreviated terms

CAS conformity assessment system

Ex explosive atmosphere

GRP * glass reinforced plastic

HSE * health, safety and environment

IRS information requirements specification

PDS procurement data sheet

PTC positive temperature coefficient

QRS quality requirements specification

TEFC * totally enclosed fan cooled

TRS technical requirements specification

* Cited in IOGP S-703J only.

Add new term 3.38

3.38
maximum continuous operating speed
highest rotational speed at which the motor, as-built and tested, is defined for continuous operation, expressed as revolutions per minute [min^{-1}]

Add new term 3.39

3.39
minimum continuous operating speed
lowest rotational speed at which the motor, as-built and tested, is defined for continuous operation, expressed as revolutions per minute [min^{-1}]

4 Duty

4.2 Duty types

4.2.9 Duty type S9 – Duty with non-periodic load and speed variations

In second sentence of fourth paragraph, replace "IEC TS 60034-25:2014" with

IEC TS 60034-25:2022

4.2.10 Duty type S10 – Duty with discrete constant loads and speeds

In second sentence of last paragraph, replace "IEC TS 60034-25:2014" with

IEC TS 60034-25:2022

5 Rating

5.5 Rated output

5.5.2 AC generators

In first paragraph, replace "volt-amperes (VA)" with

kilovolt-amperes (kVA)

5.5.3 Motors

Replace "watts (W)" with

kilowatts (kW)

5.6 Rated voltage

5.6.2 AC generators

Replace "7.3" with

7.4

5.8 Machines with more than one rating

In second sentence of last paragraph, replace "7.3" with

7.4

Add new subclause

5.9 Efficiency

5.9.1

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

5.9.2

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

6 Site conditions

Add new subclause

6.8 Degree of ingress protection

The minimum degree of ingress protection for the machine shall be as specified in Table 23 and in accordance with IEC 60034-5.

Add new Table 23

Table 23 – Minimum degree of ingress protection based on the location of the installation

Installation environment	Minimum degree of ingress protection	
	Motor	Terminal box
Indoor	IP55	IP55
Outdoor – onshore	IP55	IP55
Outdoor – coastal / offshore / open deck	IP56	IP56

7 Electrical operating conditions

7.1 Electrical supply

Delete "or as otherwise agreed between the user and the manufacturer" and replace "should be suitable for" with

shall be a minimum of

Delete "or as otherwise agreed between the user and the manufacturer" and replace "should be suitable for" with

shall be a minimum of

8 Thermal performance and tests

8.1 Thermal class

Replace first paragraph with

The motor insulation system shall be minimum thermal class 155 (F) without exceeding thermal class 130 (B) temperature rise for the motor rated output at the maximum reference coolant temperature.

Add to first paragraph

For converter duty motors, the motor insulation system shall be thermal class 155 (F) without exceeding thermal class 130 (B) temperature rise within the operating load envelope at the maximum reference coolant temperature.

8.6 Determination of winding temperature

8.6.1 Choice of method

Replace first paragraph with

Motor winding temperature shall be measured using the resistance method defined in 8.5.2 and 8.6.2.3.3.

Delete third paragraph

8.6.2 Determination by resistance method

8.6.2.3 Correction for stopping time

8.6.2.3.2 Short stopping time

Replace subclause with

The short stopping time shall be determined by the following steps.

a) Obtain the initial resistance reading after stabilization of the measuring device and within 120 s of switching off power.

b) Take additional readings at 30 s intervals over a period of 5 min following the first reading.

c) Calculate the resistance value at the time of switching off power by means of extrapolation.

d) Use the resistance value at the time of switching off power to confirm the winding temperature.

e) Measure the resistance between the same windings for all readings.

Table 6 – Time interval

Delete Table 6

8.6.2.3.3 Extended stopping time

Delete subclause 8.6.2.3.3

9 Other performance and tests

9.2 Withstand voltage test

In eighth paragraph, replace "7.3" with

7.4

10 Information requirements

10.3 Rating plate

Replace first sentence of first paragraph with

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

Replace second sentence of first paragraph with

The information included on rating and marking plates shall be stamped or engraved.

In first sentence of second paragraph, replace "The rating plate(s) shall preferably be mounted on the frame of the machine" with

The rating and marking plates shall be attached to a non-removable part of the motor frame with stainless steel 316L fasteners

10.4 Information content

10.4.1 General

In first sentence of first paragraph, replace "10.4.5" with

10.4.6

Delete third sentence of first paragraph

In first sentence of second paragraph, replace "jj)" with

kk)

10.4.2 Minimum information requirements

Replace list item k) with

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

Replace subclause 10.4.6 title with

10.4.6 Additional information

Replace list item gg) with

gg) The types of the bearings, bearing sizes, bearing insulation, type of lubricant, lubrication interval and quantity of lubricant, as applicable.

Add new list item kk)

kk) For motors used in hazardous areas, the equipment marking on the nameplate applied to Ex equipment and/or Ex components in accordance with IEC 60079 (all parts).

11 Miscellaneous requirements

11.1 Protective earthing of machines

Replace second sentence of third paragraph with

Motors with frame size 71 and above shall have an ISO metric thread earthing terminal fitted externally on the frame body.

Add to third paragraph

The earthing terminal shall be permanently marked with the symbol ⏚ (IEC 60417-5019) to indicate protective earth.

Add new subclause

11.3 Performance criteria

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

11.3.1.1

The motor shall start direct-on-line and accelerate with the rated load at 80 % of the rated voltage applied at the motor terminals.

11.3.1.2

The motor shall be designed for direct-on-line starting across full line voltage in accordance with Table 24.

Add new Table 24

Table 24 – Number of re-starts of motors

Starting condition	Status	Minimum number of consecutive starts [a] per hour
With the initial temperature at or below the maximum ambient temperature	Cold	3
With the initial temperature above the maximum ambient temperature but not exceeding the maximum rated operating temperature	Hot	2
[a] The motor should coast to rest between consecutive starts.		

11.3.1.3

Where re-acceleration is required, if power to the motor is interrupted for a duration not exceeding 0,2 s, the motor shall re-accelerate with the full residual voltage in total phase opposition to the supply voltage.

11.3.2 Noise

Noise measurements shall be in accordance with ISO 1680.

Add new subclause

11.4 Design criteria

11.4.1 General

11.4.1.1

The motor shall be designed and constructed for a minimum service life of 25 years excluding parts subjected to wear and tear.

11.4.1.2

The motor shall be designed for continuous operation of at least six years.

11.4.2 Enclosure design

11.4.2.1 General

11.4.2.1.1

Where a motor has a frame size 160 and above, while the motor is mounted in the designated orientation, the motor shall have a drain hole fitted with a specified removable plug at the lowest point.

NOTE Ex-db motors are exempted from this requirement.

11.4.2.1.2

Drain plugs shall be accessible with the motor installed in service position.

11.4.2.2 Mounting

11.4.2.2.1

The motor mounting arrangement shall be in accordance with IEC 60034-7.

11.4.2.2.2

Vertically mounted motors with a downward facing drive end shaft shall be provided with a canopy shielding the upward facing air inlets.

11.4.2.2.3

Vertically mounted motors with an upward facing drive end shaft shall be provided with a seal in addition to the bearing seal and/or shaft-mounted water flinger to prevent water/fluid ingress through the drive end bearing.

11.4.2.3 Frame

11.4.2.3.1

Frame numbers and fixing dimensions shall be in accordance with IEC 60072-1.

11.4.2.3.2

The motor frame shall be provided with lifting lugs or lifting eyebolts.

NOTE Removal of lifting lugs or lifting eyebolts retains the degree of ingress protection of the motor.

11.4.2.3.3

Frame, stator end-shield and bearing housing of the motor shall be constructed from cast iron.

11.4.2.3.4

Where a corrosivity category of C4 or greater is specified, the selection of hardware material used on the frame shall be in accordance with Table 25.

Add new Table 25

1Table 25 – Selection criteria for hardware used on frame

Hardware type	Hardware material
External screws, bolts, nuts and washers of a thread diameter less than or equal to 10 mm	316L stainless steel
External screws, bolts, nuts and washers of a thread diameter greater than 10 mm	Hot-dip galvanized
Grease nipples	316L stainless steel

11.4.2.3.5

Motor frame components and add-on assemblies heavier than 25 kg, inclusive of terminal box covers, shall be provided with lifting provisions.

11.4.2.4 Surface finish

11.4.2.4.1

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

11.4.2.4.2

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

11.4.2.4.3

The protective paint system durability category shall be at least “medium” in accordance with ISO 12944-1 for all locations.

11.4.3 Cooling

Where a motor is installed outdoor, the motor shall be of totally enclosed fan-cooled design.

11.4.4 Rotor

11.4.4.1

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

11.4.4.2

Rotors shall be balanced in accordance with ISO 21940-11 to meet the specified vibration limits in accordance with IEC 60034-14:2018, Table 1.

11.4.4.3

For converter duty motors, the maximum vibration magnitude limits shall be applicable throughout the defined speed range.

11.4.4.4

Rotor shaft ends shall be provided with an ISO metric threaded hole to facilitate coupling and rolling element bearing removal.

11.4.4.5

Shaft extensions shall be in accordance with IEC 60072-1.

11.4.5 Terminal boxes

11.4.5.1

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

11.4.5.2

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

11.4.5.3

Terminal box cable entries shall have a metric thread in accordance with IEC 60423:2007, Table 1.

11.4.5.4

Cable entries shall be fitted with blanking devices to retain the ingress protection rating of the motor during transportation and storage.

11.4.5.5

Where single-core power cables are specified, the gland plate shall be made of non-magnetic material.

11.4.5.6

Terminal boxes shall have a dedicated earth terminal for individual electrical circuits.

11.4.6 Fans

11.4.6.1

Fan impellers external to the stator end shields shall be keyed or screwed to the rotor shaft.

11.4.6.2

Where a corrosivity category greater than C3 has been specified, fan impellers external to the stator end shields shall not be made of aluminium.

11.4.7 Bearing and lubrication

11.4.7.1

Motors with a frame size 132 or below shall have double-sealed grease-lubricated rolling element bearings.

11.4.7.2

Motors with a frame size above 132 shall have re-greaseable rolling element bearings.

11.4.7.3

Re-greaseable rolling element bearing housing shall be provided with a labyrinth seal.

11.4.7.4

Where rolling element bearings are re-greaseable, inlet and outlet ports for grease shall be accessible without disassembly of the fan cover and fan.

11.4.7.5

Rolling element bearing clearance shall be C3 type in accordance with ISO 5753-1:2009, Table 1, Group 3.

11.4.7.6

The minimum L_{10h} bearing design lifetime in accordance with ISO 281 shall be in accordance with Table 26.

Add new Table 26

Table 26 – Minimum L_{10h} bearing design lifetime

Motor mounting type	**Minimum L_{10h} bearing design lifetime** h
Horizontal	50 000
Vertical	40 000

11.4.7.7

Rolling element bearings shall be re-greaseable with a minimum lubrication interval in accordance with Table 27.

Add new Table 27

Table 27 – Lubrication intervals of grease-lubricated rolling element bearings

Motor mounting type	Lubrication interval h
Horizontal	≥ 4 000
Vertical	≥ 2 000

11.4.7.8

Converter duty motors with frame size 280 or greater shall have an insulated bearing on the non-drive end.

11.4.7.9

Rolling element bearings shall use grease that contains mineral-based oil and lithium complex thickener.

11.4.7.10

Rolling element bearings shall have a metallic cage.

11.4.7.11

Bearings shall be a metric size and in accordance with ISO 15 and ISO 492.

11.4.8 Anti-condensation heaters

11.4.8.1

Where an anti-condensation heater is installed, while the motor is not in operation, the anti-condensation heaters provided around stator windings shall keep the temperature inside the motor enclosure 5 K above the ambient air temperature.

11.4.8.2

Anti-condensation heater terminals shall be at least IP2X rated.

11.4.8.3

Where an anti-condensation heater is installed, a warning label shall be affixed on the cover of the terminal box to indicate that the anti-condensation heater circuit is energized when the motor is stationary.

11.4.9 Additional requirements for converter duty motors

The stated continuous motor output ratings for converter duty motors shall be in accordance with IEC 61800-2:2021, 5.3.3.

11.4.10 Motors intended for use in hazardous area

11.4.10.1 Certification

11.4.10.1.1

Motors and their mounted components shall be certified for the specified protection level in accordance with IEC 60079 (all parts).

11.4.10.1.2

Motors for use in a hazardous area shall be provided with a certificate issued by a notified body or a certification body.

NOTE A manufacturer's declaration of conformity alone does not satisfy the requirement of 11.4.10.1.2.

11.4.11 Motors intended for close-coupled pump service applications

11.4.11.1

For close-coupled pump service applications, the common shaft of the motor and pump shall be machined from a single billet of heat-treated steel.

NOTE Close-coupled pump service applications that require non-magnetic shaft materials are exempted from this requirement.

11.4.11.2

For close-coupled pump service applications, shaft and sealing elements of the electric motor shall be chemically and thermally compatible with the fluid properties specified for the pump.

11.4.11.3

For close-coupled pump service applications, if the fluid properties are unavailable, the shaft shall be made of steel type SAE 1035.

11.4.11.4

For close-coupled pump service applications, the shaft run-out shall be in accordance with the precision class specified in IEC 60072-1:2022, Table 3.

11.4.11.5

For close-coupled pump service applications, the maximum permissible change in the indicator reading of the concentricity of spigot diameter and the perpendicularity of the flange to the shaft shall be in accordance with precision class specified in IEC 60072-1:2022, Table 2.

11.4.11.6

For close-coupled pump service applications of OH5 type, the thrust bearing shall be located at the non-drive end of the motor.

11.4.11.7

For close-coupled pump service applications, while the pump is starting, stopping, operating at any point on its characteristic curve or being tested with water, the motor shall withstand the maximum thrust of the pump in both directions of rotation.

12 Tolerances

12.1 General

In NOTE 2, replace "IEC Guide 115:2021" with

IEC Guide 115:2023

Bibliography

Add to start of Bibliography

The following documents are informatively cited in the text of this specification, IEC 60034-1, the PDS (IOGP S-703D) or the IRS (IOGP S-703L).

Add to Bibliography

API Standard 610, *Centrifugal Pumps for Petroleum, Petrochemical, and Natural Gas Industries*

API Specification Q2, *Specification for Quality Management System Requirements for Service Supply Organizations for the Petroleum and Natural Gas Industries*

IEC GUIDE 115:2023, *Application of measurement uncertainty to conformity assessment activities in the electrotechnical sector*

IEC 60034-2-3:2020, *Rotating electrical machines - Part 2-3: Specific test methods for determining losses and efficiency of converter-fed AC motors*

IEC 60034-9:2021, *Rotating electrical machines – Part 9: Noise limits*

IEC 60034-18-1:2022, *Rotating electrical machines – Part 18-1: Functional evaluation of insulation systems – General guidelines*

IEEE 112:2017 , *IEEE Standard Test Procedure for Polyphase Induction Motors and Generators*

IOGP S-715, *Supplementary Specification to NORSOK M-501 Surface Preparation and Protective Coatings*

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country code*

ISO 9001, *Quality management systems — Requirements*

ISO 10005, *Quality management — Guidelines for quality plans*

ISO 12944-6, *Paints and varnishes — Corrosion protection of steel structures by protective paint systems — Part 6: Laboratory performance test methods*

ISO 13880:1999, *Petroleum and natural gas industries — Content and drafting of a technical specification*

ISO/IEC Directives, Part 2, *Principles and rules for the structure and drafting of ISO and IEC documents*

NEMA MG1 *, *Motors and Generators*

NORSOK M-501, *Surface preparation and protective coating*

* Cited in IOGP S-703J only.

Delete from Bibliography

IEC 60079 (all parts), *Explosive atmospheres*

IEC GUIDE 115:2021, *Application of uncertainty of measurement to conformity assessment activities in the electrotechnical sector*

International Association of Oil & Gas Producers

IOGP Headquarters

City Tower, 40 Basinghall Street, London EC2V 5DE, United Kingdom
T: +44 20 4570 6879
E: reception@iogp.org

IOGP Europe

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