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TECHNICAL SPECIFICATION

Doc No: DSF-SPC-QAC-005

Rev. 1

Page 1 of 61

HIGH PRESSURE (HP) TRANSMISSION SYSTEMS

SHOP INSPECTION OF EQUIPMENT AND MATERIALS FOR NGT PROJECT

JUNE 2021

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1	Second Issue	30-06-2021	MP	DK	TPI
0	First Issue	05-04-2011	PQ DPT.		V.G.
REV	DESCRIPTION	DATE	PRPD	CHKD	APVD



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TECHNICAL SPECIFICATION

Doc No: DSF-SPC-QAC-005

Rev. 1

Page 2 of 61

REVISION HISTORICAL SHEET

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Doc No: DSF-SPC-QAC-005

Rev. 1

Page 3 of 61

Table Of Contents

1	SCOPE AND OBJECTIVES.....	4
2	REFERENCES	4
3	ACRONYMS	11
4	INSPECTION REQUIREMENTS	11
5	EXTENT OF INSPECTION & REQUIRED CERTIFICATION	14
6	INSPECTION ACTIVITY PLANS FOR ACTIONS BY OWNER'S REPRESENTATIVES / THIRD PARTY / VENDORS & REQUIRED CERTIFICATION	20

	Hellenic Gas Transmission System Operator S.A. 357-359 Messogion Av., GR 152 31 Halandri Tel.: 213 088 4000 Fax: 210 674 9504 Email: desfa@desfa.gr	TECHNICAL SPECIFICATION
Doc No: DSF-SPC-QAC-005	Rev. 1	Page 4 of 61

1 SCOPE AND OBJECTIVES

This specification defines the extent of inspection and certification requirements of all purchased equipment and materials to be incorporated in high pressure natural gas projects. Inspection certification requirements shall be covered by an accredited Third Party Organization (Inspector)-

It is designed to be used in conjunction with Material Requisition (MR), Job Specification No. DSF-SPC-QAC-006, the other project specifications, Applicable Standards & European Union (EU) Directives in their latest revision which define specific inspection tasks which the Vendor/Manufacturer, Inspector will perform.

2 REFERENCES

2.1 Reference Documents

Job Spec. No. DSF-SPC-QAC-002

[Material Colour Coding]

Job Spec. No. DSF-SPC-QAC-004

[Positive Material Identification]

Job Spec. No. DSF-SPC-QAC-006

[Inspection and Test Instructions]

Job Spec. No. DSF-SPC-PIP-001

[Inspection and Test Instructions]

Job Spec. No 100/1

[Welding Requirements for Equipment and Piping]

Job Spec. No DSF-SPC-MEC-001

[Unfired Pressure Vessels]

Job Spec. No DSF-SPC-MEC-002

[Filters]

Job Spec. No DSF-SPC-PIP-002

[Steel Pipe]



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TECHNICAL SPECIFICATION

Doc No: DSF-SPC-QAC-005

Rev. 1

Page 5 of 61

Job Spec. No DSF-SPC-PIP-003

[Steel Casing Pipe]

Job Spec. No DSF-SPC-PIP-004

[Welding Inspection]

Job Spec. No DSF-SPC-PIP-007

[Scraper Traps]

Job Spec. No DSF-SPC-PIP-008

[Vent Closures]

Job Spec. No DSF-SPC-MEC-004

[Heat Exchangers (M/R Stations)]

Job Spec. No DSF-SPC-MEC-013

[Burners]

Job Spec. No DSF-SPC-MEC-014

[Boilers]

Job Spec. No DSF-SPC-MEC-015

[Centrifugal Pumps in General and Medium Duty Service]

Job Spec. No DSF-SPC-MEC-016

[P.D. Pumps - Controlled Volume]

Job Spec. No DSF-SPC-CIV-010

[Structural Steel Fabrication]

Job Spec. No DSF-SPC-PIP-021

[Shop and Field Fabricated Piping]

Job Spec. No DSF-SPC-PIP-023

[Welding Inspection of Piping for M/R Station]

Job Spec. No DSF-SPC-PIP-024

[Plug Valves DN \geq 50]

Job Spec. No DSF-SPC-PIP-025

[Ball Valves DN \geq 50]

Job Spec. No DSF-SPC-PIP-026

[Valves DN $<$ 50]

Job Spec. No DSF-SPC-PIP-027



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TECHNICAL SPECIFICATION

Doc No: DSF-SPC-QAC-005

Rev. 1

Page 6 of 61

[Valves DN \geq 50 (shut off)]

Job Spec. No DSF-SPC-PIP-029

[Buttwelding Steel Fittings DN \leq 300]

Job Spec. No DSF-SPC-PIP-030

[Buttwelding Steel Fittings DN \geq 350]

Job Spec. No DSF-SPC-PIP-031

[Hot Bends]

Job Spec. No DSF-SPC-PIP-033

[Flanges]

Job Spec. No DSF-SPC-PIP-035

[Gaskets]

Job Spec. No DSF-SPC-PIP-036

[Stud-Bolts and Nuts]

Job Spec. No DSF-SPC-PIP-037

[Manual Valve Operators]

Job Spec. No DSF-SPC-PIP-040

[Strength and Tightness Test for M/R Station]

Job Spec. No DSF-SPC-PIP-038

[Insulating Couplings]

Job Spec. No DSF-SPC-PIP-039

[Welding of Piping for M/R Station]

Job Spec. No DSF-SPC-INS-002

[General Instrumentation]

Job Spec. No DSF-SPC-INS-005

[Testing Calibration and Alignment of Instrumentation]

Job Spec. No DSF-SPC-INS-013

[Turbine Meters]

Job Spec. No DSF-SPC-INS-014

[Ultrasonic Meters]

Job Spec. No DSF-SPC-INS-015

[Electronic Flow Computers (for Natural Gas M/R Stations)]

Job Spec. No DSF-SPC-INS-016

[Gas Chromatographs (for Natural Gas Analysis)]

Job Spec. No DSF-SPC-INS-006

[Gas Regulator Valves]

Job Spec. No DSF-SPC-INS-007

[Gas Slam-shut Valves]

Job Spec. No DSF-SPC-INS-008

[Pneumatic Actuators]

Job Spec. No DSF-SPC-INS-009

[Safety Relief Valves]

Job Spec. No DSF-SPC-INS-018

[Station Control Panels]

Job Spec. No DSF-SPC-INS-010

[Instrument Wiring and Cables]

Job Spec. No DSF-SPC-ELE-008

[Electrical Switchboards]

Job Spec. No DSF-SPC-INS-012

[All Dielectric Optical Fiber Cables]

Job Spec. No DSF-SPC-MEC-006

[External Painting]

Job Spec. No DSF-SPC-MEC-007

[Insulating Coating Materials for M/R Station]

Job Spec. No DSF-SPC-MEC-008

[Plant Applied External 3-Layer Polyethylene Line Pipe Coating]

2.2 Reference Codes and Standards

EU DIRECTIVE 2014/68/EU PED

[Pressure Equipment Directive]

EU DIRECTIVE 2014/34/EU ATEX

[Equipment Explosive Atmospheres Directive]

EU DIRECTIVE 2006/42/EC

[Machinery]

EU DIRECTIVE 2014/30/EU EMC

[Electromagnetic Compatibility Directive]

EU DIRECTIVE 2014/35/EU LVD

[Low Voltage Directive]

EU DIRECTIVE 305/2011 CPD

[Construction Products Directive]

EU Directive 93/68/EEC

[CE MARKING]

API 675

[Positive Displacement Pumps - Controlled Volume]

EN 334

[Gas pressure regulators for inlet pressures up to 100 bar]

EN ISO 9712

[Non-destructive testing. Qualification and certification of NDT personnel]

EN ISO 16826

[Non-destructive testing. Ultrasonic testing. Examination for discontinuities perpendicular to the surface]

EN ISO 16810

[Non-destructive testing – Ultrasonic Testing General principles]

EN ISO 17638

[Non destructive examination of welds. Magnetic particle examination of welds]

EN ISO 17636-1

[Non-destructive testing of welds. Radiographic testing. X- and gamma-ray techniques with film]

EN 1503-1

[Valves - Materials for bodies, bonnets and covers - Part 1: Steels specified in European standards]

EN 1594

[Gas supply systems - Pipelines for maximum operating pressure over 16 bar - Functional requirements]

EN 1776

[Gas supply systems - Natural gas measuring stations - Functional requirements]


EN 10204

[Inspection Documents for metallic products]

EN ISO 3138

[Petroleum and natural gas industries — Steel pipe for pipeline transportation systems]

EN 12186

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<p>Doc No: DSF-SPC-QAC-005</p>	<p>Rev. 1</p>	<p>Page 10 of 61</p>

[Gas supply systems - Gas pressure regulating stations for transmission and distribution - Functional requirements]

EN 12261

[Gas meters - Turbine gas meters]

EN 12405-1

[Gas meters - Conversion devices - Part 1: Volume conversion]

EN 13000

[Cranes - Mobile cranes]

EN 13445

[Unfired pressure vessel]

EN 13942 (modified ISO 14313)

[Petroleum and natural gas industries - Pipeline transportation systems - Pipeline valves]

EN 14015

[Specification for the design and manufacture of site built, vertical, cylindrical, flat-bottomed, above ground, welded, steel tanks for the storage of liquids at ambient temperature and above]

EN 14141

[Valves for natural gas transportation in pipelines - Performance requirements and tests]

EN 14382

[Safety devices for gas pressure regulating stations and installations - Gas safety shut-off devices for inlet pressures up to 100 bar]

EN 50173

[OTDR Certification for fiber optic cables]

EN 61515/ IEC1515

[Mineral Insulated Thermocouples Cable]

EN 60034-1

[Rotating electrical machines - Part 1: Rating and performance]

EN 60034-14

[Rotating electrical machines - Part 14: Mechanical vibration of certain machines with shaft heights 56 mm and higher - Measurement, evaluation and limits of vibration severity]

EN 60079-7

[Explosive atmospheres - Part 7: Equipment protection by increased safety "e"]

EN 60332-3

[Tests on Electrical Cables Under Fire Conditions]

IEC 60502

[Power Cables from 1 kV up to 30 kV]

IEC 60794

[Optical Fiber cables part 1 and Part 2]

DIN 30650

[Odorant Storage and Transportation Containers]

EN ISO 4126

[Safety devices for protection against excessive pressure]

EN ISO 5199

[Technical Specification for Centrifugal Pumps - Class II]

ISO TR 12765

[Measurement of Fluid Flow in Closed Conduits – Methods Using Transit Time Ultrasonic Flowmeters]

3 ACRONYMS

MR: Material Requisition

IAP: Inspection Activity Plan

WPQR: Welding Procedure Qualification Record

WQR: Welder Qualification Record


PMI: Positive Material Identification

SMYS: Specified Minimum Yield Strength

4 INSPECTION REQUIREMENTS

The Vendor/Manufacturer shall supply the pressure equipment in accordance with the essential safety requirements of the PED directive 2014/68/EU at his own cost. Gas Transmission Pipelines are excluded from PED requirements.

The Vendor/Manufacturer shall apply the requirements of all the applicable EC Directives for each item, equipment or assembly, at his own cost.

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<p>Doc No: DSF-SPC-QAC-005</p>	<p>Rev. 1</p>	<p>Page 12 of 61</p>

All items, equipment or assemblies shall bear the CE marking in accordance with all the applicable EC Directives (e.g. for PED 2014/68/EU, LVD 2014/35/EU, ATEX 2014/34/EU, CPD 305/2011, EMC 2014/30/EU, Machinery 2006/42/EEC, etc any other applicable EC Directives), at Vendor/Manufacturer's cost.

The following inspection percentages are related to the quantity of the items of equipment and materials on this project and are not intended to indicate the degree of inspection to be performed.

Where 100% inspection is specified, each item will be inspected but not necessarily each component making up the item.

Where 10% inspection is specified, in the case that total quantity is more than 1.000 pieces, only 100 of the total quantity purchased on each order will be inspected. If these are satisfactory, no further inspection will be made. In the case of bulk orders, the percentage inspection will be carried out at intervals throughout the period of delivery, not by carrying out one inspection to inspect say 10% of the order quantity.

The degree of inspection, which shall be performed, is defined in the next sections in conjunction with the attached "Inspection Activity Plans" (IAP).

Any non-standard inspection considered necessary for special items with unusual manufacturing features will be called up in the particular Material Requisition.

In the event of conflict between this specification, a project specification or a Material Requisition, the more stringent shall apply. However, EU Directives are compulsory and prevailing to any other requirement.

The scope of the Inspector inspection work defined in this specification is based on using Suppliers of proven ability approved by the Owner.

Whenever purchased equipment includes components of a different category to the primary category under which it is listed herein, then these components shall be inspected to the extent defined in the paragraphs of this specification relating to these components. In particular, this applies to package plants and Vendor/Manufacturer of Assembled Units, where Vendor/Manufacturer of a piece of major equipment is required to carry out shop assembly of other associated components.

Any additional requirements will be identified on the Material Requisition.

The scope of Inspector's services does not include the provision of any licensed inspection or certification (e.g. CE mark) that may be required by Statutory Inspection Authority.

Inspector has the option/right of attending all tests and inspections at Manufacturer's or at Sub-Manufacturer's works. Vendor/Manufacturer shall give a ten (10) working days advance notice that the equipment will be available for inspection on a specified date. Additionally, the test certificates and equipment dossiers, as applicable, shall be made available for checking at the same time.

In the event that material and/or equipment is found to be unsatisfactory or not in compliance with the drawing or specification (rejection notice issued by Owner and/or Owner's Representative), special rectification procedures shall not be put in hand before a corrective procedure has been submitted and approved by Owner (clearance of the rejection notice).

Material and/or equipment may be repaired only with the concurrence of Inspector.

However additionally to the above Owner and/or Owner's Representative have the option/right of attending all tests and inspections at Manufacturer's or at Sub- Manufacturer's works. Vendor's/Manufacturer's shall give a ten (10) working days' advance notice that the equipment will be available for inspection on a specified date. Additionally, the test certificates and equipment dossiers, as applicable, shall be made available if requested for Owner and/or Owner's Representative approval.

Manufacturers Quality Control Plan shall be submitted to Owner's and/or Owner's Representative for review and approval.

Material certificates of pressure retaining parts shall be according to requirements of clause 3, ELOT EN 10204 and the requirements of EU Directive PED No. 2014/68/EU


Material Certificates of non-pressure retaining parts provided by Vendor/Manufacturer shall bear a certificate "type 2.2" as per ELOT EN 10204.

WPQR (Welding Procedure Qualification Records) must not be issued more than five (5) years ago.

WQR (Welder Qualification Record) must be valid during the whole duration of works and the welders' performance in the relevant WPQR, during the last six (6) months should be proved.

Positive Material Identification (PMI) testing shall be performed at Vendor/Manufacturer's cost for all alloy materials and weldings, in accordance with Job Specifications No DSF-SPC-QAC-002 and DSF-SPC-QAC-004

The Vendors/Manufacturers shall send to Inspector the "Notification for Inspection" concerning the Inspection points as defined in the relevant IAP herein (Spot Witnessing, Witnessing, Hold) and according to the instructions of Job Specification No. DSF-SPC-QAC-005. For pressure

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<p>Doc No: DSF-SPC-QAC-005</p>	<p>Rev. 1</p>	<p>Page 14 of 61</p>

equipment the Welding, Destructive and Non-Destructive Testing Procedures and Personnel must be approved by a Notified Body, at Vendor/Manufacturer 's Cost.

5 EXTENT OF INSPECTION & REQUIRED CERTIFICATION

The extent of Inspection shall be performed in accordance with the following instructions, the applicable Material Requisition and the relevant Inspection Activity Plan (IAP).

5.1 STEEL PIPES

All Seamless pipe 10% witnessing inspection by Inspector.

ERW/ SAWH/ LSAW/ DLSAW pipes, 100% witnessing, inspection by Inspector.

In accordance with EN ISO 3138, EN 1594, Job Specification No. DSF-SPC-PIP-002, Job Specification No DSF-SPC-MEC-008 requirements.

Inspector will review the Final Documentation / Certificates of the total order, as per the relevant IAP

5.2 STEEL CASING PIPES

No witnessing inspection.

Inspector will review the Final Documentation / Certificates of the total order as per Job Specification No DSF-SPC-PIP-003 requirements and relevant IAP

5.3 VALVES

All valves with DN >200 or with SMYS >360 N/mm² will be witnessing inspected by Inspector.

All valves in accordance with EN 14141, EN 1092-1, EN 1503-1, EN 13942 (ISO 14313 modified) and the relevant Job Specifications No DSF-SPC-PIP-024, No DSF-SPC-PIP-025, No DSF-SPC-PIP-026, DSF-SPC-PIP-027, & No DSF-SPC-PIP-037.

Inspector will review the Final Documentation / Certificates of the total order, as per the relevant IAP .

5.4 PIPING MATERIALS

No witnessing inspection,

- a) Fittings and Flanges

For fittings and flanges with size greater than DN 300 or made from grades with SMYS greater than 360 N/mm², Vendors/Manufacturers will provide an inspection certificate "type 3.2" in accordance with EN 10204. For all other materials, certificates "type 3.1" in accordance with EN 10204 is required. Inspector will review the Material Certificates of the total order, in accordance with Job Specifications No DSF-SPC-PIP-029, No DSF-SPC-PIP-030 and No DSF-SPC-PIP-033.

b) Stud - Bolts and Nuts

Inspector will review the Material Test Certificates "type 3.1" as per ELOT EN 10204 of the total order, in accordance with Job Specification No DSF-SPC-PIP-036.

c) Gaskets

Inspector will review the Material Test Certificates "type 2.2" as per ELOT EN 10204 of the total order, in accordance with Job Specification No DSF-SPC-PIP-035.

5.5 CENTRIFUGAL PUMPS

All pumps will be witnessing inspected by Inspector in accordance with EN ISO 5199 and Job Specification DSF-SPC-MEC-015.

5.6 ODORIZING PLANT

All equipment will be witnessing inspected by Inspector in accordance with DIN 30650 for Odorant Containers, API 675 for Dosing Pumps, ELOT EN 13445 requirements and the applicable Job Specifications No DSF-SPC-QAC-007 and No DSF-SPC-MEC-016.

5.7 FILTERS / STRAINERS, SCRAPER TRAPS, DRUMS, LIQUID CATCHERS & VENT CLOSURES

All equipment will be witnessing inspected by Inspector in accordance with the requirements of EN 13445 and Job Specifications No. DSF-SPC-MEC-003, No. DSF-SPC-PIP-007, No DSF-SPC-MEC-001 & No DSF-SPC-PIP-008.

5.8 HEAT EXCHANGERS / FUEL GAS HEAT EXCHANGERS

All equipment will be witnessing inspected by Inspector in accordance with the requirements of EN 13445 and Job Specification No DSF-SPC-MEC-004.

5.9 TANKS

All equipment will be witnessing inspected by Inspector in accordance with EN 14015 requirements.

5.10 BOILERS

No witnessing inspection.

Inspector will review the Final Documentation / Certificates of the total order, as per Job Specification No DSF-SPC-MEC-014 requirements.

5.11 BURNERS

No witnessing inspection.

Inspector will review the Final Documentation / Certificates of the total order, as per Job Specification No. DSF-SPC-MEC-013 requirements.

5.12 HOT INDUCTION BENDS

All equipment will be witnessing inspected by Inspector in accordance with Job Specification No. DSF-SPC-PIP-031 requirements.


5.13 INSULATING COUPLINGS

All equipment will be witnessing inspected by Inspector in accordance with Job Specification No. DSF-SPC-PIP-038 requirements.

5.14 METERING AND PRESSURE REGULATING STATION

All equipment will be witnessing inspected by Inspector in accordance with EN 1776, EN 12186, EN 12405-1, requirements and the Job Specifications No DSF-SPC-INS-001, No DSF-SPC-INS-013, No DSF-SPC-INS-015, No DSF-SPC-INS-016, No DSF-SPC-INS-006, No DSF-SPC-INS-007, No DSF-SPC-INS-008, No DSF-SPC-INS-009 and No DSF-SPC-INS-018.

All components shall be inspected individually in accordance with the corresponding paragraphs of this specification.

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<p>Doc No: DSF-SPC-QAC-005</p>	<p>Rev. 1</p>	<p>Page 17 of 61</p>

5.15 TURBINE METER

All equipment will be witnessing inspected by Inspector in accordance with EN 12261 and Job Specification No DSF-SPC-INS-013.

5.16 ULTRASONIC METER

Ultrasonic meter shall be inspected by Inspector in accordance with ISO TR 12765 and Job Specification No DSF-SPC-INS-014. The body of the meter shall be inspected by Inspector in accordance with ELOT EN 12261 and Job Specification No DSF-SPC-INS-014.

Calibration of Ultrasonic Meter must be performed by an accredited Testing Company. Owner has the right to witness calibration process.

5.17 MOTOR & PNEUMATIC OPERATED VALVES

All actuators and valves individually and assembled will be witnessing inspected by Inspector, in accordance with the corresponding paragraphs of this specification and the relevant Job Specifications.

5.18 CONTROL VALVES

10 % witnessing inspection by Inspector but not less than one **(1)** valve per type, in accordance with EN 334 and EN 14382 and Job Specifications No DSF-SPC-INS-006 and No DSF-SPC-INS-007.

Inspector will review the Final Documentation / Certificates of the total order, as per the relevant IAP


5.19 PRESSURE & THERMAL RELIEF VALVES

All equipment will be witnessing inspected by Inspector in accordance with EN 334 and EN ISO 4126 and Job Specification No. DSF-SPC-INS-009 requirements.

5.20 CONTROL PANEL / SCADA / TELECOMMUNICATION / SHUT-DOWN / POWER SUPPLY / BATTERY SYSTEMS

All equipment will be witnessing inspected by Inspector in accordance with the relevant Job Specification No DSF-SPC-INS-018, etc.

Prior to release and reception at site, documentation package must be reviewed by Inspector.

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<p>Doc No: DSF-SPC-QAC-005</p>	<p>Rev. 1</p>	<p>Page 18 of 61</p>

5.21 GAS CHROMATOGRAPHS

All equipment will be witnessing inspected by Inspector in accordance with Job Specification No DSF-SPC-INS-016.

5.22 INSTRUMENT & FIBER OPTIC CABLES

Instrument & Fiber Optic Cables will be spot witnessing inspected by Inspector in accordance with Inspection Activity Plan requirements. Each cable shall be tested at the factory in accordance with the requirements of EN 60794, IEC 1515 / EN 61515, IEC 60584-3 / HD 446.3, EN 50173, ISO-IEC 11801 and the relevant Job Specifications No DSF-SPC-INS-010 and No DSF-SPC-INS-012.

Testing of fiber optic cables shall be performed using an optical time Domain Reflectometer (OTDR) on each core to confirm integrity and to provide base line information for field-testing after installation.

Individual cable test certificates shall be provided for each reel of wire and cable provided.

5.23 ELECTRONIC FLOW COMPUTERS


No witnessing inspection.

Inspector will review the Final Documentation / Certificates of the total order, as per Job Specification No DSF-SPC-INS-015 requirements.

5.24 ELECTRIC MOTORS

All motors 110 KW and larger, will be witnessing inspected by Owner and/or Owner's Representative in accordance with EN 60034-1, EN 60079-7 and EN 60034-14, Job Specification and Material Requisition requirements.

For other motors inspection shall include only review of Inspection Documents, in accordance with the above-mentioned specifications.

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<p>Doc No: DSF-SPC-QAC-005</p>	<p>Rev. 1</p>	<p>Page 19 of 61</p>

5.25 ELECTRICAL SWITCHGEAR

All equipment will be witnessing inspected by Inspector in accordance with the relevant Job Specification No DSF-SPC-ELE-008.

Prior to release and reception at site, documentation package must be reviewed by Inspector.

5.26 ELECTRICAL POWER CABLES

No witnessing inspection.

Inspector will review the Final Documentation / Certificates of the total order, in accordance with the requirements of IEC 60502 & EN 60332-3.

5.27 CATHODIC PROTECTION / EARTHING / LIGHTNING EQUIPMENT

Equipment will be spot witnessing inspected by Inspector in accordance with the relevant Material Requisition & Inspection Activity Plan.

Prior to release and reception at site, documentation package must be reviewed by Inspector.

5.28 EMERGENCY GAS / DIESEL GENERATORS

All equipment will be witnessing inspected by Inspector in accordance with EN 60439-1 for power and control panel board and EN 60034-1, -2 & -2A for generator testing requirements.

5.29 FIRE FIGHTING SYSTEM


Equipment will be witnessing, inspected by Inspector in accordance with **99/36/EEC** Directive requirements.

5.30 CRANES

All lifting equipment: hoists, cranes, lifts and lifting equipment components shall be witnessing inspected by Inspector, in accordance with **EN 13001-3-1**, **EN 13000** and in accordance with the requirements of the applicable **European Directive 2006/42/EEC “Machinery”** and Material Requisition requirements.

Prior to release and reception at site, documentation package must be reviewed by Inspector.

National legislation regarding installation and operation of lifting equipment shall be taken into consideration.

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<p>Doc No: DSF-SPC-QAC-005</p>	<p>Rev. 1</p>	<p>Page 20 of 61</p>

5.31 HEATING, VENTILATING AND AIR CONDITIONING

No witnessing inspection.

Inspector will review the Final Documentation / Certificates of the total order, in accordance with the requirements of the applicable European Directives 2014/35/EU (LVD), 93/68/EEC (CE MARKING).

5.32 STRUCUTRAL STEEL

Structural steel will be spot witnessing inspected by Inspector in accordance with Specification No DSF-SPC-CIV-010 and the approved drawings requirements.

Inspector will review the Final Documentation / Certificates of the total order, as per the relevant IAP.

5.33 OTHER MATERIALS AND EQUIPMENT

Extent of inspection will be as specified in the relevant Material Requisition requirements.

6 INSPECTION ACTIVITY PLANS FOR ACTIONS BY OWNER'S REPRESENTATIVES / THIRD PARTY / VENDORS & REQUIRED CERTIFICATION


Definitions of Reviewing (R), Witnessing (W), Spot Witnessing (SW), Monitoring (M), Hold (H)

General

The above terms are used in connection with the checking of technical documentation and its confirmation by Inspector at the manufacturer's shop and written Inspection Notifications by Vendors/Manufacturers are requested in accordance with Job Specification No DSF-SPC-QAC-006.

Reviewing (R)

Technical documents issued by third parties (manufacturers, subcontractors, other organizations) are reviewed by the Inspector in order to check whether their contents apply to the project under consideration and comply with the requirements of the Specifications and Material Requisition.

 <p>DESFA Hellenic Gas Transmission System Operator S.A.</p>	<p>Hellenic Gas Transmission System Operator S.A. 357-359 Messogion Av., GR 152 31 Halandri Tel.: 213 088 4000 Fax: 210 674 9504 Email: desfa@desfa.gr</p>	<p>TECHNICAL SPECIFICATION</p>
<p>Doc No: DSF-SPC-QAC-005</p>	<p>Rev. 1</p>	<p>Page 21 of 61</p>

For instance, any existing certificates on welder's performance qualifications are checked, in order to ascertain whether a welder's qualifications are sufficient for the particular case. Every document Reviewed by the Inspector will receive the Inspector's "Review" stamp.

Witnessing (W)

By witnessing is meant that the Inspector is physically present during the action being witnessed. A written Inspection Notification by Vendor/Manufacturer is required.

For Inspection and testing successfully performed and witnessed by the Inspector, an Inspection Report shall be issued and signed by the Inspector.

Spot Witnessing (SW)

A written Inspection Notification by Vendor/Manufacturer at the beginning of the inspection activity is required.

Should be extended depending on the kind of the equipment and Inspector's satisfaction, according to the Material Requisition requirements. Inspection Report will be issued and signed by the Inspector.

Monitoring (M)

By Monitoring is meant that the Inspector at least temporarily attended a test inspection activity or personally satisfied himself that the correct testing procedure was followed and the particular testing equipment / inspection procedure was in accordance with the Material Requisition requirements.

All relevant technical documents will be endorsed by means of signature and stamping by the Inspector.

Hold Point (H)

A written Inspection Notification by Vendor/Manufacturer is required.

This is a binding request to witness on inspection or test procedure. The presence of the Inspector is mandatory and the procedure will not take place without his presence, unless he waives this right informing the Vendor/Manufacturer in writing only.

6.1 Documentation

Vendors'/ Manufacturers' Data Books shall be reviewed ~~by~~ Inspector. Originally signed/ stamped documents shall be delivered to the Owner and incorporate in Projects' Final Documentation Packages.

6.2 Inspection Activity Plan (IAP) for Steel Pipes.

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
A. PRE-INSPECTION MEETING		
Check of Inspection requirements.	H	---
B. RAW MATERIALS CHECK		
Coil Visual Examination.	SW	---
Material Certificates for coil, powder coating & adhesive.	R	ELOT-EN 10204 (Note 1)
C. PIPES INSPECTION & TESTING		
Production and welding operations.	M	B
Ultrasonic inspection of skeep for lamination.	SW	B
Check of size.	SW	B
Pipe identification.	SW	B
Calibration certificates of tensile and impact machines.	R	B
Cross roll straightening.	SW	B
PRODUCT TEST	SW	B
Chemical analysis (2 / heat).		
Tensile testing for base metal and weld (1 / 100 pipes / heat).		
Impact test for base metal, weld and HAZ (1 set / 100 pipes/heat).		
Hardness test for HAZ, base, weld (4 per heat).		
Reverse bend test (4 per heat).		
Flattening test.		
Heat treatment temperature check.	M	B
End beveling for each pipe.	SW	B
NDT personnel qualifications.	R	B
UT equipment calibration.	M	B
Ultrasonic inspection of weld zone (per each pipe)	SW	B
Hydrotest (per each pipe at a hold time of 10 sec)	SW	B

Visual examination.	SW	B
Dimensional check (ID, OD, wall thickness, length, weight, ends preparation, residual magnetism, out of roundness, peaking).	SW	B

SUBJECT	ACTION	CERTIFICATION
D. PIPES COATING INSPECTION & TESTING		
Coating operations.	M	B
Roughness & shaft contamination tests.	SW	B
Visual examination.	SW	B
Calibration of wall-thickness gauge.	M	B
Coating wall thickness measurements.	SW	B
Holiday test.	SW	B
E. FINAL PRODUCT ACTIVITIES		
Marking.	SW	B
Mill test certificate.	R	B
		ELOT EN 10204 Type 3.1 (Note 1)
Inspection data book.	R	B
Inspection release notice per packing list/shipment.	H	C (Note 2, 3)

Abbreviations:

W = Witness

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold


R = Review

Notes:

1) "type 3.1" for $DN \leq 200$ and $SMYS \leq 360 \text{ N/mm}^2$
"type 3.2" for $DN > 200$ or $SMYS > 360 \text{ N/mm}^2$

2) An Inspection Certificate type 3.2 as per ~~ELOT~~ EN 10204

3) For small quantities the Owner may accept 3.1 Certificates provided the material manufacturer is approved.

 Hellenic Gas Transmission System Operator S.A. 357-359 Messogion Av., GR 152 31 Halandri Tel.: 213 088 4000 Fax: 210 674 9504 Email: desfa@desfa.gr	TECHNICAL SPECIFICATION	
Doc No: DSF-SPC-QAC-005	Rev. 1	Page 24 of 61

6.3 Inspection Activity Plan (IAP) for Steel Casing Pipes.

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material Certificates for Final Product.	R	B EN 10204 Type 3.1

Abbreviations:

W = Witness

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

6.4 Inspection Activity Plan (IAP) for Valves.

6.4.1 INSPECTION ACTIVITY PLAN (IAP) FOR DOUBLE BLOCK & BLEED VALVES

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Pre-Inspection Meeting.	H	---
Material Certificates for Main Components.	R	Note 1
WPS / PQR / WPQR	R	B, A, Note 2
Radiographic Examination.	R	B
MP / DP Examination.	R	B, Note 2
Ultrasonic Examination.	R	B
Heat Treatment Records.	R	B
Visual & Dimensional Examination.	SW	B
Hydrostatic Test.	W	B
Pneumatic Test.	W	B
Functional Test.	W	B
Check of Painting (adhesion / porosity).	W	B
Check of Coating (for buried valves).	W	B
Name Plate Marking.	W	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C, Note 3, 4

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

Notes: 1) For all pressure retaining parts (except nuts & bolts) made of materials with SMYS >360 N/mm or DN >200, Vendor/Manufacturer will provide Material

Certificates in accordance with EN 10204 "type 3.2". For parts with $DN \leq 200$ and $SMYS \leq 360$ N/mm² "type 3.1".

- 2) According to EN 14141 and EN ISO 9712 requirements.**
- 3) An Inspection Certificate "type 3.2" as per EN 10204.**
- 4) For small quantities the Owner may accept 3.1 Certificates provided the material manufacturer is approved.**

6.5 Inspection Activity Plan (IAP) for Valves.

6.5.1 INSPECTION ACTIVITY PLAN (IAP) FOR OTHER VALVES

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material Certificates for Main Components & Final Product.	R	Note 1
WPS/PQR/WPQR	R	B, A, Note 2
Radiographic Examination.	R	B
MP / DP Examination.	R	B, Note 2
Ultrasonic Examination.	R	B
Heat Treatment Records.	R	B
Visual & Dimensional Examination.	SW	B
Hydrostatic Test.	W	B
Pneumatic Test.	W	B
Functional Test.	W	B
Check of Painting (adhesion / porosity).	W	B
Check of Coating (for buried valves).	W	B
Name Plate Marking.	W	B
CE Mark Check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C, Note 3

Abbreviations:

W = Witness

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

Notes: 1) For all pressure retaining parts, Vendor/Manufacturer will provide Material Certificates in accordance with EN 10204 "type 3.2" for DN > 200 or SMYS > 360 N/mm².

- 2) According to EN 14141 and EN ISO 9712 requirements.
- 3) An Inspection Certificate "type 3.2" for DN > 200 and SMYS > 360 N/mm².
- 4) For valves with DN ≤ 200 and SMYS ≤ 360 Certificates EN 10204 "type 3.1" for final product and main components.


6.6 Inspection Activity Plan (IAP) for Centrifugal Pumps.

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material Certificates.	R	Note 2
Material Identification.	W	B
NDT Procedure Qualification.	R	B, A, Note 3
NDT Inspection Personnel Qualification Records.	R	B, A, Note 3
Radiographic Examination Records.	R	B, Note 3
Dye penetrant/magnetic particle inspection records	R	B, Note 3
Visual inspection evidence of cracks, excessive roughness, laps, shrinkages or any other defects.	W	B
Dimensional check and visual inspection.	R	B
Hydrostatic testing of casing.	W	B
Balancing of impeller/shaft assembly.	R	B
Performance tests & NPSH test if it is applicable in accordance with paragraph 2.5.	H	A, B
Dismantling and reassembly.	W	B
Name Plate Marking.	W	B
CE Mark Check.	W	B
EC Declaration of Conformity.	R	B
Check of painting (after painting completion).	W	B
Check for completeness, including auxiliary piping, mechanical seal, coupling and spares.	H	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations:
W = Witness
A = Documents reviewed by Inspector
B = Documents issued by Vendor's/Manufacturer's Q.C.
C = Certificate issued by Inspector
M = Monitor
SW = Spot witness
H = Hold
R = Review

 <p>Hellenic Gas Transmission System Operator S.A. 357-359 Messogion Av., GR 152 31 Halandri Tel.: 213 088 4000 Fax: 210 674 9504 Email: desfa@desfa.gr</p>	TECHNICAL SPECIFICATION	
Doc No: DSF-SPC-QAC-005	Rev. 1	Page 30 of 61

- Notes:**
- 1) **Inspection of Electric Motors in accordance with the requirements of relevant paragraph 2 and the corresponding Inspection Plan.**
 - 2) **For Pressure retaining parts, Vendor/Manufacturer shall provide Material Certificates conforming to EN 10204 "type 3.1".**
 - 3) **An Inspection Certificate "type 3.2" for DN > 200 and SMYS > 360 N/mm².**
 - 3) **According to EN ISO 9712 requirements.**

6.7 Inspection Activity Plan (IAP) for Odorizing Plants

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material certificates (Note) .	R	B
Non-destructive testing procedure qualification.	R	B
Radio graphic examinations.	R	B
Odorizing pump hydrostatic test.	W	B
Unit hydrostatic test.	W	B
Leakage test of complete unit using odorant.	H	B
Odorizing pump mechanical running test.	W	B
Odorizing pump performance test and demonstration of the total flow range from maximum to minimum with the contractual repeatability and linearity.	H	A, B
Checking of controls.	W	B
Checking of relief valve setting.	W	B
Complete system full function test (string test).	W	B
Noise and vibration measurement.	W	B
CE Mark check.	W	B
EC Declaration of Conformity.	R	B
Name plate marking.	W	B
Cleaning, preservation, painting.	R	B
Check of completeness including spares.	W	B
Preparation for shipment.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations:
W = Witness
A = Documents reviewed by Inspector
B = Documents issued by Vendor's/Manufacturer's Q.C.
C = Certificate issued by Inspector
M = Monitor
SW = Spot witness
H = Hold
R = Review

Note: For all pressure retaining parts, Vendor/Manufacturer will provide Material Certificates in accordance with EN 10204 type 3.1" for $DN \leq 200$ and $SMYS \leq 360 \text{ N/mm}^2$, "type 3.2" for $DN > 200$ or $SMYS < 360 \text{ N/mm}^2$. All electrical equipment and components used in potentially explosive atmospheres or in intrinsically safe circuits shall have EEx approval and conformity certificates issued by a Notified Body as per EU Directives, i.e. ATEX.

6.8 Inspection Activity Plan (IAP) for Filters / Strainers

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material Certificates.	R	B, Note 1
Identification of Material	M	—
Welding Procedures.	R	A, B, Note 2
Welders Qualification.	R	A, B, Note 2
Mechanical and hardness test.	R	B
NDT Personnel Qualification.	R	B, Note 2
MP / DP Examinations.	R	B, Note 2
US Examinations.	R	B, Note 2
Radiographic Examinations.	R	B, Note 2
Visual Examination.	W	B
Dimensional Control	W	B
Leakage Check.	H	B
Pressure Test.	H	B
Functional Test.	H	B
Painting Check (after painting completion).	W	B
Name Plate Marking.	W	B
CE Mark Check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations:
W = Witness
A = Documents reviewed by Inspector
B = Documents issued by Vendor's/Manufacturer's Q.C.
C = Certificate issued by Inspector
M = Monitor
SW = Spot witness
H = Hold
R = Review

- Notes:**
- 1) For pressure retaining parts, Vendor/Manufacturer shall provide Material Certificates conforming to EN 10204 "type 3.1" for $DN \leq 200$ and $SMYS \leq 360$ N/mm², "type 3.2" for $DN > 200$ or $SMYS > 360$ N/mm².
 - 2) According to EN 13445 and EN ISO 9712 requirements.

6.9 Inspection Activity Plan (IAP) for Scraper Traps

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Pre-Inspection meeting.	H	—
Material Certificates.	R	B, Note 1
Identification of Materials.	W	B
Welding Procedures.	R	B, A, Note 2
Welders Qualification.	R	B, A, Note 2
Weld repair procedures.	R	B, A, Note 2
Welding Monitoring.	SW	B
Heat treatment.	R	B, A, Note 2
Hardness test.	W	B
NDT Personnel Qualification.	R	B, Note 2
MP / DP Examinations.	R	B
Ultrasonic Examinations.	R	B
Radiographic Examinations.	R	B
Visual Examination.	W	B
Dimensional Control.	W	B
Pressure Test (Hydrostatic, Pneumatic).	H	B
Surface treatment test.	R	B
Painting Check (after painting completion).	W	B
Name Plate Marking.	W	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

Notes: 1) For pressure retaining parts, Vendor/Manufacturer shall provide Material Certificates conforming to ELOT EN 10204 "type 3.1" for $DN \leq 200$ and $SMYS \leq 360 \text{ N/mm}^2$, "type 3.2" for $DN > 200$ or $SMYS > 360 \text{ N/mm}^2$.

2) According to EN 13445 and EN ISO 9712 requirements.

6.10 Inspection Activity Plan (IAP) for Drums / Liquid Catchers

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material Certificates.	R	Note 1
Transfer of Marking.	M	—
Welding Procedures.	R	B, A, Note 2
Welders Qualification.	R	B, A, Note 2
Edge preparation fit-up, alignment.	SW	—
Weld repair procedures.	R	B, A, Note 2
Preheating.	SW	B
NDT Procedure Qualification.	R	B, Note 2
NDT Personnel Qualification.	R	B, Note 2
Heat treatment.	R	B, A
Radiographic examinations.	R	B, Note 2
Liquid penetrant examination and/or magnetic particle examination.	R	B, Note 2
Ultrasonic examination records.	R	B, Note 2
Hardness test.	R	B
Visual and dimensional check.	W	B
Hydrostatic test.	H	B
Pneumatic test of reinforcing pads.	W	B
Name plate marking.	W	B
Painting Check (after painting completion).	W	B
CE Mark Check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

- Notes:**
- 1) For pressure retaining parts, Vendor/Manufacturer shall provide Material Certificates conforming to EN 10204 "type 3.1"
 - 2) According to EN 13445 and EN ISO 9712 requirements.

6.11 Inspection Activity Plan (IAP) for Vent Closures

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

	ACTION	CERTIFICATION
Material certificates.	R	Note 1
Transfer of marking.	M	—
Welding procedures.	R	A, B Note 2
Welders qualification.	R	A, B Note 2
Weld repair procedures.	R	A, B Note 2
Heat treatment.	R	A, B
Hardness test.	R	B
NDT personnel qualification.	R	B, Note 2
MP / DP examinations.	R	B
Ultrasonic examinations.	R	B
Radiographic examinations.	R	B
Visual examination.	W	B
Dimensional control.	W	B
Pressure test.	H	B
Surface treatment test.	R	B
Name plate marking.	W	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

- Notes:**
- 1) For pressure retaining parts, Vendor/Manufacturer shall provide Material Certificates conforming to EN 10204 "type 3.1"
 - 2) According to EN 13445 and EN ISO 9712 requirements.

6.12 Inspection Activity Plan (IAP) for Heat Exchangers / Fuel Gas Heat Exchangers

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material Certificates.	R	Note 1
Transfer of Marking.	M	—
Welding Procedures.	R	B, A, Note 2
Welders Qualification.	R	B, A, Note 2
Post weld heat treatment records.	R	B,A
Mechanical and hardness test.	R	B
NDT Personnel Qualification.	R	B, Note 2
MP/DP Examinations.	R	B, Note 2
US Examinations.	R	B, Note 2
Radiographic examinations.	R	B, Note 2
Visual examination.	W	B
Dimensional control.	W	B
Leakage check.	H	B
Pressure test.	H	B
Pneumatic test of reinforcing pads.	W	B
Name plate marking.	W	B
Painting Check (after painting completion).	W	B
CE Mark Check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

- Notes:**
- 1) For pressure retaining parts, Vendor/Manufacturer shall provide Material Certificates conforming to EN 10204 "type 3.1"
 - 2) According to EN 13445 and EN ISO 9712 requirements.

6.13 Inspection Activity Plan (IAP) for Tanks

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material Certificates.	R	Note 1
Material Identification.	W	B
Welding procedures and qualifications.	R	B, A, Note 2
NDE procedures & personnel qualifications.	R	B, Note 2
UT examination.	SW	B, Note 2
Radiographic examinations.	R	B, Note 2
MP examination.	SW	B, Note 2
Post weld heat treatment.	M	B
Pneumatic test.	W	B
Hydrostatic test.	W	B
Visual and dimensional check.	W	B
Vacuum and leak test (bottom / shell).	SW	B
Sandblasting, Painting, coating.	SW	B
Name plate marking.	W	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

- Notes:**
- 1) For pressure retaining parts, Vendor/Manufacturer shall provide Material Certificates conforming to EN 10204 "type 3.1"
 - 2) According to EN 13445 and EN ISO 9712 requirements.

6.14 Inspection Activity Plan (IAP) for Hot Induction Bends

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Pre-inspection meeting.	H	
Material Certificates for raw materials.	R	ELOT EN 10204 "type 3.2"
Material Identification.	W	B
Bending.	M	B
Heat Treatment.	M	B
Bevelling.	SW	B
Mechanical test (tensile, impact, hardness).	SW	B
NDE Personnel Qualification.	R	B, Note
MP examinations at bevel.	SW	B
Ultrasonic examinations for 100% longit, welds, bevel end +50mm wall thickness.	SW	B
Visual examination.	W	B
Dimensional control (wall thickness, ovality).	W	B
Pigging.	SW	B
Name plate marking.	W	B
Mill test certificate (for final product).	R	B, EN 10204 "Type 3.2"
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

Note: According to EN 13445 and EN ISO 9712 requirements.

6.15 Inspection Activity Plan (IAP) for Insulating Couplings

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT		CERTIFICATION
Material Certificates.	R	B, Note 1
Identification of materials.	M	B
Welding procedures.	R	A, B, Note 2
Welders qualification.	R	A, B, Note 2
Mechanical and hardness test.	R	B
NDE Personnel Qualification.	R	B, Note 2
MP / DP Examinations.	R	B, Note 2
Ultrasonic examinations.	R	B, Note 2
Radiographic examinations.	R	B, Note 2
Electric test report.	R	B
Visual examination.	W	B
Dimensional control.	W	B
Air leakage test.	H	B
Pressure test.	H	B
Functional test.	H	B
Painting check (after painting completion).	W	B
Name plate marking.	W	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: W = Witness

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

- Notes:**
- 1) For pressure retaining parts, Vendor/Manufacturer shall provide Material Certificates conforming to EN 10204 "type 3.1" for DN ≤ 200 and SMYS ≤ 360 N/mm², "type 3.2" for DN > 200 or SMYS > 360 N/mm².
 - 2) According to EN ISO 9712 requirements, EN ISO 16826 EN ISO 16810, EN ISO 17638 EN ISO 17636-1 and EN 1290 requirements.

6.16 Inspection Activity Plan (IAP) for Metering & Pressure Regulating (M/R)

(Note 1)

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Pre-Inspection Meeting.	H	—
Material Certificates.	R	Note 2
Positive Material Identification Certificates.	R	B
Explosion proof / protection degree / calibration / type test certificates (Note 4).	R	B
Identification of materials.	W	B
WPS / PQR / WPQR	R	B, A, Note 2
Welding Monitoring.	SW	B, Note 3
NDE procedures.	R	B
MP examination.	SW	B, Note 2
Radiographic examination.	R	B, Note 2
Pneumatic test.	W	B
Hydrostatic test for : filter	H	B
Turbine or ultrasonic meter (as applicable).		
Dimensional check.	W	B
Visual examination.	W	B
Functional test / factory equipment tests.	W	B
Assembly and final inspection of the complete package.	H	B
Sandblasting, painting.	SW	B
CE Mark Check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C, Note 5

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

Notes: 1) All components shall be inspected individually in accordance with the corresponding paragraphs and inspection plans of this Specification.

- 2) For Pressure retaining parts, Vendor/Manufacturer shall provide Material Certificates conforming to EN 10204 "type 3.1" "type 3.1" for $DN \leq 200$ and $SMYS \leq 360 \text{ N/mm}^2$, "type 3.2" for $DN > 200$ or $SMYS > 360 \text{ N/mm}^2$.**
- 3) According to EN ISO 9712 requirements.**
- 4) Approved by Notified Body as per EU Directives, i.e. ATEX.**
- 5) An Inspection Certificate in accordance with EN 10204, "type 3.2" will be issued by Inspector for the overall construction of the M/R Skid with Components (the total skid unit).**

6.17 Inspection Activity Plan (IAP) for Turbine or Ultrasonic Meters

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material Certificates.	R	B, Note 1
Visual Inspection and Dimensional Check.	W	B
Operational / function / repeatability test / calibration and metrological performance test.	W	Note 2
Type test / factory test certificates.	R	B
Checking of identification / marking, labeling check.	W	B
Checking of completeness.	W	B
Check of Explosion Proof Certificate issued by an approved certification body.	R	B
CE Mark check.	W	B
EC Declaration of conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice	H	C

Abbreviations:

W = Witness

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

Notes: 1) Manufacturer's test report according to ELOT EN 10204 - "type 3.1".

2) Certification shall be issued by an Accredited Independent laboratory.

6.18 Inspection Activity Plan (IAP) for Motor & Pneumatic Operated Valves

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material Certificates.	R	Note 2
Identification of materials.	M	—
Welding procedures.	B	A, B, Note 3
Welders qualification.	R	A, B, Note 3
Mechanical and hardness test.	R	B
NDT Personnel Qualification.	R	B, Note 3
MP / DP Examinations.	R	B, Note 3
Ultrasonic Examinations.	R	B, Note 3
Post weld heat treatment (if applicable).	R	B
Radiographic examinations.	R	B, Note 3
Electric test report.	R	B
Visual Examination.	W	B
Dimensional control.	W	B
Leakage test.	H	B
Pressure test.	H	B
Functional test.	H	B
Painting check (after painting completion).	W	B
Name plate marking.	W	B
CE Mark Check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C, Note 4

Abbreviations:

W = Witness

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

Notes: 1) Inspection of pneumatic/electric actuators in accordance with the corresponding inspection plan.

2) For Pressure retaining parts, Vendor/Manufacturer shall provide Material Certificates conforming to EN 10204 "type 3.1" "type 3.1" for DN ≤ 200 and SMYS ≤ 360 N/mm², "type 3.2" for DN > 200 or SMYS > 360 N/mm².

- 3) According to ELOT EN 14141, EN ISO 9712 and EN 12732 requirements.
- 4) An Inspection Certificate in accordance with ELOT EN 10204, "type 3.2" will be issued by Inspector after the orders completion.

6.19 Inspection Activity Plan (IAP) for Electric Actuators

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Mechanical and Chemical Test Certificates for main components and final product.	R	Note
Insulation test.	W	B
Functional test.	W	B
Performance test.	W	B
Check of explosion proof and weather proof certificates issued by an approved certification body.	R	B
Visual and dimensional check.	W	B
CE Mark Check.	W	B
EC Declaration of conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations:
W = Witness
A = Documents reviewed by Inspector
B = Documents issued by Vendor's/Manufacturer's Q.C.
C = Certificate issued by Inspector
M = Monitor
SW = Spot witness
H = Hold
R = Review
Note: Manufacturer's test report according to EN 10204 - "type 2.2".

6.20 Inspection Activity Plan (IAP) for Pneumatic Actuators

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Mechanical & Chemical Test Certificates for main components and final product.	R	Note
Insulation test.	W	B
Functional test.	W	B
Tightness test for Cylinder and Pneumatic Piping.	W	B
Running Test.	W	B
Operation and Performance test.	W	B
Check of explosion proof and weather proof certificates issued by an approved certification body.	R	B
Visual and dimensional check.	W	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

Note: **Manufacturer's test report according to EN 10204 - "type 2.2".**

6.21 Inspection Activity Plan (IAP) for Control Valves

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material Certificates.	R	Note 1
Identification of materials.	M	—
Welding procedures.	R	A, B, Note 2
Welders qualification.	R	A, B, Note 2
Mechanical and hardness test.	R	B
NDE Personnel Qualification.	R	Note 2
MP / DP Examinations.	R	B, Note 2
Ultrasonic examinations.	R	B, Note 2
Radiographic examinations.	R	B, Note 2
Visual examination.	W	B
Dimensional control.	W	B
Leakage test.	H	B
Pressure test.	H	B
Functional test.	H	B
Painting check (after painting completion).	W	B
Name plate marking.	W	B
CE Mark Check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

Notes: 1) For pressure retaining parts Vendor/Manufacturer will provide Material Certificates for raw materials and final product conforming to EN 10204 "type 3.1" for DN ≤ 200 and SMYS ≤ 360 N/mm², "type 3.2" for DN > 200 or SMYS > 360 N/mm².

2) According to EN 14141, EN ISO 9712 and EN 12732 requirements.

6.22 Inspection Activity Plan (IAP) for Pressure and Thermal Relief Valves

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material Certificates.	R	Note 1
Identification of materials.	M	—
Welding procedures.	R	A, B, Note 2
Welders qualification.	R	A, B, Note 2
Mechanical and hardness test.	R	B
NDT Personnel Qualification.	R	B, Note 2
MP / DP Examinations.	R	B
Ultrasonic examinations.	R	B
Radiographic examinations.	R	B
Visual examination.	W	B
Dimensional control.	W	B
Leakage test.	H	B
Pressure test.	H	B
Functional test.	H	B
Painting check (after painting completion).	W	B
Name plate marking.	W	B
CE Mark Check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

Notes: 1) For pressure retaining parts Vendor/Manufacturer will provide Material Certificates for raw materials and final product conforming to EN 10204 "type 3.1" for DN ≤ 200 and SMYS ≤ 360 N/mm², "type 3.2" for DN > 200 or SMYS > 360 N/mm².

2) According to EN 14141, EN ISO 9712 and EN 12732 requirements.

6.23 Inspection Activity Plan (IAP) for Control Panels - Scada System - Telecommunication System - Distributed Control System - Emergency Shut Down System

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Functional and factory acceptance test.		B
Visual and dimensional examination.		B
Check of explosion proof and protection degree certificates issued by an approved certification body.	R	B
Dielectric, calibration and insulation test.	W	B
Electrical performance test.	W	B
Loop simulation test.	W	B
Checking of labeling.	W	B
Painting check.		B
Material and test certificates.	R	B
Visual and dimensional check.	W	B
CE Mark Check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations:

W = Witness

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

6.24 Inspection Activity Plan (IAP) for Gas Chromatographs

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material Certificates.	R	B, Note 1
Visual Inspection and Dimensional Check.	W	B
Operational / function / calibration & metrological performance test.	W	Note 2
Type test / factory test certificates.	R	B
Quantity Check.	W	B
Checking of identification / marking, labelling check.	W	B
Checking of completeness.	W	B
Check of Explosion Proof Certificate issued by an approved certification body.	R	B
CE Mark check.	W	B
EC Declaration of conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice	H	C

Abbreviations:
W = Witness
A = Documents reviewed by Inspector
B = Documents issued by Vendor's/Manufacturer's Q.C.
C = Certificate issued by Inspector
M = Monitor
SW = Spot witness
H = Hold
R = Review
Notes:

- 1) **Manufacturer's test report according to EN 10204 - "type 3.1".**
- 2) **Certification shall be issued by an accredited independent laboratory at Vendor's/Manufacturer's cost.**

6.25 Inspection Activity Plan (IAP) for Instrument and fiber Optic Cables

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material certificates for raw and final product.	R	EN 10204 Type 3.1
Cables layout and wiring check.	SW	B
Visual and dimensional check.	SW	B
Attenuation / Manufacturer's tests.	SW	B
Marking (for cables and drums).	SW	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

6.26 Inspection Activity Plan (IAP) for Instrument and Emergency Power Supplies and Battery Systems (UPS etc.)

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition such as UPS system and Battery.

SUBJECT	ACTION	CERTIFICATION
Material certificates.	R	—
Full operational test.	W	B
Dielectric tests.	W	B
Dimensional check & visual inspection.	W	B
Check of safety & operational interlocks.	W	B
Checking of completeness.	W	B
Certification of all components including type tests and type of protection.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

6.27 Inspection Activity Plan (IAP) for Instrument and Emergency Power Supplies and Battery Systems (U.P.S. etc.)

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material certificates.	R	B
Manufacturer's tests in accordance with ELOT EN 60034-1 :	W	B
• Dimensional check & visual inspection.		
• Load characteristic including η load test.		
• Torque test (160%, 15S).		
• Over speed test.		
• Vibration test.		
• Calculation of efficiency / if agreed upon.		
• Measurement of noise level.		
• Determination of insulation resistance.		
• Dielectric test (high voltage).		
• Measurement of locked motor current.		
Checking of completeness.	W	B
Name plate.	W	A
Certification of all components including type tests and type of protection.	R	B
CE Mark check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

6.28 Inspection Activity Plan (IAP) for Electrical Switchgear (Circuit Breakers, Power Centers, Motor Control Centers, Distribution Boards)

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material certificates.	R	B
Factor test (Routine test).	W	B
Full operational tests.	W	B
Checking of completeness.	W	B
Check of safety & operational interlocks.	W	B
Dimensional check & visual inspections.	W	B
Certification of all components including type tests, type of protection and explosion proof certificate issued by an approved certification body.	R	B
CE Mark check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations:

W = Witness

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

6.29 Inspection Activity Plan (IAP) for Cathodic Protection / Earthing / Lighting Equipment

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material certificates.	R	B
Dimensional check.	W	B
Full operational tests.	W	B
Checking of completeness.	W	B
Certification of all components including type tests, type of protection and explosion proof by an approved certification body.	R	B
Factory and routine test.	W	B
CE Mark check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations:

W = Witness

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

6.30 Inspection Activity Plan (IAP) for Emergency Gas / Diesel Generator

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material certificates.	R	B
NDT procedure qualification.	R	A
NDT inspection personnel qualification records.	R	A
Ultrasonic examination records.	R	B
Radiographic examination records.	R	B
Dye penetrant / magnetic particle inspection records.	R	B
Dimensional check and visual inspection.	W	B
Hydrostatic test (where required).	W	B
Performance and running tests together with the driven machine.	H	A
Governor test.	W	B
Dismantling after test (partial).	W	B
Site running test	H	A
Vibration measurement.	W	B
Noise measurement.	W	B
Fuel and exhaust gas leakage check.	W	B
Emission measurement.	W	B
CE Mark check.	W	B
EC Declaration of Conformity.	R	B
Name plate marking.	W	B
Cleaning, preservation, painting.	R	B
Check of completeness including spares.	W	B
Preparation for shipment.	R	B
Completeness of documentation.	R	
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

Notes: **All above for the large machinery only.**

6.31 Inspection Activity Plan (IAP) for Fire Fighting System

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material certificates.	R	B
Manufacturer's tests:	W	B
• Full operational test.		
• Dielectric tests.		
• Dimensional check & visual inspection.		
Checking of completeness.	W	B
Certification of all components including type tests and type of protection.	R	B
CE Mark check.	W	B
EC Declaration of Conformity.	R	B
Inspection Data Book.	R	B
inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

6.32 Inspection Activity Plan (IAP) for Cranes

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material certificates for main beam and drum.	R	B, Note 1
Hook and rope certificates.	R	B, Note 2
Cables certificates.	R	B, Note 2
Electric motors certificates.	R	B, Note 2
Check of explosion proof and weather proof certificates issued by an approved certification body.	R	B
Identification of material / components.	W	B
WPS / PQR.	R	A, B, Note 3
Inspection during assembly.	SW	—
Examination of welds.	W	B
NDT examination / MT 20% on fillet welds.	W	B, Note 3
Painting check (after painting completion).	W	B
Final visual and dimensional check.	W	B
Speed control.	W	B
Noise control certificate.	R	B
Dynamic overload test 120% of rated load.	W	B
Static overload test 150% of rated load.	W	B
Insulation resistance and voltage test.	W	B
Functional test (functional sequence, operational test for limit switches).	W	B
Name plate marking.	W	B
CE Mark check.	W	B
EC Declaration of conformity.	R	B
Check of completeness.	W	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations: **W = Witness**

A = Documents reviewed by Inspector

B = Documents issued by Vendor's/Manufacturer's Q.C.

C = Certificate issued by Inspector

M = Monitor

SW = Spot witness

H = Hold

R = Review

Notes: 1) According to ELOT EN 10204 "type 3.1"

2) According to ELOT EN 10204 "type 2.2"



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TECHNICAL SPECIFICATION

Doc No: DSF-SPC-QAC-005

Rev. 1

Page 60 of 61

3) According to EN ISO 9712 and ELOT EN 12732.

6.33 Inspection Activity Plan (IAP) for structural Steel

The IAP is a guideline defining the minimum extent of Inspector activities.

Type and extent of tests will strictly comply with standards and / or other specifications of the relevant Material Requisition.

SUBJECT	ACTION	CERTIFICATION
Material certificates, type ELOT EN 10204 "type 3.1" .	R	B
Welding procedure qualification records.	R	A, B
Examination surface preparation.	SW	—
Examination of welds.	W	—
Final visual inspection.	SW	B
NDT examination.	SW	B
Final dimensional check.	SW	B
Compliance with requisition (approved drawings).	R	B
Marking / Tagging.	SW	B
Inspection Data Book.	R	B
Inspection Release Notice.	H	C

Abbreviations:
W = Witness
A = Documents reviewed by Inspector
B = Documents issued by Vendor's/Manufacturer's Q.C.
C = Certificate issued by Inspector
M = Monitor
SW = Spot witness
H = Hold
R = Review