

GENERAL SPECIFICATION

STRUCTURAL

GS EP STR 203

Forged materials for Offshore steel structures

Rev.	Date	Purpose of the revision
11	11/2018	Title, §1, §3, §5, §6.1, §6.2, §6.3, §7, §8, §8.1, §8.2, §9, §9.1, §9.2, §12.1, §12.3, §12.4, §12.5
10	10/2016	§ 1, 2, Appendix 1 cancelled
09	11/2015	§ 1, 13, Appendix 1
08	05/2015	Organisation change - January 2015
00	10/2006	First issue

Owning entity: DSO/IP/TEC	Managing entity: DSO/IP/TEC/STR
Other Approving entity(ies):	

General Specification		GS EP STR 203
Forged materials for Offshore steel structures		
Rev.: 11	Effective date: 11/2018	Page: 2 of 17

Contents

1. Scope	4
2. Reference documents	4
3. Definitions	6
4. Member classification	7
5. Definition of general characteristics of forged steel products	7
6. Manufacturing procedure and process	9
6.1 Documentation	9
6.2 Steel making process and chemical requirements	9
6.3 Forging	10
7. Heat Treatment	10
8. Test Blocks	11
8.1 Test Blocks for forgings acceptance testing (QTS)	11
8.2 Welding Test Blocks	12
9. Destructive testing requirements	12
9.1 Tensile tests	13
9.2 Toughness testing	13
9.3 Micrographic examination	14
9.4 Hardness test	14
10. Surface finish, dimensional	14
11. Defects rectification and repair by welding, welding attachments	14
12. Non Destructive Testing (NDT) Requirements	15
12.1 General requirements	15
12.2 Visual inspection	15
12.3 Magnetic Particle Inspection	15
12.4 Ultrasonic Testing	16
12.5 Hardness Testing	16



General Specification		GS EP STR 203
Forged materials for Offshore steel structures		
Rev.: 11	Effective date: 11/2018	Page: 3 of 17

13. Marking, Documentation	16
Bibliography.....	17

General Specification		GS EP STR 203
Forged materials for Offshore steel structures		
Rev.: 11	Effective date: 11/2018	Page: 4 of 17

1. Scope

This specification defines the Company's minimum general requirements for the manufacture and supply of forged structural materials to be used in the construction of Offshore steel structures or parts of thereof.

The present specification does not apply for permanent mooring components like offshore chains, H-links, cable sockets or triplates, for which **GS EP STR 661** shall apply.

This specification covers exclusively carbon steel forgings and low alloyed carbon steel forgings.

This specification does not apply for lifting pins and axles when supplied according to **GS EP STR 201**.

This specification shall be read in conjunction with **GS EP STR 201**, **GS EP STR 301**.

Where required, this specification shall be used in conjunction with a Project Particular Specification (PPS) detailing the additional tests and requirements or the possible modifications to the present specification, based on the particular design conditions or the local legislation of the structural project.

Regarding the multiple cases of use of forged products, if estimated necessary for service by Company, Company may impose complementary or more stringent requirements than those described hereafter.

Contractor shall issue a manufacturing procedure at the bid stage, including full technical features of the proposed material/products as chemical composition, NDT, mechanical tests locations and expected results... This procedure shall be qualified by a Manufacturing Procedure Qualification and Testing (MPQT).

No deviations from the requirements stated in the present specification shall be permitted unless prior written approval has been obtained from the Company.

Attention is drawn on certain materials that shall be subject to inspection and approval by a Third Party Inspection (TPI) or a Classification Society, according Purchase Order or Particular Project Specification.

If classification of the structure is required, any Contractor's request for clarification or deviation to Classification Society Rules shall be submitted to Classification Society through a form previously agreed. Company shall be in copy of any Technical Query and Classification Society answers.

2. Reference documents

The reference documents listed below form an integral part of this General Specification.

The order of precedence of the applicable documents shall be:

- The Purchase Order (PO)
- The Project Particular Specification (PPS)
- The present General Specification
- The codes and standards in reference.

General Specification		GS EP STR 203
Forged materials for Offshore steel structures		
Rev.: 11	Effective date: 11/2018	Page: 5 of 17

Applicable Codes and Standards which are to be used in conjunction with this specification are stated in paragraphs hereafter.

Unless otherwise specifically indicated in writing by the Company, the Supplier shall work in accordance with the requirements specified herein and the applicable requirements of the latest editions at date of Contract award of the referenced Codes and Standards, whenever asked in the present specification.

Where this specification states no overriding requirements, the referenced Codes and Standards shall apply in full.

Standards equivalent to those referred to herein shall not be substituted without written approval of the Company. Approval of equivalent standards will not, in any way, remove responsibility of the Supplier to meet the requirements of the standards referred to and amended herein, in the event of conflict.

The Supplier shall equip himself with copies of all the reference specifications referred to in this specification and shall make them readily available to all fabrication, testing and inspection personnel involved on the work.

External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published at the effective date of this document.

Reference	Title
ASTM A370	Standard test method and definitions for mechanical testing of steel products
ASTM A388/A388M	Standard Practice for Ultrasonic Examination of Heavy Steel Forgings
ASTM E112	Standard Test Methods for Determining Average Grain Size
ASTM E709	Practice Guide for Magnetic Particle Testing
ISO 148-1	Metallic materials - Charpy pendulum impact test - Part 1: Test method
ISO 6507-1	Metallic materials Vickers hardness test - Part 1: Test method
ISO 8503-1	Preparation of steel substrates before application of paints and related products. Surface roughness characteristics of blast-cleaned steel substrates - Part 1: Specifications and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces
ISO 9712	Non-destructive testing - Qualification and certification of NDT personnel

General Specification		GS EP STR 203
Forged materials for Offshore steel structures		
Rev.: 11	Effective date: 11/2018	Page: 6 of 17

Total General Specifications

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published.

Reference	Title
GS EP STR 201	Materials for offshore steel structures
GS EP STR 301	Fabrication of offshore steel structures
GS EP STR 661	FPSO - Design requirements for mooring and anchoring systems

3. Definitions

Throughout this specification, the following definitions shall apply:

Contractor	Means the company designated on the Contract as being the selected supplier of the said material. He may be additionally in charge or not of the design of the material to be delivered.
Supplier	Means the company designated on the Purchase Order form as being the selected supplier of the said materials.
Manufacturer	Means the company or its sub-contractors selected by the Company or the Supplier (as applicable) as the Manufacturer of the said materials.
Purchaser	Means the Company or the Supplier (as applicable) which have placed the Purchase Order to the Manufacturer.
Inspector	Means the Company's or Supplier's representative(s), (as applicable), or member(s) from an Inspection Agency duly appointed by the Company or the Supplier (as applicable) to act as its representative(s) for the purpose of the contract.
PPS	Designates the Project Particular Specification as defined in § 5 above.
Approval	Means Managing entity of the referential written assent. Approval by Managing entity shall in no way relieve Contractor of any of his obligations, responsibilities or liabilities. The words "Approve", "Approved" and "Approval" shall be construed accordingly.
Forging for welding	Means a forging component dedicated to be welded for assembly on the final structure. The welds considered are in the main load path.
QTS	Means Qualification and Testing Samples. Test Block representative of the forged material used to verify proper mechanical properties and chemical composition of the product.
Welding Test Block	Means coupon representative of the forged material to be used for the qualification of welds between the said forging and the final structure where the forging will be installed.