

ALLEGATO 10 NORMATIVE E CRITERI DI PROGETTAZIONE



MAJOR CODES AND STANDARDS

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1. SCOPE

The purpose of this document is to specify the major codes and standards to be followed by the CONTRACTOR GROUP for the engineering procurement and construction of the Brindisi LNG Terminal.

2. GENERAL

The Brindisi LNG receiving terminal is being designed in accordance with the requirements of BS EN 1473 design code. In addition, the requirements of NFPA 59A design code have been used only for ORV relief case and the sizing of the impounding basins.

A preliminary list of International Codes and Standards to be used for this project is provided below. This list will be reviewed during detailed engineering by the CONTRACTOR GROUP and revised as necessary.

In addition a preliminary list of major Italian laws and norms are given which are applicable to the project these will be reviewed and implemented as appropriate during the detailed engineering phase.

3. ISO CODES AND STANDARDS

<u>Reference No</u>	<u>Title</u>	<u>Date</u>
ISO 1000	SI units and recommendations for the use of their multiples and of certain other units.	1992
ISO 1461	Hot dip galvanized coatings on fabricated iron and steel articles- Specifications and test methods	1999
ISO 3046-1	Reciprocating internal combustion engines – Performance	2002
ISO 3046-3	Reciprocating internal combustion engines – Performance	1989
ISO 3046-4	Reciprocating internal combustion engines – Performance	1997
ISO 3046-5	Reciprocating internal combustion engines – Performance	2001
ISO 3046-6	Reciprocating internal combustion engines – Performance	1990
ISO 5167-Pt1-4	Measurement of fluid flow by means of pressure differential	2003
ISO TR 5168	Measurement of fluid flow – evaluation of uncertainties	1998
ISO 5208	Industrial Valves – Pressure Testing for Valves	1993
ISO 5752	Metallic valves for use in flanged pipe systems Face-to-face and centre-to-face dimensions	1982
ISO 8501-1	Preparation of steel substrates before application of paints and related products-Visual assessment of surface cleanliness- Pt. 1: Specification for rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.	1988 +Suppl.1 1994
ISO 9000	Quality Management Systems-Fundamentals and Vocabulary	2000
ISO 9001	Quality management systems - Requirements	2000
ISO 10497	Testing of Valves: Fire Type-Testing requirements	1992
ISO 14001	Environmental Management Systems	1996
Others	To be Specified by the EPC Contractor	

4. US CODES AND STANDARDS

<u>Reference No</u>	<u>Title</u>	<u>Date</u>
NACE MR01-75	Metals for sulphide stress cracking and stress corrosion cracking resistance in sour oilfield environments	2003
NACE RP 0178	Fabrication details, surface finish requirements, and proper design consideration for tanks and vessels to be lined for immersion service	1989 R2003
NFPA 10	Portable Fire Extinguishers	2002
NFPA 11A	Medium & High Expansion Foam Systems	1999
NFPA 12	Carbon Dioxide Extinguishing Systems	2000
NFPA 13	Installation of Sprinkler Systems	2002
NFPA 14	Standpipe & Hose Systems	2003
NFPA 15	Water Spray Fixed Systems	2001
NFPA 16	Deluge Foam-water Sprinkler Systems & Foam-water Systems	2003
NFPA 17	Dry Chemical Extinguishing Systems	2002
NFPA 20	Installation of Stationary Pumps	1999
NFPA 22	Water Tanks for Private Fire Protection	2003
NFPA 24	Installation of Private Fire Service Mains	2002
NFPA-59A	Production, Storage & Handling of LNG	2001
NFPA 72	National Fire Alarm Code	2002
NFPA 307	Construction and Fire Protection of Marine Terminals, Piers and Wharves	2000
NFPA 780	Standard for the installation of Lighting Protection Systems	2000
NFPA 2001	Standard on Clean Agent Fire Extinguishing Systems	2000
API 5L	Line Pipe (42 nd Ed)	2000
API 6D+Suppl2	Specification for Pipeline Valves (gate, plug, ball and check valves 22 nd ed)	2002
API 6FA	Fire Test for Valves	1999
API 520	Sizing, Selection & Installation of Pressure Relieving Devices in Refineries Part I – Sizing & Selection (7 th ed. 2000) Part II – Installation (4 th ed 1994)	2000 1994
API 521	Guide for Pressure Relieving & Depressuring Systems (4 th Ed) and errata	1997 1999
API 526	Flanged Safety Relief Valves (5 th Ed)	2002
API 527	Commercial Seat Tightness of Valves with Metal to Metal Seats (3 rd Ed)	1991 (R1996)
API 594	Check Valves: Wafer, wafer-lug, and double flanged type (5 th ed)	1997
API 598	Valve inspection and Testing (7 th ed) (1996) + Errata	1997
API 599	Metal Plug Valves Flanged and Welding Ends (5 th ed)	2002
API 600	Steel Gate Valves - Flanged and Butt Welding Ends (11 th Ed)	2001
API 602	Compact Steel Gate Valves (7 th ed)	1998
API 603	Corrosion Resistant, Bolted Bonnet Gate Valves – Flanged and Butt-Welding Ends (6 th ed)	2001
API 607	Fire Test for soft-seated Quarter-turn Valves (4 th Ed)	1993 (R1998)
API 609	Lug and Wafer Type Butterfly Valves (5 th Ed)	1997
API 610	Centrifugal Pumps for Petroleum, Petrochemical, and Natural Gas Industries (9 th Ed)	2003
API 613	Special Purpose Gear Units for Petroleum, Chemical, and Gas Industry Services (5 th Ed)	2003
API 614	Lubrication, Shaft Sealing & Control Oil Systems and Auxiliaries For Petroleum, Chemical, and Gas Industry Services (4 th ed)	1999

US CODES AND STANDARDS (CONTD.)

<u>Reference No</u>	<u>Title</u>	<u>Date</u>
API 617	Axial & Centrifugal Compressors and Expander Compressors for Petroleum, Chemical, and Gas Industry Services (6 th Ed)	2002
	And Errata	2003
API 618	Reciprocating Compressors for Petroleum, Chemical, and Gas Industry Services (4 th Ed)	1995
API 620	Design and Construction of large, Welded, Low Pressure Storage Tanks (10 th Ed)	2002
API 650	Welded Steel Tanks for Oil Storage (10 th Ed) + Add2 and addenda	1998 2000/01
API 675	Positive Displacement Pumps – Controlled Volume	
API 1104	Welding of Pipe Lines and Related Facilities (19 th Ed)	1999
	And Errata	2001
API 2000	Venting of Atmospheric & Low Pressure Storage Tanks (5 th Ed)	1998
API MPM	Chapter 2, section 2A – Measurement and Calibration of Upright	1995
-Ch2.2A	Cylindrical Tanks by the manual strapping method (1 st Ed)	
API MPMS	Chapter 2, section 2B – Calibration of Upright Cylindrical Tanks using	1989
-Ch2.2B	the optical reference line method (1 st Ed)	(R2002)
ASCE 7	Minimum Design Loads for Buildings & Other Structures	2002
ACI 318M	Metric Building Code Requirement for Structural Concrete	2002
AISC 350	Load and Resistance Factor Design specification for structural steel	
	Buildings (1999) and	2001.
ASME	Boiler & Pressure Vessel Code - Applicable Parts	2001
	and Addenda	2002/03
ASME B1.1	Unified Inch Screw threads (UN and UNR Thread Form)	1989
		(R2001)
ASME B1.20.1	Pipe Threads, general Purpose (inch)	1983
		(R2001)
ASME B15.1	Safety Standard for Mechanical Power Transmission Apparatus	2000
ASME B16.1	Cast Iron Pipe Flanges and Flanged Fittings	1998
ASME B16.5	Pipe Flanges and Flanged Fittings (1996) and Addenda A	1998
ASME B16.9	Factory made Wrought Steel Butt-Welding Fittings	2001
ASME B16.10	Face-to-Face and End-to-End Dimensions of Valves	2000
ASME B16.11	Forged Fittings, socket-welding and Threaded	2001
ASME B16.20	Metallic Gaskets for Pipe flanges – Ring-joint, Spiral-wound, and Jacketed	1998
	And Addenda	2000
ASME B16.21	Non-Metallic Flat Gaskets for Pipe Flanges	1992
ASME B16.25	Buttwelding Ends	1997
ASME B16.28	Wrought Steel Buttwelding, Short radius Elbows and Returns	1994
ASME B16.34	Valves – Flanged, Threaded, and Welding End	1996
	And Addenda A	1998
ASME B16.42	Ductile Iron Pipe Flanges and Flanged Fittings, Classes 150 and 300	1998
ASME B16.47	Large diameter steel flanges NPS 26 through NPS 60	1996
	and Addenda A	1998
ASME B18.2.1	Square and Hexagonal Bolts and screws (Inch series)	1996
	And Addenda A	1999
ASME B18.2.2	Square and Hexagonal Nuts (Inch series)	1987
		(R1999)
ASME B18.22.1	Plain Washers	1965
		(R1998)
ASME B31.1	Power Piping	2001

US CODES AND STANDARDS (CONTD.)

<u>Reference No</u>	<u>Title</u>	<u>Date</u>
ASME B 31.3	Process Piping	2002
ASME B36.10M	Welded and Seamless Wrought Steel Pipe	2000
ASME B36.19M	Stainless Steel Pipe	1985 (R1994)
ASME B46.1	Surface Texture, Surface Roughness, Waviness, and Lay	2002
ASME/FCI-70-2	Quality Control Standard for Control Valve Seat Leakage	2003
AWWA C504	Rubber-Seated Butterfly Valves	2000
AGA XQ 9212	Compressibility and Super Compressibility for natural gas and other hydrocarbon gases: Transmission measurement	1994
AGA Report No9	American Gas Association Report No 9	
AWS	Applicable Codes	
ASTM	Appropriate Materials Standards	

5. BRITISH CODES AND STANDARDS

BS 476 Pt7	Fire tests on building materials and structures. Part 7, method of test to determine the classification of the surface spread of flame of products	1997
BS1414	Steel Wedge Gate Valves, Flanged and BW End and Amendments to	1975 1990
BS 1560-3.1	Circular flanges for pipes, valves & fittings (class designated)- Steel, cast iron and copper alloy flanges – specification for steel (Amd) Flanges (Amd)	1989 1993 1995
BS 1655	Specification for Flanged Automatic Control Valves for the Process Control Industry (Face to Face dimensions) – Amds to	1950 1976
BS1868	Steel Check Valve, Flanged and BW Ends and Amendments to	1975 1990
BS1873	Steel Globe Valve, Flanged and BW Ends And Amendments to	1975 1990
BS 2782 Pt3	Methods of testing plastics. Mechanical properties. Tensile strength, elongation and elastic modulus – Amd	1976 1994
BS 2972	Methods of test for inorganic thermal insulating materials	1989
BS 3958 Pt4	Thermal insulating materials. Bonded preformed man-made mineral fibre pipe sections	1982
BS 3958 Pt5	Thermal insulating materials. Specification for bonded man-made mineral fibre slabs	1986
BS 4447	specification for the performance of prestressing anchorages for post-Tensioned construction (Amd)	1973 1990
BS 4800	Schedule of paint Colours for Building Purposes	1989 R2000
BS 4882	Bolting for flanges and pressure containing purposes	1990 (R2001)
BS 5328-1	Concrete. Guide to specifying concrete 1997 (+amds) to 2002	
BS 5328-1:1997 (+ Amds to 2002)	Concrete. Guide to specifying concrete (Replaced by BS 8500-1:2002, BS 8500-2:2002 and BS EN 206-1:2000 but remains current.)	
BS 5328-2:1997 (+ Amds to 2002)	Concrete. Methods for specifying concrete mixes (Replaced by BS 8500-1:2002, BS 8500-2:2002 and BS EN 206-1:2000 but remains current.)	

BRITISH CODES AND STANDARDS (CONTD.)

<u>Reference No</u>	<u>Title</u>	<u>Date</u>
BS 5328-3:1990 (+ Amds to 2002)	Concrete. Specification for the procedures to be used in producing and transporting concrete (Replaced by BS 8500-1:2002, BS 8500-2:2002 and BS EN 206-1:2000 but remains current.)	
BS 5328-4:1990 (+ Amds to 1999)	Concrete. Specification for the procedures to be used in sampling, testing and assessing compliance of concrete (Replaced by BS 8500-1:2002, BS 8500-2:2002 and BS EN 206-1:2000 but remains current.)	
BS 5351	Steel Ball Valves, for the Petroleum, Petrochemical and Allied Industries	1986
	and amendments to	1990
BS-5353	Steel Plug Valves	1989
BS 5514	Reciprocating I.C engines	(Many pts latest rev applies)
BS 5840 pt 1&2	Valve Mating Details for Actuator Operation	2003
BS 5896	Specification for high tensile steel wire and strand for the prestressing of concrete	1980
BS 5950	Structural use of steelwork in Building (various parts)	
BS-6364	Valves for Cryogenic Service	1984 R1991 (Amds to 1997)
BS-6755 pt 2	Testing of Valves, pt 2 Specification for fire type – testing Requirements	1987
	and amendments to	1991
BS-6941	Specification for electrical apparatus for explosive atmospheres with Type of protection N	1988
BS-7079	Preparation of steel substrates before application of paints and Related products (various parts)	(latest ed applies)
BS 7671	Requirements for Electrical Installations	2002
BS 7777	Flat Bottomed Vertical Cylindrical Storage Tanks for Low Temp Service (in 4 parts)	1993
BS 8110	Structural Use of Concrete - Pt 1 (1997) + Amendments to - Pt 2 (1985) + Amendments to	2002 2001
BS EN 288-3	Specification and approval of welding procedures for metallic materials Welding procedure tests for the arc welding of steels	1992+amds to 1998
BS EN 288-4	Specification and approval of welding procedures for metallic materials Welding procedure tests for the arc welding of aluminium And its alloys	1992 Amds 1997
BS EN 558-1&2	Industrial Valves. Face-to-face and centre-to-face dimensions of Metal valves for use in flanged piping systems. Class designated Valves.	1996
BS EN 593	Industrial Valves – metallic butterfly valves (1998) + Amendments to	2000
BS EN 1171	Cast iron gate Valves (2002) + Amendments to	2003
BS EN 1418	Welding personnel. Approval testing of welding operators for fusion Welding and resistance weld setters for fully mechanized and Automatic welding of metallic materials	1998+amd2003
BS EN 1473	Installation & Equipment for Liquefied Natural Gas Design for onshore Installations	1997
BS EN 1474	Installation & Equipment for Liquefied Natural Gas: Design & Testing of Loading/Unloading Arms.	1997
BS EN 1515-1	Flanges and their joints. Bolting. Selection of bolting	2000
EN 1532	Installation and Equipment for Liquefied Natural Gas-Ship to Shore Interface	1997

BRITISH CODES AND STANDARDS (CONTD.)

<u>Reference No</u>	<u>Title</u>	<u>Date</u>
BS EN 10025	Hot rolled products of non-alloy structural steels. Technical delivery Conditions.	1993
	and amendment	1995
BS EN 10269	Steels and nickel alloys for fasteners with specified elevated and/or low temperature properties.	1999
	and amendments to	2000
BS-EN 10045-1	Charpy Impact Test on Metallic materials Part 1 test method (V and U notches)	1990
BS EN 10160	Ultrasonic testing of steel plates	1999
BS EN 10204	Metallic products. Types of inspection documents	1991
	and amendments to	1996
BS EN 12266	Testing of Valves pt 1	2003
	Testing of Valves pt 2 (2002) + Amendments to	2003
BS EN 12627	Industrial valves – Butt welding ends for steel valves	1999
BS EN	Industrial valves. Multi-turn valve actuator attachments	1996+corr.2003
ISO 5210		
BS EN	Industrial valves. Part-turn actuator attachments	2001+corr.2003
ISO 5211		
BS EN	Steel gate, globe and check valves for sizes DN 100 and smaller,	
ISO15761	for the petroleum and natural gas industries	2002
	and amendments to	2003
BS EN	Specification and qualification of welding procedures for metallic	2002
ISO 15614-8	materials.Welding procedure test.Welding of tubes to tube-plate joints	
BS EN 50014	Electrical apparatus for potentially explosive atmospheres. General Requirements	1998+Amds to 1999
BS EN 50018	Electrical apparatus for potentially explosive atmospheres. Flameproof Enclosure 'd'	2000+Amds 2003
BS EN 60079-7	Electrical apparatus for explosive gas atmospheres.Increased safety "e"	2003
BS PD 5500	Unfired Fusion Welded Pressure Vessels	2003
	+ Amendments	
PD 7777	Alternative steel selection and its effect on design and testing of tanks To BS 7777	2000

6. EUROPEAN CODES AND STANDARDS

<u>Reference No</u>	<u>Title</u>	<u>Date</u>
EN 1160	Installations and Equipment for Liquefied Natural Gas-General Characteristics of Liquefied Natural Gas	1996
EN 12065	Installation and Equipment for Liquefied Natural Gas-Testing of Foam concentrates designed for Generation of Medium and High Expansion foam & of Extinguishing Powders used on Liquefied Natural Gas Fires	1997
EN 12066	Installations and Equipment for Liquefied Natural Gas-Testing of Insulating Linings for Liquefied Natural Gas Impounding Areas	1997
EN 12308	Installations and Equipment for Liquefied Natural Gas-Suitability Testing of Gaskets designed for Flanged Joints used in LNG Piping	1998

7. EUROPEAN (ITALIAN) STANDARDS

UNI ENV 1991-1	Eurocode 1. Basis of design and actions on structures	1996
UNI ENV (All listed below are various parts of Eurocode 1)		
1991-2-1	Actions on structures – Densities, self-weight and imposed	1996
1991-2-2	Actions on structures exposed to fire	1997
1991-2-3	Actions on structures – Snow loads	1996
1991-2-4	Actions on structures – Wind actions	1997
1991-2-5	Actions on structures – Thermal actions	2001
1991-2-6	Actions on structures – Actions during execution	2000
1991-2-7	Actions on structures – Accidental actions due to impact & explosions	2000
1991-4	Actions in silos and tanks	1997
1991-5	Actions induced by cranes and other machinery	2002
UNI ENV	Eurocode 2. Design of concrete structures	
1992-1-1	General rules and rules for buildings	1993
1992-1-2	General rules – Structural fire design	1998
1992-1-5	General rules – Structures with unbonded and external prestressing tendons	1995
1992-1-6	General rules – Plain concrete structures	1995
1992-3	Concrete foundations	2000
1992-4	Liquid retaining and containment structures	2001
UNI ENV	Eurocode 3. Design of steel structures	
1993-1-1	General rules and rules for buildings	1994
1993-1-5	Supplementary rules for planar plated structures without transverse loading	2001
UNI ENV 1997-1	Eurocode 7. Geotechnical design. General rules	1997
UNI ENV (All listed below are various parts of Eurocode 7)		
1997-2	Design assisted by laboratory testing	2002
1997-3	Design assisted by field testing	2002
UNI ENV	Eurocode 8. Design provisions for earthquake resistance of structures	
1998-1-1	Seismic actions and general requirements for structures	1997
1998-1-2	General rules for buildings	1997
1998-1-3	Specific rules for various materials and elements	1998
1998-3	Towers, masts and chimneys	1999
1998-4	Design of structures for earthquake resistance–silos, tanks & pipelines	2000
1998-5	Foundations, retaining structures and geotechnical aspects	1998

8. INTERNATIONAL CODES AND STANDARDS

<u>Reference No</u>	<u>Title</u>	<u>Date</u>
IEC 61158	Digital Data Communications for Measurement and Control – FieldBus for use in industrial control systems (many pts latest ed applies)	
IEC 60034	Rotating Electrical Machines (many pts latest ed applies)	
IEC 60072-1	Dimensions and Output series for rotating electrical machines	1991
IEC 60072-2	Dimensions and Output series for rotating electrical machines	1990
IEC 60072-3	Dimensions and Output series for rotating electrical machines	1994
IEC 60073	Coding Principles for Indication Devices and Actuators	2002
IEC 60079 PT 0	Electrical Apparatus for Explosive Gas Atmos. – Gen. requirements	2000
IEC 60079 PT1	Flameproof Enclosures "d"	2001
IEC 60079 PT10	Classification of Hazardous Areas	2002
IEC 60079 PT11	Intrinsically Safe Electrical Systems "i"	1999
IEC 60331	Fire Resisting Characteristics of Electric Cables (many pts latest ed applies)	
IEC 60332-1	Electric Cables Under Fire Conditions	1993

INTERNATIONAL CODES AND STANDARDS (CONTD.)

<u>Reference No</u>	<u>Title</u>	<u>Date</u>
IEC 60332-2	Electric Cables Under Fire Conditions	1989
IEC 60529	Degrees of Protection Provided by Enclosures (IP Code) 2001 +corr 1	2003
IEC 60534-1	Control valve Terminology and General Considerations	1987
IEC 60534-2-1	Flow Capacity – Section One: Sizing equations for Fluid Flow Under installed Conditions	1998 +corr 1 2000
IEC 60534-2-3	Flow Capacity – Section Three: Test Procedures	1997
IEC 60534-3-1	Dimensions – Face to Face Dimensions for Flanged, Two-way, Globe-Type, straight pattern and centre-to-face dimensions for flanged two-Way, globe-type, angle pattern control valves	2000
IEC 60534-3-3	Dimensions – End-to-End Dimensions for Buttweld, Two-way, Globe-Type, Straight pattern control valves	1998
IEC 60534-4	Inspection and Routine testing	1999
IEC 60534-8-3	Noise considerations-control valve aerodynamic noise prediction method	2000
IEC 60534-8-4	Noise considerations – prediction of noise generated by hydrodynamic flow	1994
IEC 60584 PT 1	Thermocouples Reference Tables	1995
IEC 60947-1	Specification for low voltage switchgear and controlgear – part 1 General Rules (2001) and corr. 1	2002
IEC 61000	Electromagnetic Compatibility(EMC)	(many parts latest ed applies)
IEC 61131	Programmable Controllers	(many parts latest ed applies)
IEC 61508	Functional Safety of Electrical/electronic/programmable Electronic Safety –Related System	(many parts latest ed applies)
IEC 61511-1	Functional Safety. Safety Instrumented systems for the process Industry sector	2003
IEC 61511-2	Functional Safety. Safety Instrumented systems for the process Industry sector	2003
IEC 61511-3	Functional Safety. Safety Instrumented systems for the process Industry sector	2003
ISA-RP-55.1	Hardware testing of Digital Process Computers	1975 R1983
ISA 5.1	Instrumentation Symbols and Identification	1984 R1992
ISA 75.01.01	Flow Equations for sizing Control Valves	2002
ISA 75.08.01	Face to Face Dimensions for Flanged Globe Style Control Valve Bodies (Classes 125, 150, 250, 300 & 600)	2002
ISA 75.08.06	Face to Face Dimensions for Flanged Globe Style Control Valve Bodies (Classes 900, 1500 & 2500)	2002
ISA 50.00.01	Temperature Measurement Thermocouples Compatibility of Analogue Signals for Electronic Industrial Process Instruments 1975 (R2002)	1975
OCIMF	Specification for Marine Loading Arms 3 rd ed	1999
SIGTTO	Liquefied Gas Handling Principles on Ships and in Terminals 3 rd ed	2000
IP	Model Code of Safe Practice	
FIP	Applicable Standards	
PI	Applicable Standards	
TEMA	Applicable Standards	
CENELEC	Rules for general electrical installation, intrinsic safety and standards Concerning radio frequency interference	
EEMUA 191	Alarm Systems, a guide to design management and procurement	1999
DIN V 19250	Control technology Fundamental Safety Aspects to be considered for Measurement and Control Equipment	1994
IEEE-802.3,	Information Processing Systems-	(many parts latest ed applies)

INTERNATIONAL CODES AND STANDARDS (CONTD.)

<u>Reference No</u>	<u>Title</u>	<u>Date</u>
(TCP/IP)	Local Area Network	
UL 94	Tests for Flammability of Plastic materials for Parts in devices and appliances with amendments to	1996 2001

9. MANUFACTURERS STANDARDISATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS-SP-25	Standard Marking Systems for Valves, Fittings, Flanges and Unions	1998
MSS-SP-45	Bypass and Drain Connection Standard	2003
MSS-SP-55	Quality standard for Steel Castings for Valves, Flanges and Fittings And Other piping Components – Visual method for evaluation of Surface irregularities	2001
MSS-SP-58	Pipe Hangers and Supports – Materials, design and manufacture	2002
MSS-SP-61	Pressure testing of steel valves	2003
MSS-SP-67	Butterfly Valves	2002
MSS-SP-71	Gray Iron Swing Check Valves, Flanged and Threaded Ends	1997
MSS-SP-72	Ball Valves with Flanged or Buttwelding Ends for General Service	1999
MSS-SP-78	Cast iron Plug valves, Flanged and Threaded Ends	1998
MSS-SP-85	Cast Iron Globe and Angle Valves, Flanged and Threaded Ends	2002

10. OIL COMPANIES INTERNATIONAL MARINE FORUM STANDARDS

OCIMF	Design and construction specification for marine loading arms 3 rd ed	1999
OCIMF	Recommendations for oil tanker manifolds and associated equipment	1991
OCIMF	Recommendations for manifolds of refrigerated liquefied gas carriers For cargos from 0°C to minus 104°C	1987
OCIMF	Recommendations for manifolds of refrigerated liquefied natural gas carriers (LNG)	1994

11. ENERGY INDUSTRIES COUNCIL SPECIFICATIONS

MEC 02	General guidelines for firewater pump packages	2003
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12. ENGINEERING EQUIPMENT AND MATERIALS ASSOCIATION

EEMUA 132	Specification for three-phase cage induction motors +amd1	1988 2002
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13. MAJOR ITALIAN LAW CODES AND NORMS

13.1 Mechanical

Raccolta VSR Rev. 1995 Ed.1999 Specifiche tecniche applicative del D.M. 21 novembre 1972 per la verifica a stabilità dei recipienti in pressione
(Pressure vessels strength analysis)

Metallic industrial piping dated 2002

EN13480

13.2 Civil

DPR n° 378 dated 6/6/2001 Disposizioni legislative in materia edilizia (Testo B)
(Legislative provisions applicable to buildings works [Text B])

DPR n° 379 dated 6/6/2001 Disposizioni regolamentari in materia edilizia (Testo C)
(Regulatory provisions applicable to building works [Text C])

DPR n° 380 dated 6/6/2001 Testo unico delle disposizioni legislative e regolamentari in materia edilizia (Testo A)
(Unified text containing legislative and regulatory provisions applicable to building works [Text A])

LEGGE n°1086 dated 5/11/1971 Norme per la disciplina delle opere in conglomerato cementizio armato, normale e precompresso ed a struttura metallica
Directives for the concrete structures conventional pre-compressed, and steel structures)

LEGGE n° 64 dated 2/2/1974 Provvedimenti per le costruzioni con particolari prescrizioni per le zone sismiche
(Provisions applicable to structures in seismic areas)

D.M. dated 03/12/1987 Norme tecniche per la progettazione, esecuzione e collaudo delle costruzioni prefabbricate
(Technical norms for the design, construction and testing of pre-fabricated structures)

D.M. dated 11/3/1988 Norme tecniche riguardanti le indagini sui terreni e sulle rocce, la stabilità dei pendii naturali e delle scarpate, i criteri generali e le prescrizioni per la progettazione, l'esecuzione e il collaudo delle opere di sostegno delle terre e delle opere di fondazione e relative istruzioni emanate con Circolare LL.PP n. 30483 del 24.9.1988
(Technical norms concerning the analyzes of soil and rocks, stability of natural slopes and scarps, the general criteria and provisions for the design, construction and testing of retaining walls and foundations and related instructions issued with Circolare L.L.P.P. n. 30483 dated 24.9.1988)

D.M. dated 14/02/1992 Norme tecniche per il calcolo, l'esecuzione ed il collaudo delle opere in cemento armato normale e precompresso e per le strutture metalliche
(Technical norms for the calculation, execution and testing of reinforced concrete structures, both conventional and pre-compressed, and steel structures)

D.M. dated 09/01/1996 Norme tecniche per il calcolo, l'esecuzione ed il collaudo delle opere in cemento armato normale e precompresso e per le strutture metalliche
(Technical norms for the calculation, execution and testing of reinforced concrete structures, both conventional and pre-compressed, and steel structures)

D.M. dated 16/01/1996 Norme tecniche relative ai "Criteri generali per la verifica di sicurezza delle costruzioni e dei carichi e sovraccarichi"
(Technical norms concerning "General criteria for the safety check of the structures and the loads and overloads)

D.M. dated 16/01/1996 Norme tecniche per le costruzioni in zone sismiche
(Technical norms applicable to structures in seismic areas)

LEGGE n° 24 dated 05/01/1953 Riorganizzazione dei servizi relativi alle opere marittime
(Re-organization of services concerning sea works)

LEGGE n° 84 dated 28/01/1994 Legge quadro nel settore marittimo e portuale
(Regulatory law for the maritime and port sectors)

Consiglio Superiore deilstruzioni tecniche per la progettazione delle dighe
Lavori Pubblici-Roma 1995marittime
(Technical norms for the design of maritime breakwaters)

Consiglio Superiore deilstruzioni tecniche per la progettazione delle opere di
Lavori Pubblici-Roma 1991difesa costiera
(Technical norms for the design of coastal protection structures)

Normativa UNI (where applicable)

Normativa CNR (where applicable)

Ordinanza del Presidente del Consiglio dei Ministri del 20/03/2003

Primi elementi in materia di criteri generali per la classificazione sismica del territorio nazionale e di normative tecniche per le costruzioni in zona sismica (Ordinanza n. 3274)
(Basic elements concerning the general criteria for the seismic classification of the national territory and technical norms for structures in seismic areas [Ordinanza n. 3274])

Circolare Ministero LL.PP. dated 14/2/1974

Istruzioni per l'applicazione della Legge 5 Novembre 1971, n. 1086
(Instructions for the implementation of Law n. 1086 dated 5.11.71)

Circolare Servizio tecnico centrale del Ministero LL.PP. n.156 AA.GG./STC del 4/07/ 96

Istruzioni per l'applicazione delle "Norme tecniche relative ai criteri generali per la verifica di sicurezza delle costruzioni e dei carichi e sovraccarichi" di cui al DM 9/1/96
(Instructions for the implementation of "Technical norms concerning general criteria for the safety check of the structures and the loads and overloads" as per D.M. 9/1/96)

Circolare Servizio tecnico centrale del Ministero LL.PP. n.252 AA.GG./STC del 15/10/96

Istruzioni per l'applicazione delle "Norme tecniche per il calcolo, l'esecuzione ed il collaudo di opere in cemento armato normale e precompresso e per le strutture metalliche" di cui al DM 9/1/96
(Instructions for the implementation of "Technical norms for the calculation, execution and testing of reinforced concrete structures, both conventional and pre-compressed, and steel structures" as per D.M. 9/1/96)

Circolare Servizio tecnico centrale del Ministero LL.PP. n.65 AA.GG del 10/04/97

Istruzioni per l'applicazione delle "Norme tecniche per le costruzioni in zone sismiche" di cui al D.M. 16/01/96
(Instructions for the implementation of "Technical norms applicable to structures in seismic areas" as per D.M. 16/01/96)

13.3 Electrical

Legge n°46/90 dated 05/03/90 Norme per la sicurezza degli impianti
(Norms concerning plants safety)

Legge n°186 dated 01/03/68 Disposizioni concernenti la produzione di materiali, apparecchiature, macchinari, installazioni e impianti elettrici ed elettronici.
(Norms concerning the production of electrical and electric materials, equipment, machinery, installations and plants)

DPR n° 547 dated 27/03/55 Norme per la prevenzione degli infortuni sul lavoro.
(Norms of working accidents prevention)

Normativa CEI (Comitato Elettrotecnico Italiano)
All listed below are some 'major' applicable parts of CEI. All CEI normative must be considered where applicable.

CEI 11-1 Impianti elettrici con tensione superiore a 1 kV in corrente alternata.
(Power installations exceeding 1 kV a.c.)

CEI 11-17 Impianti di produzione, trasmissione e distribuzione di energia elettrica. Linee in cavo
(Generation, transmission and distribution systems of electric power – Cable installation)

CEI 11-35 Guida all'esecuzione delle cabine elettriche d'utente
(Electrical substations – Design and installation criteria)

CEI 11-37 Guida per l'esecuzione degli impianti di terra di stabilimenti industriali per sistemi di I, II, III cat.
(Electric installation on industrial premises supplied by low, medium and high voltage systems. Earthing system installation criteria)

CEI EN 60298 Apparecchiatura prefabbricata con involucro metallico (CEI 17-6) per tensioni da 1 kV a 52 kV.
(A.C. metal-enclosed switchgear and controlgear for voltages rated above 1 kV and up to and including 52 kV)

CEI EN 60439 Apparecchiature assiemate di protezione e di manovra (CEI 17-13) per bassa tensione (quadri BT)
(Low voltage switchgear and controlgear assemblies)

CEI EN 50018 Costruzioni elettriche per atmosfere potenzialmente esplosive. Custodie a prova di esplosione "d".
(Electrical apparatus for potentially explosive atmospheres. Flameproof enclosure "d").

CEI EN 50018/A1 Costruzioni elettriche per atmosfere potenzialmente esplosive. Custodie a prova di esplosione "d".
(Electrical apparatus for potentially explosive atmospheres. Flameproof enclosure "d").

CEI EN 50019 Costruzioni elettriche per atmosfere potenzialmente (CEI 31-7)esplosive. Modo di protezione a sicurezza aumentata "e". (Electrical apparatus for potentially explosive atmospheres. Increased safety "e").

CEI EN 50014 Costruzioni elettriche per atmosfere potenzialmente (CEI 31-8)esplosive. Regole generali. (Electrical apparatus for potentially explosive atmospheres. General requirements)

CEI EN 50020 Costruzioni elettriche per atmosfere potenzialmente (CEI 31-9)esplosive. Sicurezza intrinseca "i". (Electrical apparatus for potentially explosive atmospheres. Intrinsically safety "i").

CEI EN 50021 Costruzioni elettriche per atmosfere potenzialmente (CEI 31-11)esplosive. Modo di protezione "n". (Electrical apparatus for potentially explosive atmospheres. Type of protection "n").

CEI EN 50039 Costruzioni elettriche per atmosfere potenzialmente (CEI 31-10)esplosive. Sistemi elettrici a sicurezza intrinseca "i". (Electrical apparatus for potentially explosive atmospheres. Intrinsically safe electrical systems "i").

CEI EN 60079-10 Costruzioni elettriche per atmosfere esplosive per (CEI 31-30)la presenza di gas. Parte 10: Classificazione dei luoghi pericolosi. (Electrical apparatus for explosive gas atmospheres. Part 10: classification of hazardous areas)

CEI EN 60079-14 Costruzioni elettriche per atmosfere esplosive per la (CEI 31-33) presenza di gas. Parte 14: impianti elettrici nei luoghi con pericolo di esplosione per la presenza di gas (diversi dalle miniere). (Electrical apparatus for explosive gas atmospheres. Part 14: electrical installations in hazardous areas – other than mines)

CEI 64-8; V1 Impianti elettrici utilizzatori a tensione nominale non superiore a 1000 V in corrente alternata, e a 1500 v in corrente continua. (Electrical installation of buildings)

CEI 64-8/1,2,3,4,5 Impianti elettrici utilizzatori a tensione nominale non superiore a 1000 V in corrente alternata, e a 1500 v in corrente continua (Electrical installation of buildings)

14. LEGEND

<u>Reference No</u>	<u>Title</u>
NFPA	National Fire Protection Association (US)
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing Materials
AWS	American Welding Society
ANSI	American National Standards Institute
ISA	International Society for Measurement and Control
BS	British Standards
EN	European Norms
IEC	International Electrotechnical Commission
OCIMF	Oil Companies International Marine Forum
IP	Institute of Petroleum (UK)
FIP	Fédération Internationale de la Précontrainte
PI	Perlite Institute
TEMA	Tubular Exchanger Manufacturers Association
UL	Underwriters Laboratories Inc.