

DEP SPECIFICATION

PIPING CLASSES - REFINING AND CHEMICALS

DEP 31.38.01.12-Gen.

February 2017

DESIGN AND ENGINEERING PRACTICE

DEM1



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1. INTRODUCTION

1.1 SCOPE

This DEP specifies requirements and gives recommendations for piping classes which have been developed for use in refineries and chemical plants.

The basis of design of the piping classes is given in DEP 31.38.01.10-Gen.

The general requirements for piping systems are specified in DEP 31.38.01.11-Gen.

Piping classes developed primarily for exploration and production facilities are contained in DEP 31.38.01.15-Gen. Piping classes that are applicable to Canadian standard CSA Z662 are contained in DEP 31.38.01.23-Gen.

This DEP contains mandatory requirements to mitigate process safety risks in accordance with Design Engineering Manual (DEM) 1 – Application of Technical Standards.

This is a revision of the DEP of the same number dated February 2016. For an overview of the changes to the piping Code and the individual piping classes since the previous edition, see (1.5).

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

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This DEP is intended for use in facilities related to oil refineries, chemical plants, gas plants and supply/distribution installations, and, where applicable, onshore exploration and production facilities (all within the property limits as defined in ASME B31.3:2012, Section 300.1). This DEP may also be applied in other similar facilities.

When DEPs are applied, a Management of Change (MOC) process shall be implemented; this is of particular importance when existing facilities are to be modified.

If national and/or local regulations exist in which some of the requirements could be more stringent than in this DEP, the Contractor shall determine by careful scrutiny which of the requirements are the more stringent and which combination of requirements will be acceptable with regards to the safety, environmental, economic and legal aspects. In all cases the Contractor shall inform the Principal of any deviation from the requirements of this DEP which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned, the objective being to obtain agreement to follow this DEP as closely as possible.

1.3 DEFINITIONS

1.3.1 General definitions

The **Contractor** is the party that carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project or operation of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Manufacturer/Supplier** is the party that manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party that initiates the project and ultimately pays for it. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The word **shall** indicates a requirement.

The capitalised term **SHALL [PS]** indicates a process safety requirement.

The word **should** indicates a recommendation.

The word **may** indicates a permitted option.

1.3.2 Specific definitions

1.4 CROSS-REFERENCES

Where cross-references to other parts of this DEP are made, the referenced section or clause number is shown in brackets (). Other documents referenced by this DEP are listed in (7).

1.5 SUMMARY OF MAIN CHANGES

1.5.1 General

Some missing pipes/fittings and flanges were added in Piping classes.

Carbon steel outer ring material options of spiral wound gaskets were expanded.

The design standard for large size Camprofiles gaskets was changed from Shell standard dimensions to ASME B16.20 dimensions to align with market availability.

Note on piping classes about selection of gate valves versus triple offset butterfly valves was changed to give better selection guidance.

DN 50 (NPS 2) Thermowells and associated instrument connections have been added to several piping classes.

A comprehensive review of valve buying descriptions.

The most substantial changes are explained in the following paragraphs.

For a detailed overview of the changes in each piping class, reference is made to (Appendix A). The piping class revision history is indicated in (Appendix B). For both documents reference is made to separate Excel files

This DEP has reference to MESC 14 onwards. MESC numbers referred to in the piping classes contained in this DEP are extracted from MESC version 14 and above.

1.5.2 Addition of DN50 (NPS 2) thermowells to several piping classes

Where the inside diameter of the DN 40 (NPS 1 ½) thermowell instrument connection become too small to match the outside diameter of the DN 40 (NPS 1 ½) thermowell, due to high wall thickness of the branch fitting, the thermowell, the temperature instrument branch connection and associated assemblies in the piping classes were updated to size DN 50 (NPS 2)

1.5.3 Changes to valve buying descriptions

Below an overview of the most substantial changes as a result of a comprehensive review of the valve buying descriptions:

- DN 50 (NPS 2) cast gate valves as per ISO 10434 or API STD 603, globe valves as per BS 1873 and check valves as per BS 1868 were replaced by forged ISO 15761/API STD 602 gate globe and check valves for economic reasons.
- Approved Manufacturer's deviation requests were added to the MESC buying descriptions for gate, globe, check, ball and butterfly valves, to eliminate deviation lists. Where technically justified, alternative materials were added to the valve components in the MESC buying descriptions.
- ASME B31.3 non listed materials were removed from MESC buying descriptions and replaced by ASME B31.3, ASME B16.34 or ASME BPVC section II, part D listed alternatives.
- Cladded valves were reviewed and brought in line with above bullet point and market availability.