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Guidance on Industry Standard for Design and Construction of Large, Welded, Low Pressure Storage Tanks (API 620)

GIS 58-201

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GIS 58-201.

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Scope

This GIS provides guidance on industry standard for design, fabrication, erection, and testing of large, welded, low pressure storage tanks.

Introduction

- a. Guidance for design, fabrication, erection, and testing of large, welded, low pressure storage tanks is based on American Petroleum Institute (API) Std 620, tenth edition, addendum 1, 2004.
- b. Guidance statements of this GIS are modifications to API Std 620.
- c. Modifications to API Std 620 are identified as Add, Modify to Read, or Delete.
- d. Paragraph numbers in this specification correspond to API Std 620.
- e. Paragraphs of API Std 620 that are not revised remain applicable.

Section 1 - Scope

Add

1.4 Conflicting requirements

Conflicts between this GIS and other contract or procurement documents, unless specifically stated as an exception, shall be submitted by Vendor to BP for written resolution.

Section 2 - References

Add

BP

GIS 06-311	Guidance on Industry Standard for Cathodic Protection Goods and Services.
GIS 58-101	Guidance on Industry Standard for Welded Steel Atmospheric Tanks for Oil Storage.
GP 52-10	Guidance on Practice for Thermal Insulation.

Process Industry Practices (PIP)

PIP STF05521	Details for Angle Railings for Walking and Working Surfaces.
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Section 4 - Materials

4.3 Pipe, flanges, forging, and castings

4.3.3 Flanges

Add

- 4.3.3.3 a. Flanges shall be raised face socket welding for DN 50 (NPS 2) and smaller.
- b. Raised face welding neck flanges shall be used for larger than DN 50 (NPS 2), except that flat face slip on flanges may be used for interior piping.



4.3.4 Castings and forgings

Add

Cast fittings or other components shall not be used in tank shell, roof, or bottom.

4.5 Structural shapes

Add

Materials for permanent structural attachments welded to shell shall be of same nominal composition as tank shell materials.

Section 5 - Design

5.1 General

Add

5.1.6 Design documentation

- a. Prior to start of fabrication, tank design report shall be provided to BP.
- b. Report shall include mechanical design calculations for tank components (listed in d.) to demonstrate compliance with API Std 620 and additional requirements specified in GIS 58-101 and this GIS.
Any additional requirements in GP 58-10 should also be provided for inclusion in the tank design report.
- c. For components falling beyond scope of applicable tank standard, adequate calculations to justify design shall be provided by Vendor.
- d. Design calculations shall include:
 1. Shell design (liquid head, wind, seismic, etc.).
 2. Prediction of changes in tank shape during filling, emptying, and thermal expansion and contraction.
 3. Nozzle reinforcement.
 4. Wind stiffeners - primary and intermediate.
 5. Wind overturning stability and anchor bolt design, including anchor lugs/chairs.
 6. Roof design, including internal support structure.
 7. Foundation settlement prediction and design.
 8. Relief valve sizing.
 9. Completed data sheet.
- e. Tank design calculations made with use of computer programs shall either be accompanied by appropriate program documentation or substantiated by detailed hand calculations.

5.4 Loadings

Add

External loads and restraints shall be listed on tank data sheets.

