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Guidance on Industry Standard for API 676 Positive Displacement Pumps - Rotary

GIS 34-213

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GIS 34-213. This Guidance on Industry Standard (GIS) is based on parts of heritage documents from the merged BP companies as follows:

Amoco

- | | |
|-----------------|--|
| A RE-PUMP-676-P | Rotating Equipment, Pumps, API 676, Rotary, Procurement Specification. |
| A RE-PUMP-00-G | Rotating Equipment, Pumps, Guide (excerpts). |

Gulf of Mexico Deepwater (GOMDW)

- | | |
|--------------------|--|
| 1400-20-ME-SP-2030 | Positive Displacement Pumps - Rotary, Addendum to: API Standard 676. |
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PTA

- | | |
|-------------------|--|
| PTA RE-PUMP-676-P | Rotating Equipment, Pumps, API 676, Rotary, Procurement Specification. |
| PTA RE-PUMP-00-G | Rotating Equipment, Pumps, Guide. |

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Introduction

- a. Guidance for positive displacement rotary pumps is based on American Petroleum Institute (API) Standard 676, Positive Displacement Pumps - Rotary, Second Edition, December 1994.
- b. Guidance statements of this GIS are modifications to API 676.
- c. Modifications to API 676 are identified as Add, Modify to Read, or Delete.
- d. Paragraph numbers in this GIS correspond to API 676.
- e. Paragraphs of API 676 that are not revised remain applicable.

1. General

1.1 Scope

Add

This shall be interpreted as minimum requirements. No statement shall be construed as limiting work to minimum requirements.

If liquid is clean (containing no solids), rotary pumps are outstanding for high viscosity liquids (above 400 cSt to 600 cSt (2000 SSU to 3000 SSU)). Three categories of rotary pumps are gear, screw, and progressive cavity.

- *Gear and screw pumps have two configurations, one with internal bearings and one with external bearings and timing gears.*
 - *Internal bearing configuration can be used only if pumped fluid is suitable for bearing lubrication (fluid is clean and viscosity greater than 20 cSt (100 SSU)). Rotors that ride on internal bearings make direct contact with each other and cannot be constructed of materials that have similar hardness or high galling tendencies (for example, 300 SS).*
 - *Pumps using external bearings are lubricated by separate oil reservoir and are equipped with timing gears that prevent rotor contact. External bearing configuration can be used in high viscosity and corrosive services. However, each pump has four seals, increasing cost and maintenance. Excessive rotor deflection can be a problem that results in premature failure. Rotor design must not depend upon fluid film stiffness for support. Slippage is a function of differential pressure and viscosity and must be considered if selecting this type of pump.*
- *Progressive cavity design has non-metallic soft lined stator as standard construction, suitable for fluids with entrained solids or high viscosity fluids with corrosive characteristics. This design has only one mechanical seal.*

1.2 Alternative designs

Modify to Read

Primary quotation from Vendor shall comply with this GIS. Vendor may supplement basic quotation with alternate quotations, provided the following conditions are met:

- a. Significant process, price, or delivery date advantage is indicated.

