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of Natural Gas Resources; 1.1 The formation of natural gas; 1.2 Conventional natural gas resources; 1.3 Gas reservoir fluids; 1.4 Unconventional natural gas resources; 1.5 Hydraulic fracturing; Further reading; Chapter 2 - Natural Gas Properties; 2.1 Fluid distribution in reservoir; 2.2 Phase behavior of hydrocarbon systems; 2.3 Pressure-volume-temperature properties of hydrocarbon fluids; 2.4 Gas compressibility factor; 2.5 Equation of state
2.6 Gas specific gravity2.7 Gas density; 2.8 Specific volume; 2.9 Isothermal compressibility of gases; 2.10 Gas formation volume factor; 2.11 Standard volume; 2.12 Acentric factor; 2.13 Viscosity; 2.14 Thermal conductivity; 2.15 Gross heating value of natural gases; References; Further reading; Chapter 3 - Single-phase and Multiphase Flow in Natural Gas Production Systems; 3.1 Basic fluid flow theory; 3.2 Process pipe sizing for plants located onshore single phase; 3.3 Process pipe sizing for plants located offshore; 3.4 Transmission pipelines; 3.5 Two-phase mixture properties
3.6 Two-phase flow pressure drop3.7 General aspects in design of piping systems in oil, gas, and petrochemical plants; 3.8 Isometric drawings; 3.9 Line identification list; 3.10 Pipe supports; 3.11 Pressure testing diagram; 3.12 Tie-in diagram; 3.13 Above-ground piping systems; 3.14 Valves; 3.15 Flanges; 3.16 Instrument piping; 3.17 Sample systems; 3.18 Vents and drains; 3.19 Blow-down; 3.20 Utility piping; 3.21 Piping adjacent to equipment; 3.22 Piping flexibility; 3.23 Piping supports; 3.24 Insulation; 3.25 Piping connections to existing plant; 3.26 Underground piping systems; References
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4.14 Typical equations, which can be used for terminal velocity calculation4.15 Vessels; Reference; Further reading; Chapter 5 - Gas Compressors; 5.1 Type selection criteria; 5.2 Centrifugal compressors; 5.3 Design criteria; 5.4 Reciprocating compressors; 5.5 Axial compressors; 5.6 Screw compressors; 5.7 Rotary compressors; 5.8 Compressor cooling water jacket; 5.9 Atmospheric pressure; 5.10 Specification sheets; 5.11 Material for axial and centrifugal compressors and expander-compressors; 5.12 Centrifugal and axial compressors; 5.13 Integrally geared compressors; 5.14 Expander-compressors
Reference

Sommario/riassunto

Natural gas is considered the dominant worldwide bridge between fossil fuels of today and future resources of tomorrow. Thanks to the recent shale boom in North America, natural gas is in a surplus and quickly becoming a major international commodity. Stay current with conventional and now unconventional gas standards and procedures with Natural Gas Processing: Technology and Engineering Design. Covering the entire natural gas process, Bahadori's must-have handbook provides everything you need to know about natural gas, including: Fundamental background on natural gas pro