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地址:北京市东城区广渠家园6号楼320室

邮编:100022

电话:(010)67006041;67006042

传真:(010)67006043

E-mail:sykjyz@vip.sina.com

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Abstract: Three opening design forms of the upper (top) staircase style outlet, upper (top) inclined channel outlet, and middle inclined channel outlet of the buried oil tank room building, as well as the scheme combination of the accident oil leakage collection system, were introduced in detail. The advantages and disadvantages of the above three schemes are compared and analyzed from aspects of the tank room building form, outlet height, operating room cleanliness, floor area, and structural workload. The optimal solution is the upper (top) staircase style outlet and a small capacity oil separation tank. At the same time, the design principles for the opening of a buried vertical oil tank room building are proposed to achieve daily operations without downhole operation, ventilation for inspection operations, and oil leakage treatment outdoors.

Key words: buried vertical oil tank, tank room building, opening, form, design, advantage and disadvantage, analysis.

OIL AND GAS PIPELINE

5 Joint Nonlinear Dynamic Characteristics of a Corrugated Pipe Liquid - Solid Mixed Medium Isolator. Yin Shicheng, Chen Chun.

Abstract: In order to improve the vibration isolation performance of low - frequency and heavy - duty power machinery in transportation engineering, a corrugated tube type liquid - solid mixed medium vibration isolator with gas - liquid - solid multiple media was developed. This type of vibration isolator has segmented linear - nonlinear stiffness characteristics, and its dynamic characteristics such as resonance frequency are determined by the non smooth characteristics induced by segmented stiffness and the traditional continuous smooth nonlinear segments. This article uses the averaging method to solve the amplitude frequency response equation of the isolation system, and then derives the analytical expression of the spine line. The research results indicate that if the soft and hard characteristics of the two types of nonlinearity are consistent, the overall stiffness attribute of the isolator will be strengthened; if the two are different, for the case where the displacement response amplitude exceeds the stiffness turning point ($\beta > 1$), the nonlinear characteristics of the system are no longer monotonically hardening (with a peak to frequency ratio greater than 1) or monotonically softening (with a peak to frequency ratio less than 1). However, as the external

excitation changes from small to large, the frequency response characteristics of the system may exhibit a transition from gradually hardening (soft) to gradually softening (hard), which is different from piecewise bilinear models. This study has guiding significance for the dynamic characteristics design of vibration isolation devices.

Key words: oil pipeline, corrugated pipe, liquid - solid mixture, vibration isolator, piecewise linear nonlinear, spine line.

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Key words: oil depot, equipment, full lifecycle, management, information, systems, research and development, application

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Key words: oil product, vertical storage tank, high and low liquid level, safety, interlocking, alarm,

setting, discussion.

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17 Market Prospect Analysis of Distributed Methanol - to - Hydrogen Production Technology in Gas Station. Li Zhixuan.

Abstract: Taking the first integrated methanol - to - hydrogen production and hydrogen refueling station in China as an example, the distributed methanol - to - hydrogen production technology in gas station is briefly introduced, and the application prospect is analyzed. The distributed methanol - to - hydrogen production technology in the station is a technology based on methanol reforming to produce hydrogen. This technology uses the characteristics of high hydrogen yield and easy transportation of methanol to the hydrogen end. Methanol and water are used for reforming reaction under the action of catalyst to obtain mixed gases such as H₂, CO₂ and CO, and then hydrogen products with purity up to 99.999% are obtained after separation and purification. This technology has the advantages of simple equipment, convenient operation, wide applicability, safety and reliability, and is widely used in hydrogen production. This technology also has the advantages of reducing energy waste, environmental protection and energy conservation, significant economic benefits, high product purity, high production efficiency, stable and reliable operation, and simple operation, with broad market application prospects.

Key words: distributed methanol - to - hydrogen production technology, introduction, application, prospect, analysis.

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Abstract: The working principle and advantages of hydrogen fuel cells, as well as the overview of the development of domestic and foreign hydrogen refueling stations are briefly introduced. The difficulties faced by the current development of hydrogen refueling stations in China are analyzed, and the suggestions for promoting the development of hydrogen refueling station network are put forward; the first is to plan the layout of hydrogen refueling stations reasonably using local strong conditions; the second to coordinate layout of hydrogen refueling stations according to market demand; the third is to grasp the relationship between seizing the opportunity and emphasizing efficiency; the fourth is to choose on-site hydrogen production technology to reduce operating costs in areas with insufficient hydrogen resources. Large state-owned enterprises should play a leading and main role in promoting the construction of hydrogen refueling stations.

Key words: promotion, hydrogen refueling station, network, construction, suggestion.

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ature transmitter, online densimeter, which are required for accurate oil distribution in oil depots, are introduced and compared, and the main advantages and disadvantages, key points of selection and installation, and daily operation management requirements of these equipment are pointed out, which can provide a reference for the selection of accurate oil distribution equipment in oil depots.

Key words: oil depot, metering, oil distribution equipment, selection, installation, management.

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Key words: gas station, service, evaluation, system, construction, application.

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Key words: comprehensive energy station, construction, cost, precision, control, system, construction, digital, empowerment.

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Abstract: Taking Sinopec Heilongjiang Petroleum Product Company as an example, the functional deployment strategy of companies outside Sinopec's oil sales area is formulated by using the SWOT method. The competitive advantages of external companies are analyzed in terms of politics, economy, technology, and location (S). The inherent disadvantages of external companies are analyzed in terms of lack of oil sources and high marketing costs, insufficient deepening of sales networks and sound marketing methods, lagging performance management systems and incomplete incentive measures, low comprehensive quality of employees and lagging promotion technology, weak crisis awareness of employees, and one-sided understanding of crises (W). The practical opportunities for companies outside the region to play their functions are analyzed in terms of the differentiated, high-end and personalized customer needs, the need for market cultivation to implement the Northeast Area Revitalization Plan strategy, and the need to seize the opportunities when the new energy era comes (O). The potential threats to the functioning of companies outside the region are analyzed from the perspectives of continuous surge in new production capacity, continuous upgrading of regional competition, and complex operational risks (T). The strategies for leveraging the functions of companies outside the region are proposed; the first is to strengthen the construction of mechanisms and strengthen internal management; the second is to focus on shaping corporate culture and cultivating core value orientation; the third is to seize the construction of marketing networks and promote innovation in marketing models; the fourth is to focus on the role of the team and deepen the project of strengthening enterprises with talents; the fifth is to strengthen the integration of advantageous resources and promote the integrated development of the company.

Key words: Sinopec, sales enterprises, companies outside the region, functions, exertion, strategies, SWOT.

43 Exploration and Practice of Building a Comprehensive Service Body for Gas Stations. Huang Zhenhui

Abstract: The current situation, characteristics, and development trends of the domestic oil product retail market are briefly analyzed, and the definition of comprehensive service bodies for gas stations and the significance of building comprehensive service bodies for gas stations is pointed out. The overall ideas, development principles, and development strategy suggestions for building comprehensive service bodies for gas stations are proposed. From the aspects of project classification, building scale, layout mode, structural form, design form, and so on, the construction of gas station comprehensive service body of Sinopec Jiangsu Petroleum Product Company

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