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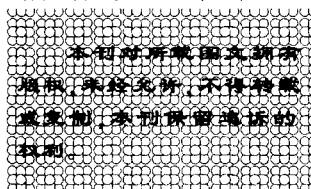
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目次

储运技术

- 1 加油站安全与环保设备集成的设计方案 邱明
- 4 油田原油密闭卸油的工艺技术
..... 王品贤 刘巨光 黄捷 付振林 梁晶晶

油气管道

- 7 武信成品油管道增设孝感混油罐分析研究 李鑫伟 韦克斌
- 12 油气站场可燃气体探测器标准体系的对比分析
..... 徐亮 袁思恩 马伟平

加气站

- 16 天然气加气站降本增效的措施 沈斌
- 21 国产LNG潜液泵和L-CNG高压柱塞泵的选型与应用
..... 陈子如 邓志晟 吴波 汪国洪

安全技术

- 25 山区油库防雷避雷的特点及防护 宋志强 张莹 张清民
- 27 成品油库紧急关断系统(ESD)设置的建议 孟静 张建宾

信息技术

- 29 智能化技术在石油库中的应用 陈良兴

数质量管理

- 32 车用汽油辛烷值下降的原因分析 王翔翀

安全管理

- 35 加油站防渗改造作业风险的控制 田红生

经营管理

- 39 大数据时代油品销售企业数据化运营体系的构建 刘立茹

报道及其他

- 20 《石油库与加油站》杂志2018年度合订本征订启事
- 26 2019年第2期广告目次
- 34 《生产安全事故应急条例》正式施行
- 38 中国石化安全理念、安全方针、安全目标
- 44 《石油库与加油站》杂志投稿须知



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Contents and Abstracts

STORAGE TECHNOLOGY

1 Integrated Design Scheme of Safety and Equipment for Gas Station. Qiu Ming

Abstract: In view of the fact that the safety and environmental protection equipments of gas stations have independent display terminals, which leads to waste of wiring and redundancy of alarms, as well as complexity of the project, increased investment and inconvenience of the operation and management personnel of gas station, a three - stage integrated design scheme of safety and environmental protection equipments for gas station is proposed. Three kinds of design options, i. e. multi - in - one integrated design of tank monitoring, integrated design of safety and environmental protection equipments, and integrated design of environmental protection system and gas station, are introduced, and the relevant improvement suggestions are put forward, which can provide reference for integrated design of safety and environmental protection equipment in gas stations.

Key words: gas station, safety, environmental protection, equipment, integration, design

4 The Process Technology of Closed Crude Oil Unloading in Oilfield. Wang Pinxian, Liu Jvguang, Huang Jie, Fu Zhenlin, Liang Changjing.

Abstract: Aiming at the problem that the open or semi - closed process is mostly used for oil unloading in oilfields at present, which cannot meet the requirement of pollutant discharge in national regulations, based on brief introduction of the open and semi - closed process of oil unloading, a fully closed process of oil unloading is designed in which the automatic start and stop of oil pump and fully automatic closed unloading can be achieved by using PLC to realize the PID closed - loop control of oil unloading process. Through the revamp of the unloading process in a combined station, a large amount of crude oil and natural gas can be recovered. The annual economic benefit is 1. 15 million Yuan with the payback period of 0. 79 years. It can not only meet the requirements of environmental protection, but also eliminate the potential safety hazards. At the same time, it reduces the waste of energy and achieves better economic and social benefits.

Key words: oilfield, crude oil, closed unloading process, introduction.

OIL AND GAS PIPELINE

7 Analysis and Research on Adding Transmix Tank in Xiaogan to Wuhan - Xinyang Oil Product Pipeline. Li Xinwei, Wei Kebin.

Abstract: In order to realize whole blending of transmix in Wuhan - Xinyang oil product pipeline, based on the brief introduction of the basic situation of the pipeline, the causes of transmix in sequential transportation of gasoline and diesel, and the formation process of transmix, by calculating the length of transmix and the amount of transmix to be treated, under the premise of ensuring the oil quality after adding transmix tank in Xiaogan station, the correct amount of transmix, the delivery proportion and the download amount of transmix in Xiaogan station and Xinyang station, and the certified oil required to realize whole blending of the transmix are obtained, which can provide guarantee for safe and efficient operation of pipeline and oil quality.

Key words: oil product, pipeline, transportation, transmix, blending, research.

12 Research on Standard System of Combustible Gas Detector in Oil and Gas Station. Xu Liang, Yuan Sien, Ma Weiping.

Abstract: In view of the disagreement of the standards on location, installation and maintenance of flammable gas detector in domestic oil and gas stations, the advanced experience of the products selection, location, alarm setting value, operation maintenance and training of flammable gas detectors in the United States, Canada and Russia are introduced, including the redundancy design used for the sensor of combustible gas detector in the important place of continuous monitoring, the set value for the first order alarm lower than 20% of LEL, the protection measures of the detector in complex places and bad climate conditions, and the replacement measures in the time of failure. Suggestions for improving the standards of domestic combustible gas detectors are put forward.

Key words: oil pipeline, station, flammable gas detector, standard, research.

GAS REFUELING STATION

16 Measures to Reduce Cost and Increase Efficiency of Natural Gas Refueling Stations. Shen Bin.

Abstract: Aiming at the problem that the cost increase of some gas refueling stations will affect the benefits of gas refueling stations because of inadequate management, based on the brief introduction of the technical characteristics and economy of three types of gas refueling stations, CNG, LNG and L - CNG, the cost reduction and efficiency improvement measures of CNG and LNG refueling stations are put forward respectively. For CNG refueling stations, the first is to select safe and

economical compressors; the second is to improve the automatic control devices to prevent leakage and accidents; the third is to improve the calibration management of refueling stations; and the fourth is to pay attention to equipment inspection. For LNG refueling station, the first is to minimize BOG (boiled off gas) production in unloading, storage, equipment management and process design; the second is to reduce loss by selecting cryogenic equipment and pipelines, optimizing refueling process and installing BOG recovery equipment. Practical cases showed that through the above measures, a remarkable result was achieved in reducing cost and increasing efficiency of gas station.

Key words: natural gas, gas refueling station, technical characteristics, economy, cost reduction and efficiency improvement, measures.

21 Selection and Application of Domestic LNG Submersible Pump and LCNG High Pressure Plunger Pump. Chen Ziru, Deng Zhisheng, Wu Bo, Wang Guohong.

Abstract: On the basis of a brief introduction of the present situation of LNG submersible pump and LCNG high - pressure plunger pump in domestic gas refueling stations, the main components, working principle, technological process and basic parameters of domestic LNG submersible pump and LCNG high - pressure plunger pump are emphatically introduced. The selection methods of domestic LNG submersible pump and LCNG high - pressure plunger pump are put forward respectively from the aspects of flow rate, head, net positive suction head and motor power. Through more than four years of safe operation, it has been proved that domestic LNG submersible pump and LCNG high pressure plunger pump have the characteristics of safety, reliability, high cost performance, low noise and wide adaptability, and can completely replace the imported similar products.

Key words: gas refueling station, domestic, LNG submersible pump, LCNG high - pressure plunger pump, type selection, application.

SAFETY TECHNOLOGY

25 Characteristics and Protection of Lightning for Oil Depot in Mountain Areas. Song Zhiqiang, Zhang Ying, Zhang Qingmin.

Abstract: In view of the complicated geological conditions, frequent lightning disasters and the rapid development of information construction in mountain oil depots, the characteristics, damage mechanism and protection of lightning disasters in mountain oil depots are analyzed. The measures and technological concepts of lightning protection technology in mountain oil depots are put forward, which can provide reference for lightning protection in mountain oil depots.

Key words: mountain area, oil depot, lightning protection, measures, introduction.

27 Suggestions on Setting up Emergency Shutdown

(ESD) System for Oil Depots. Meng Jing, Zhang Jianbin.

Abstract: Due to the lack of safety control system and instrument design requirements in the current oil depot design specifications, the safety control and process control are usually combined, the safety functions are implemented in PLC of process, emergency shutdown (ESD) system is not established separately, and there is no independent hierarchical shutdown control in the actual operation of the oil depot. So, the potential safety loopholes exist, which can easily lead to the expansion and spread of accidents. The suggestion is put forward that the emergency shutdown system of oil depot should have three levels, such as the whole reservoir area, region and equipment, and sequential shutdown, which provides ideas for the design of emergency shutdown system of oil depot.

Key words: oil depot, emergency shutdown system, hierarchical shutdown, sequential shutdown, setting, suggestions.

INFORMATION TECHNOLOGY

29 The Application of Intelligent Technology in Oil Depot. Chen Liangxing.

Abstract: Due to the relative independence of information construction and application among some oil depot departments, the functions of information is restricted. It was proposed that the integration technology should be used to realize the intercommunication among various professional systems, strengthen the application of automation and intelligent equipments in oil depot, and thus construct a comprehensive intelligent oil depot information platform with the functions of business monitoring, intelligent control, integrated application, and intelligent analysis. The realization goal, construction principle, main functions and architecture of the system were introduced, which could provide a reference for the construction of intelligent oil depot.

Key words: oil depot, information technology, intelligentization, platform, construction, application.

QUANTITY AND QUALITY MANAGEMENT

32 Cause Analysis on Octane Number Decrease of Vehicle Gasoline. Wang Xiangchong.

Abstract: According to the relevant standards, using octane number machine, density analyzer, gas chromatograph and automatic atmospheric distillation equipment, the reasons causing unqualified octane number of #95 and #92 vehicle gasoline samples from three refineries were tested and analyzed. The results show that the unqualified octane number of gasoline samples is due to the high content of components below C5 (C5 -) in gasoline samples, which is easy to volatilize during storage and transportation, and result in azeotropic volatilization of MTBE and C5

hydrocarbon; the vehicle gasoline is liable to decompose in sun exposure and the samples are usually stored in colorless transparent glass bottles. It is suggested that refineries should control the content of C5 - components and the density of vehicle gasoline, and the gasoline samples collected in the quality control room should be kept away from light.

Key words: vehicle gasoline, octane number, decrease, cause, analysis, countermeasures.

SAFETY MANAGEMENT

35 Risk Control of Anti - Seepage Modification of Gas Station. Tian Hongsheng.

Abstract: The corresponding operational risk control measures are put forward for different operation links of the current anti - seepage modification project of gas stations. In the admission link: the first is to carefully verify the qualifications of admission personnel; the second is to improve the training and assessment of admission personnel; the third is to conduct emergency drills; the fourth is to carry out the safety disclosure; the fifth is to carry out the second (day - to - day) safety disclosure. The main contractor and the tank cleaner should cooperate with each other to strictly forbid for one party to clean the tank and the other party to perform hammering and welding operations. In the tank cleaning link: the first is to conduct the flammable gas detection, ventilation, inspection of prohibited items when entering restricted space; the second is to ensure the safety of compressor vehicles. In the process of excavation and hoisting of old oil tanks, the nitrogen injection, dynamic soil excavation, hoisting and transportation of old oil tanks should be perfected. Electricity and fire should be used safely in the installation of new oil tanks and pipelines.

Key words: gas station, oil tank, anti - seepage transformation, operation, risk, control.

OPERATION MANAGEMENT

39 Construction of Data Operation System for Oil Sales Enterprises in Big Data Era. Liu Liru.

Abstract: Facing with the arrival of big data era, taking the e - commerce business of oil sales enterprises as an example, the construction of closed - loop process of data operation is proposed from six aspects, viz. , clear objectives, formulation of data indicators, data extraction and cleaning, data modeling and analysis, formation of relevant suggestions, and verification, optimization and promotion. The whole construction scheme, including the main contents of constructing user portrait and constructing closed - loop intelligent operation are introduced in detail, which can provide a reference for oil sales enterprises to construct a data operation system.

Key words: oil sales enterprises, big data, operation system, construction.

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