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石油库与加油站

SHIYOUKU YU JIAYOUZHAN

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Contents and Abstracts

Abstract: In order to solve the problems of continuous repeated alarm and a large number of false alarms in leakage detection of oil product pipeline, a clustering algorithm model of oil product pipeline based on big data clustering algorithm is proposed. Taking Hunan oil product pipeline as an example, through simulating the changing law of outlier coefficient under different working conditions using big data, the outlier coefficient threshold is summarized, and the threshold under different working conditions is set up to improve the accuracy of oil product pipeline leakage detection.
Key words: petroleum, oil product, pipeline, leakage, detection, big data, clustering algorithm, application.

Abstract: In view of the problems existing in the traditional video monitoring system, such as the need for fixed personnel on duty and unavoidable monitoring loopholes, the construction of an intelligent identification management system for waterfront gas station is proposed. The overall design principle, management system architecture, main functions and practical application of the intelligent identification management system of the waterfront gas station are introduced. Through the application of the system, the intelligent safety supervision of the station is realized, the work efficiency and safety management level are improved, the labor cost is reduced, and the safe production and operation is guaranteed.
Key words: waterfront gas station, safety, management, intelligent identification technology, construction, application.

Abstract: In view of the problems of relevant equipment gradually added in gas stations to meet the needs of operation, safety and environmental protection that the functions and roles are overlapping, relevant data cannot be networked, communication interface standards are not unified, data can only be uploaded, and equipment early warning depends on manual solution, the design scheme of gas station internet of things (SIOT) is proposed, and the system structure of SIOT is introduced. Through internet of things (IOT) technology, using edge computing, combined with big data and artificial intelligence (AI) technology, some manual judgment and operation work are transferred to the interworking and interaction between equipment, so as to realize the high integration, comprehensive display, interconnection, linkage between equipment, comprehensive monitoring of equipment at the management end, remote management and distribution of equipment parameters and the unification of equipment data interface.
Key words: gas station, equipment, internet of things, information, system, program, design.

SAFETY TECHNOLOGY

Abstract: In view of the low automation level of the firefighting system of a large oil product depot, in which the relevant valves need to be opened manually, affecting the initial fire extinguishing, the integrate transformation of the automatic firefighting system is implemented. By means of automatic control and communication technology and database technology, the fire water and foam system, combustible gas alarm and manual alarm system are integrated through the Internet, and using the advantage of the support of industrial field configuration software for relevant equipment and protocols, the functions including support of multiple protocols, field equipment communication, real-time data acquisition and control are realized, which can meet the requirements of rapid and accurate disposal in daily firefighting and emergency state of oil depot. At the same time, the causes of false alarm and failure of pneumatic valve in the early stage of system operation are analyzed, and the corresponding disposal measures are put forward to ensure the normal operation of the system.
Key words: oil depot, firefighting, automation, system, integration, maintenance.

GREEN ENERGY

Abstract: The hydrogen production methods are briefly introduced, including hydrogen production from fossil fuel, industrial by-product, water electrolysis, and new methods such as water photolysis and biomass, and five hydrogen purification methods including condensation - low temperature adsorption, low temperature absorption - adsorption, pressure swing adsorption, palladium membrane diffusion and metal hydride separation are described. The relative standards of hydrogen used in proton - exchange membrane fuel cell (PEMFC) are compared and analyzed. The influence of total sulfur, carbon monoxide, formaldehyde and formic acid, total halide, ammonia, carbon dioxide, water, total hydrocarbon, oxygen, particulate matter, nitrogen, argon, helium and other impurities in hydrogen on the quality of hydrogen used in PEMFC as well as the effects of nitrogen oxides, sulfur oxides, ammonia, carbon monoxide and other pollutants in the air on PEMFC are presented, which can provide the basis for the quality control of hydrogen used in PEMFC.
Key words: proton - exchange membrane, fuel cell, hydrogen, quality, control.

SAFETY MANAGEMENT

Abstract: From the aspects of construction, engineering and supervision personnel, safety protection appliance and construction machines and tools, safety education and training and safety examination, high-risk operation management, new energy business development, and contractor assessment, etc., the problems existing in the safety management of gas stations construction are pointed out, and the corresponding solutions are put forward, such as strengthening the personnel management of construction, engineering and supervision units to improve admission control, ensuring that safety protection appliance and construction machines and tools can meet the field safety requirements, carrying out targeted safety

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