Modular Construction and Standardization of CNG and LNG Filling Stations Exploration and Practice of Operation Management

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Abstract. With the rapid development of the natural gas industry, it gradually replaces oil fuel and penetrates into all fields of production and life. In view of the current huge energy demand, Huagang Group must accelerate the construction of CNG and LNG filling stations, reduce the construction and production operation costs, shorten the investment recovery cycle, and improve the management of gas business from fine management in order to occupy a place in the gas market. Level and social competitiveness, fundamentally eliminate the safety hazards of high-risk gas companies, and explore a standardized and efficient operation mode in modular construction and standardized operation management.

Introduction

With the expansion of natural gas West-East Gas Transmission Project, natural gas has become increasingly mature after decades of development and application technology due to its low cost, high efficiency, no pollution, safe use, convenience and speed. The use of compressed natural gas in urban taxis and buses has been popular in large and medium-sized cities at home and abroad. In addition, under the impetus of the accelerated development of LNG receiving projects such as Guangdong Dapeng, Jiangsu Rudong LNG and Tangshan Caofeidian, the construction of CNG has been initiated in China. The climax of automobile refueling stations and the application of natural gas in China have entered a new stage of development. To this end, natural gas is increasingly recognized as a clean energy source.

Under the increasingly fierce market competition and the current huge energy demand, Huagang Group urgently recognizes that if the company wants to occupy a place in the gas market, it must use the wholesale and retail of CNG and LNG as the gas of Huagang Company. The main direction of business development and important economic growth points, only to explore a standardized and efficient operation mode in modular construction and standardized operation management, can accelerate the construction speed of CNG and LNG filling stations and improve the construction capacity of stations.

The Main Measures and Practices

Establish a Network System for Modular Construction and Standardized Operation Management Institutions of CNG and LNG Filling Stations

First, the Huagang Group established a leading group. The second is to establish a corresponding management system of “horizontal to the side, vertical to the end”. The third is to clarify the safety management objectives of each department in the modular construction and standard operation management of CNG and LNG filling stations, and establish a safety management system from the manager of production and operation to the specific execution operator of production and operation, thus CNG and LNG. The modular construction of the gas station and the standardized operation management provide a strong guarantee.
Standardization of Function Setting and Equipment Selection for CNG and LNG Filling Stations

First, Huagang Group classifies CNG and LNG refueling stations according to the different scales of the CNG and LNG wholesale and retail sales markets of each company and the characteristics of the geographical location. The equipment management center carries out equipment according to various types of station functions. Standardized configuration. Second, the selection of various types of station equipment also strives to standardize, that is, equipment with the same function and the same processing capability, functional configuration, specifications, models and brands strive to be unified.

Optimization, Simplification and Standardization of CNG and LNG Filling Station Process and Station Control System Design

According to the construction plan of CNG and LNG refueling stations of different levels and functions of Huagang Group, the company's engineering design management center and the engineering design company signed the design contract for CNG and LNG refueling stations, and submitted the installation foundation map and nozzle orientation of the relevant equipment. The design information required for installation of equipment such as dimensional drawings and electrical instrument control charts is given to the engineering design company. The engineering design company designs the gas station according to the relevant specifications of CNG and LNG gas station design. Before the blueprint of the project construction, the engineering design management center of Huagang Company organizes relevant departments to review the design drawings and strive for CNG and LNG filling stations. The design process, control simplification, optimization, the same function, the same level of CNG, LNG filling station construction drawing final solidification, that is, standardization. In the future, when the same function and the same level of CNG and LNG filling stations are constructed, a large amount of design time can be saved, and the completion time of the project is also greatly advanced. At the same time, when signing a design contract with an engineering design company, the amount of payment is also greatly reduced, saving a large amount of design costs.

Bulk Purchase of CNG, LNG Filling Station Equipment and Construction Materials

According to the construction plan of CNG and LNG refueling stations of Huagang Company, the company's material management center organized a unified bidding for equipment and construction materials of the same specifications and types of CNG and LNG refueling stations, and purchased them in bulk, saving large purchase costs.

Materials Standardization of Installation and Construction of CNG and LNG Filling Stations

According to the standardized construction blueprint, the engineering management department of Huagang Company can organize the construction team to carry out the civil engineering and steel structure of CNG and LNG filling station equipment foundation, pipe trench, cable trench, station house, station ground hardening, gas filling shed and so on. Prefabrication of construction and process pipelines as well as laying of power cables and control signal cables. Once the equipment is in place, the welding of equipment process nozzles and the wiring of equipment power cables and control signal cables can be carried out. Based on the standardization of the construction blueprint, there are basically no design changes.

Materials Standardization of Production and Operation Management of CNG and LNG Filling Stations

Organized by the production and operation management department of the company, the management departments of safety and equipment cooperate to carry out the standardization construction of production and operation management of CNG and LNG filling stations: First, establish various post responsibility systems such as stationmasters, safety officers and refueling workers; The second is to establish various types of equipment, especially special equipment
management accounts and continue to dynamic management; the third is to develop major equipment operation and maintenance procedures and regular inspection charts, lubrication charts and "CNG car refueling", "CNG skid refueling" Key operating cards such as "LNG unloading" and "LNG saturation", only the specified actions to eliminate the optional action to ensure safety; Fourth, the establishment of CNG, LNG gas station sales gas IC card management system, and through the station control system, communication The system is connected to the headquarters of Huagang Company.

The Implementation Effect

The Business Benefit

First, many oilfield brothers have come to Huagang Company to learn from the classics. Second, many excellent CNG and LNG equipment manufacturers at home and abroad signed a strategic cooperation agreement with Huagang Company. The third is the downstream users and market of CNG and LNG of Huagang Company. The development achievements are outstanding and the prospects are bright.

The Social Benefit

First, as more and more CNG and LNG refueling stations of Huagang Company are completed and put into operation, more and more oilfield unemployed people and other social personnel's employment problems can be solved, and the contribution to oilfield and even social stability is immeasurable. Second, as more and more enterprises and individuals use low-carbon, environmentally-friendly clean fuel gas, our sky will become more and more blue, the air will be more and more fresh, and the quality of life and happiness index will be higher.

Conclusion

Huagang Company has established a complete set of CNG and LNG station construction control mechanism from equipment selection, material procurement to efficient operation of design, construction and production operation. While saving a lot of engineering construction and operating costs, the project construction The efficiency has been greatly accelerated, the safety hazards have been eliminated, and the comprehensive benefits and social benefits of the company have been created to create the “Huagang Gas” brand and enhance the competitiveness of the company.

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