

The study application of the complete set of technology of the industrialization of the methanol gasoline

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Abstract: The methanol gasoline has been a kind of clean substitute fuel. It is magnificent feat for increasing environment benefit and the comprehensive utilization of the resource in world. Now the methanol fuel is being industrialized. The important problems which should be studied are listed as follow. The technology of prepare; the design and actualize technology of production, service, conception and trademark; The standard of complete set of technology of the industrialization of the methanol fuel; The study on the problem of adaptability between fuel, automobile and the system of transport and confect; The policy and regulations. The complete set of technology of the industrialization of the methanol fuel is consisted of the study on these five special topics. All these topics are studied and applied. The methanol fuel has been spread in Shanxi for 3 years. About 100,000 tons of the methanol fuel has been applied to about 5 million automobiles.

Key words: methanol gasoline; industrialization; alternate fuel; standard; adaptability

The methanol gasoline has been a kind of clean substitute fuel. It is magnificent feat for increasing environment benefit and the comprehensive utilization of the resource in world. The methanol gasoline is made by adding some denatured fuel methanol into blending component gasoline of methanol gasoline for motor vehicles. It can be used alone or with gasoline. The engine need not be changed when using methanol gasoline. Now the methanol fuel is being industrialized. There are some important problems should be studied.

1 The technology of prepare

1.1 The technology of preparing denaturant

The polarity of methanol is very strong. The dissolution between methanol and

gasoline is impacted by quantity of methanol, water, component and temperature, et al. By using denaturant the dissolution will be better. The denaturants used often are cymene and isobutyl alcohol. Now the performance of denaturant studied by Huadun is good and the methanol will not cause delamination and emulsification under the temperature -30° in laboratory within 48 hours.

1.2 The technology of preparing denatured fuel methanol

1.2.1 The prepare of denaturant

Add chemicals which are used to prepare denaturant into the stirring vessel according to process conditions. Cool them to some temperature and keep this temperature. After mixing round them add into another chemical, then heat the denaturant to some temperature and mix round. When the liquid become transparent, the liquid is the denaturant.

1.2.2 The prepare of denatured fuel methanol

Add the methanol and the denaturant into the stirring vessel. By using circulating pump mix round them, then deposit this liquid. Now the denatured fuel methanol is prepared.

1.3 The technology of preparing the methanol gasoline

Add the denatured fuel methanol and the blending component gasoline of methanol gasoline for motor vehicles according some proportion into the stirring vessel. By using circulating pump mix round them, then the methanol gasoline is prepared. The chart of the technology of preparing the methanol gasoline is following.

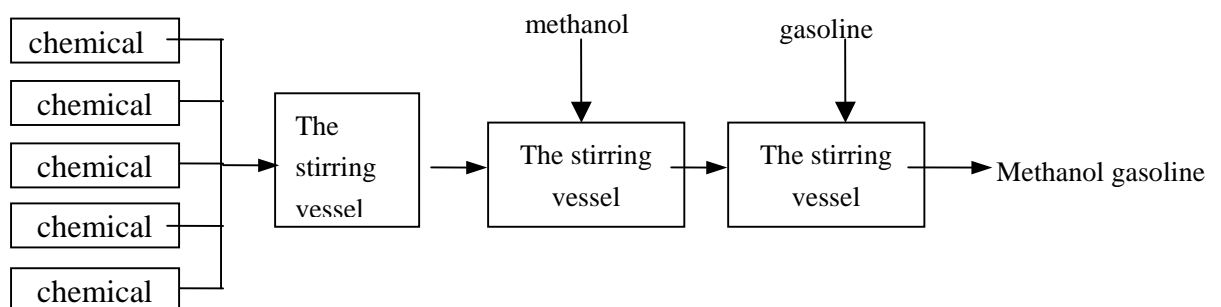


Chart 1 The technology of preparing the methanol gasoline

1.4 The process conditions technology of preparing equipment

There are three ways of preparing methanol gasoline. They are spurt prepare, tank car prepare and pipeline prepare.

The spurt prepare is adding the denatured fuel methanol and the blending component gasoline of methanol gasoline for motor vehicles into the tank car at the same time. The methanol gasoline is prepared in the process of car loading. The way used in the 1980's.

By using the way of pipeline prepare, the denatured fuel methanol and the blending component gasoline of methanol gasoline for motor vehicles are mix under the control of computer in the pipeline. This way is easy to control and the precision is high.

If the way of tank car prepare is selected, the blending component gasoline of methanol gasoline for motor vehicles is added into the tank car, then the denatured fuel methanol is added into according to some proportion. The prepare are completed in the process of transportation. This way does not need change the existing equipment. This way is selected in preparing the methanol gasoline in Shanxi province now.

2 Product service concept brand

To research and utilize a new technology, it is very important that both the software and hardware should be developed adaptively. In methane gasoline industrialize technology development, the research object including synthetically studying planning and implementing all of the items that can be involved in the generalize process, and the final goal it to achieve the standardized refined application of this technology. After three years practice and further research, we have basically concluded the frame of this project's sub-item, and made it the foundation of our further development:

1 product: the methanol gasoline for vehicle use

2 service: there was never a satisfying service yet we just keep trying hard

3 concept exceeding unlimited creation brand team unlimited development
4 brand: Huadun

3 Set up the industrialization standard

a standard is definitely necessary to ensure the methanol gasoline's production quality control, meanwhile standardization is also a key point for applying the permission to launch to market, the methanol gasoline's development called for the establishment of the relevant standard in this industry. A standard can enhance the clients, engine manufacturer and other correlative groups' confidence, not to mention the profits it brings to the economy health and environment, thus it would undoubtedly became a milestone in the industrialization process.

The standard of the methanol fuel in Shanxi is being constituted in industrialization of the methanol gasoline. In 2002 *<M5, M15 the methanol gasoline for vehicle>* and *<fuel methanol for vehicle>* are issued. In 2005 some other standards are constituted and will be issued in September 2005. They are *<Denatured fuel methanol>*, *<Methanol gasoline for motor vehicles>*, *<Blending component gasoline of methanol gasoline for motor vehicles>*, *<Methanol diesel oil for diesel motor>*, *<The security regulation of methanol fuel>* and *<The supplemental provisions of <The design specification of oil depot> for prepare establishment of methanol gasoline for motor vehicles>*. All these standards will help the industrialization of the methanol gasoline.

4 The study on the problem of adaptability between fuel, automobile and the system of transport and confect

There are some problems in the process of the industrialization of the methanol gasoline, such as cauterization of material, air lock, startup in low temperature, the drive and oil wear and so on. All these problems affect the industrialization of the methanol gasoline. the problem of adaptability between fuel, automobile and the system of transport and confect should be studied. Huadun has taken some

achievement and the performance of methanol gasoline is better.

5 The policy and regulations

As the methanol gasoline is a new form energy source, support and adaptation from the government's policy have crucially influenced its development. Since 2002, the methanol fuel started its testing generalization in the city of Taiyuan Yangquan Linfen Jincheng in Shanxi province under the precondition of the document NO.54 [2002] that was released by the Shanxi provincial government office. The document specified the four cities as the testing area, listed all the authorized suppliers and set up encouraging policies. A series relevant policies and laws have been established under the cooperation of so many departments, so far three documents have been made from the Shanxi provincial government office.

Policies can only be and should be improved after test run, before any further practice. That's so called practice is the only way to prove the theories. Today's prosperity of this industry due to the impulse that was give by the government and the enthusiastic participation of all the enterprises during the almost three years testing generalization.

6 Conclusion and prospect

The #5 subject discussed above build up the main truss of the methanol gasoline industrialization technology. Through further research and practice, the methanol gasoline industry has gained some achievements in Shanxi province. During its three-years-testing generalization, 100,000 tons of the methanol gasoline has been sold, 5,000,000 times vehicle injections has been done. With the effort from every department, we believe there is a brighter future ahead.