

中国甲醇燃料及甲醇汽车 产业化应用概况

Methanol Fuel and Vehicles in China An Overview of Industrial Applications

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The China Association of Alcohol & Ether Fuel and Automobiles



中国甲醇燃料及甲醇汽车 产业化应用概况

China Methanol Fuel and Vehicles Industrial Application Profiles

一、产业化发展意义

The Significance of the Industrial Development

二、甲醇燃料产业化应用

Industrial Applications of Methanol Fuel

三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation



一、产业化发展意义

The Significance of the Industrial Development

一、产业化发展意义

- ◎ 满足交通用油持续增加和汽车工业可持续发展需要。

Meet the needs of the for sustainable development for automotive industry and increasing oil consumption of transportation.

- ◎ 汽车产销量居世界第一位。

The world's largest country in automotive production and sales.

- ◎ 2013年石油消费同比增长2.2%，成品油同比增长2.9%，成品油及润滑油消费量相当石油进口量。

In 2013, oil consumption increased 2.2%, refined oil increased 2.9%. The amount of refined oil and lubricant oil is equivalent to the oil imports.

- ◎ 预计2020年汽车保有量超过2.6亿车辆，成品油消费5.3亿吨。

Expected car ownership will exceed over 260 million and refined oil consumption will reach 530 million tons by 2020.



一、产业化发展意义

The Significance of the Industrial Development

◎ 发挥能源资源优势

Exert the advantages of domestic energy resources

◎ 煤炭在能源生产及消费结构中占近70%。

Coal accounts for nearly 70 % of in both energy production and consumption structure.s

◎ 现代煤化工技术可以有效清洁利用资源,降低CO₂排放。

Modern coal chemical technology can effectively utilize the resources and reduce CO₂ emissions.

◎ 甲醇作为能量载体,易于储存、携带、进口。

Methanol is easy to store, carry and imports as an energy carrier.

◎ 甲醇作为车用燃料,资源具有可持续性。

The resources is sustainable for methanol as a vehicle fuel.



一、产业化发展意义

The Significance of the Industrial Development

- ◎ 利用现有交通能源体系

Utilize of existing transportation and energy system

- ◎ 内燃机汽车具有成熟技术。

Inner combustion engine vehicles have mature technology.

- ◎ 利用成品油储存、输配及加注设施。

Use of existing oil products storage, distribution and refueling facilities.

- ◎ 引用成品油和汽车法律法规、标准规范。

Referring to the standards, specification, laws and regulations of refined oil and cars.

- ◎ 利用成品油和汽车试验检验技术条件。

using the experiment and test techniques of refined oil and automotive.



一、产业化发展意义

The Significance of the Industrial Development

- ◎ 改善汽车排放对大气环境影响

Improving the impact of car emissions to the atmosphere

- ◎ 常规污染物排放: **Conventional pollutant emissions**

CO降低25%以上; HC降低10%以上; NO_x降低10%。

CO reduced by more than 25%; HC reduced by more than 10%; NO_x is reduced by 10%.

- ◎ 芳烃污染物排放: **Aromatic hydrocarbon emissions**

苯降低28%以上; 甲苯降低35%以上。

Benzene reduced by more than 28%; Toluene reduced by more than 35%.



一、产业化发展意义

The Significance of the Industrial Development

- ◎ 改善汽车排放对大气环境影响

Improving the impact of car emissions to the atmosphere

- ◎ 颗粒物排放: **Particulate matters emissions**

质量下降70%以上，数量下降50%，直喷车显著。

Reduced more than 70% by mass, reduced 50% in number, especially for GDI cars

- ◎ 甲醇在专用车上燃用，排放更优越。

Superior emissions on the dedicated methanol vehicles.

CO: 0.6g/km; HC: 0.05g/km; NOx: 0.05g/km。



一、产业化发展意义

The Significance of the Industrial Development

- ◎ 提高能源效率，降低燃料费用

Improve energy efficiency and reduce fuel cost

- ◎ M15甲醇汽油与空气混合热值与汽油与空气混合热值相当，替代比不超过1.02%。

The heat value of M15 methanol gasoline mixed with air equivalent to that of gasoline and air mixture, and the replacement ratio isn't more than 1.02%.

- ◎ 甲醇辛烷值高于汽油，提高压缩比，燃烧充分，M100甲醇燃料功率增加5%，替代比1.6。

Methanol has a higher octane number than gasoline, which can increase compression ratio, make burning fully. M100 can increase power of 5%, and the Replacement ratio between Methanol and gasoline is 1.6.



一、产业化发展意义

The Significance of the Industrial Development

- ◎ 提高能源效率，降低燃料费用

Improve energy efficiency and reduce fuel cost

- ◎ 1.5升甲醇汽车平均耗M100甲醇燃料15.4升，售价0.4美元/升，百公里燃料费用6.16美元，较汽油降低48%。

The average fuel consumption of a 1.5 liters displacement car is of M100 15.4 L/100km, the price of which is \$ 0.4 / liter, and the fuel costs is \$ 6.16/100km, Which is 48% lower than gasoline.

- ◎ M100甲醇燃料价格500美元。

The price of M100 methanol is \$ 500 per ton.



一、产业化发展意义

The Significance of the Industrial Development

- ◎ 前期由国家组织技术研发、课题研究和示范工程。

Early stage Technical R & D, research and demonstration projects were carried out at by the national government.

- ◎ 期间开发甲醇汽油应用技术、甲醇汽车改装技术；开发添加剂、专用耐醇部件和专用润滑油。

Methanol gasoline and methanol car modification techniques developed; fuel additives, alcohol-resistant parts and dedicated lubricants.

- ◎ 期间开展中美、中德合作。

Sino-US and Sino-German cooperations.

- ◎ 目前甲醇汽油产业化示范由地方政府推进，甲醇汽车试点运行由工信部组织。

Currently methanol-gasoline industrialization demonstration is promoted by local governments and the Methanol auto motives pilot is organized by MIIT



二、甲醇燃料产业化应用

Industrial Applications of Methanol Fuel

- ◎ 产业化发展路线：一低一高，替代汽油为主。

Industrial development of solutions: low and high concentrations, alternative to gasoline.

- ◎ 低比例甲醇汽油在现有车辆上燃用，燃料适应车辆。重点解决分层、气阻、腐蚀溶胀等应用技术问题，必须使用添加剂。

Low concentration: methanol gasoline targets existing vehicles. Separation, air resistance, corrosion, swelling and other applications technical problems are solved, additives are necessary.

- ◎ 高比例甲醇燃料在专用车辆上使用，汽车适应燃料。汽车重点解决冷启动、润滑、耐醇材料及零部件、尾气催化净化等技术问题。具有替代量大、燃料更经济、排放更清洁、适应性强等优势。添加剂起改善作用。

High concentration: dedicated. Focus on solving the cold start, lubrication, alcohol-resistant materials and components, exhaust catalytic treatment issues. Advantages are bigger replacement ratio, better economy, cleaner emissions, stronger adaptability. Additives can improve the performance.



二、甲醇燃料产业化应用

Industrial Applications of Methanol Fuel

- ◎ 2013年甲醇直接用于车用、民用、工业燃料430万吨。

In 2013, the total consumption of methanol fuel in car, civil, industrial areas was 4.3 million tons.

- ◎ 2013年二甲醚生产消耗甲醇670万吨，用于替代LPG。

In 2013, about 6.7 million tons of methanol was used to product DME as an alternative to LPG.

- ◎ 4个省级政府组织M15甲醇汽油试点示范工作，6个省级政府推进相关工作。

Four provinces have carried out pilot work of M15 methanol gasoline, six provinces are working on the preparation.

- ◎ 15个省市企业进行甲醇汽油和甲醇燃料生产销售。中国化工和延长石油等大型国有企业开展相关工作。

Methanol gasoline and methanol fuel are sold in 15 provinces and. State-owned enterprises CNCC and Yanchang Petroleum have carried out related work.



二、甲醇燃料产业化应用

Industrial Applications of Methanol Fuel

- ◎ 已建立技术保障体系。

A technical support system has been established

- ◎ 30余家高校研究单位开展技术研发和检测试验工作。

More than 30 university, research units are carrying out R & D and testing work.

- ◎ 成立全国醇醚燃料标准化技术委员会。

National Standardization Technical Committee on Alcohol and Ether Fuel.

- ◎ 企业技术中心与高校研究单位长期合作，建立技术创新和技术服务平台。

Long term cooperation between enterprises and universities, creating a technical innovation and service platform.



二、甲醇燃料产业化应用

Industrial Applications of Methanol Fuel

- ◎ 已颁布国家标准2项：《车用燃料甲醇》和《车用甲醇汽油（M85）》

Two promulgated national standards : "vehicle fuel methanol" and "Methanol gasoline(M85) for motor vehicles"

- ◎ 在研国家标准3项：《车用甲醇汽油（M15）》、《车用甲醇汽油中甲醇检验方法》和《车用甲醇汽油添加剂》

Three being studied national standards:" Methanol gasoline(M15) for motor vehicles ", " Methanol test methods of methanol gasoline for motor vehicles " and " methanol gasoline additives for motor vehicles "



二、甲醇燃料产业化应用

Industrial Applications of Methanol Fuel

- ◎ 在研能源标准2项。

2 ongoing energy standards.

- ◎ 19个省市区颁布37项地方标准。

37 standards promulgated in 19 provinces and municipalities

- ◎ 标准包括产品质量、生产工艺、加注站等技术标准和管理标准。

Standards include technical standards and management standards of product quality, production technology, refueling station.



二、甲醇燃料产业化应用

Industrial Applications of Methanol Fuel

- ◎ 2013年，甲醇产能5696万吨，产量3585万吨，过剩产能可替代2000万吨石油。

In 2013, the production capacity of methanol is 56.96 million tons in China, the production of methanol is 35.85 million tons. Excess methanol capacity can replace 20 million tons of oil.





二、甲醇燃料产业化应用

Industrial Applications of Methanol Fuel

◎ 已建成10万吨以上调配基地43座，能力超过1100万吨。

43 blending facilities built with more than 100,000 tons blending capability each, total over 11 million tons in sum.





二、甲醇燃料产业化应用

Industrial Applications of Methanol Fuel

◎ 已投入使用加注站超过1500座。

More than 1500 refueling stations have been put into use.





三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation

- ◎ 2005年起，中国开始甲醇汽车研发工作。

Since 2005, China began the R&D of methanol vehicles.

- ◎ 完成发动机、燃料供给系统、排气系统、电控系统等技术开发。

Completing the technical development of engine, fuel supply system, exhaust system, electric control system.

- ◎ 完成发动机强化耐久、整车道路可靠性、排放等试验。

Completing tests of engine durability, reliability and road vehicle emission tests.

- ◎ 已有14款甲醇汽车，包括轿车、载重车、轻型厢式货车、公交车等，8家车企生产。

Now there are 8 manufacturers and 14 models of methanol vehicles, including cars, trucks, light vans, buses etc..



三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation

高温、高原、高寒地区试验

High-temperature, high altitude, alpine region tests





三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation

发动机强化耐久试验

Engine durability test





三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation

整车道路可靠性及排放试验

Road vehicle reliability and emission test





三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation

甲醇商用车装配及路试

Methanol commercial vehicle assembly and road test





三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation

吉利M100甲醇轿车

山西成功M100甲醇多用途乘用车

Geely M100 methanol cars

VICTORY GROUP M100 methanol utility vehicles





三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation

通家甲醇多用途乘用车



吉利甲醇出租车





三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation

一汽集团M85甲醇轿车

FAW M85 Methanol cars



华晨汽车灵活燃料轿车

Brilliance flexible-fuel cars





三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation

陕重集团甲醇/柴油双燃料载重车

中国重汽甲醇/柴油双燃料载重车

SHACMAN Methanol / diesel dual fuel truck

CNHTC Methanol / diesel dual fuel truck





三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation

郑州宇通M100甲醇公交车

YU TONG M100 methanol buses



一汽解放M100甲醇载重车

FAW JIEFANG M100 methanol buses



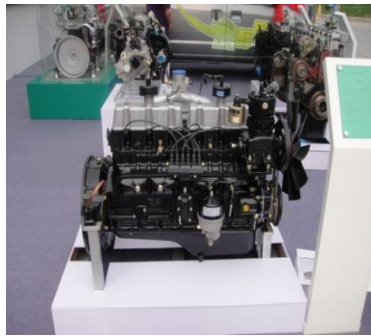


三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation

一汽靖焱M100甲醇发动机

FAW JingYe M100 methanol engines





三、甲醇汽车研制及试点运行

Methanol Vehicles Research and Pilot Operation

- ◎ 2012年工信部组织甲醇汽车试点工作。

In 2012, MIIT started Methanol vehicle pilot.

- ◎ 完成全面评价、建立标准、制定政策等工作。

Complete the work of comprehensive assessment, the establishment of standards, policy formulation etc.

- ◎ 试点地区涉及5个省市的11个城市。

Pilot areas involving 11 cities in five provinces .

- ◎ 计划试点运行甲醇汽车2385辆，包括各种车型。

Pilot planning to run 2385 methanol vehicles, including various models.

- ◎ 已在6个城市投入运行车辆407辆。

407 methanol vehicles have been put into operation in 6 cities.

- ◎ 2015年5月山西省晋中市将最早完成试点运行。

Jinzhong City, Shanxi province, is the first one to complete the pilot by may of 2015.



谢谢聆听！

Thanks for listening!

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