

IEA-Advanced Motor Fuels ANNUAL REPORT 2020

China



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Drivers and Policies

The Goal of Carbon Neutrality

On September 22, 2020, President Xi Jinping delivered an important speech at the general debate of the 75th United Nations General Assembly: The Paris Agreement represents the general direction of the global green and low-carbon transformation, and it is necessary to protect Earth. Countries must take a decisive step. China will increase its contribution, adopt more powerful policies and measures, strive to reach the peak of CO₂ emissions before 2030, and strive to achieve carbon neutrality before 2060.

The Development Plan for the New Energy Vehicle Industry (2021-2035)

In October 2020, the State Council issued the “Notice on Printing and Distributing the Development Plan for the New Energy Vehicle Industry (2021-2035),” which will adhere to the development direction of electrification, interconnection, and intelligence. China will further implement the national strategy for the development of new energy vehicles (new energy vehicles refer to battery electric vehicles, plug-in hybrid electric vehicles and fuel cell electric vehicles). A development vision was put forward: by 2035, battery electric vehicles will become the mainstream of new vehicles; public vehicles will be fully electrified; fuel cell electric vehicles will be commercialized; and the hydrogen fuel supply system will be steadily advancing; which will effectively promote energy conservation and emission reduction and improve the efficiency of social operations.

Technology Roadmap for Energy-Saving and New Energy Vehicles (2.0)

The “Technology Roadmap for Energy-Saving and New Energy Vehicles (2.0)” was issued in October 2020. It put forward goals for the development of China’s automobile industry in 2035. The carbon emissions of the automobile industry will peak ahead of the national carbon emission reduction commitments around 2028, and by 2035 the total carbon emissions will be reduced by more than 20% from the peak. The technology roadmap 2.0 further emphasizes the development strategy of pure electric drive. It is proposed that by 2035, the sales of new energy vehicles will account for more than 50% of the total automobile market, and the population of fuel cell electric vehicles will reach about 1 million.

China’s Energy Development in the New Era

In December 2020, the State Council issued the white book of “China’s Energy Development in the New Era” to promote energy conservation in the transportation field. Its plan is to improve the level of railway electrification, promote natural gas vehicles and ships, develop energy-saving and new energy vehicles, improve the charging and battery swap stations and the hydrogen refueling infrastructure, encourage ships and civil aviation aircraft calling at ports to use shore power during docking, build natural gas refueling stations, and accelerate the elimination of old, high-energy-consuming vehicles and ships.

The Notice on Adjusting Relevant Requirements for the Access of Methanol Automobile Products

In December 2020, the Ministry of Industry and Information Technology (MIIT) issued “The Notice on Adjusting the Relevant Requirements for the Access of Methanol Automobile Products.” The methanol automobile products meeting the requirements of related tests can apply for the products announcement in MIIT. This means that the market introduction of methanol automobiles is incorporated into the administration of MIIT and the full marketization of methanol automobiles is finally on the agenda.

In 2019, China issued guidance on the application of methanol vehicles in some regions, proposing to accelerate the improvement of methanol automobile industry policies and technical standards, promote the rational layout of the industry, accelerate the construction of the methanol automobile manufacturing system, and improve the market application. China will encourage and support enterprises to develop methanol automobile products, accelerate the industrial application of R&D achievements and continue to encourage the promotion and application of methanol automobiles in the four provinces of Shanxi, Shaanxi, Guizhou and Gansu.

Notice on Carrying out the Demonstration and Application of Fuel Cell Electric Vehicles

In September 2020, the Ministry of Finance, MIIT, Ministry of Science and Technology, National Development and Reform Commission and National Energy Administration jointly issued “The Notice on Carrying out the Demonstration and Application of Fuel Cell Electric Vehicles.” The incentive fund will be provided to qualified demonstration city groups for the industrialization of key core technologies of fuel cell electric vehicles and demonstration applications in the form of awards instead of purchase subsidies.

Existing National Standards on Alternative Motor Fuels

- GB/T 23510-2009, “Fuel methanol for motor vehicles” was released on April 8, 2009, and implemented on November 1, 2009.
- GB/T 23799-2009, “Methanol gasoline (M85) for motor vehicles” was released on May 18, 2009, and implemented on December 1, 2009.
- GB/T 26127-2010, “Compressed coalbed methane as vehicle fuel” was released on January 14, 2010, and implemented on December 1, 2009.
- GB/T 26605-2011, “Dimethyl ether for motor vehicle fuel” was released on June 16, 2011, and implemented on November 1, 2011.
- GB 19159-2012, “Automotive liquefied petroleum gases” was released on November 5, 2012, and implemented on April 1, 2013.
- GB/T 20828-2015, “Biodiesel blend stock (BD100) for diesel engine fuels” was released and implemented on May 8, 2015.
- GB 25199-2017, “B5 diesel fuels” was released and implemented on September 7, 2017.
- GB 18351-2017, “Ethanol gasoline for motor vehicles (E10)” was released and implemented on September 7, 2017.
- GB/T 22030-2017, “Blendstocks of ethanol gasoline for motor vehicles” was released and implemented on September 7, 2017.
- GB 35793-2018, “Ethanol gasoline for motor vehicles E85” was released on February 6, 2018, and implemented on September 1, 2018.
- GB 18047-2017, “Compressed natural gas as vehicle fuel” was released on September 7, 2017, and implemented on April 1, 2018.
- GB/T 37178-2018, “Coal-based synthetic natural gas for vehicle” was released on December 28, 2018, and implemented on July 1, 2019.
- HJ1137-2020, “Measurement methods for non-regulated emissions from methanol fueled vehicles” was released on November 10, 2020, and implemented on the date of issue.

Advanced Motor Fuels Statistics

In 2020, 195 million tons of crude oil were produced in China, an increase of 1.6% year-on-year; 670 million tons of crude oil were processed, an increase of 3.0% year-on-year. Meanwhile, 540 million tons of crude oil were imported, an increase of 7.3% year-on-year.

Natural gas is one of the energy sources for vehicles in China. In 2020, China produced 188.8 billion cubic meters (m³) of natural gas, an increase of 9.8% year-on-year. China imported 102 million tons of natural gas, an increase of 5.3% year-on-year.

In 2020, China’s auto production and sales were 25.225 million vehicles and 25.311 million vehicles respectively, with a year-on-year decrease of 2% for production and 1.9% for sales. The degree of decrease was narrowed down by 5.5% and 6.3%, compared with that of 2019.

In 2020, the production and sales of gasoline vehicles were both 123,000 units, down by 5% and 3.4% year-on-year respectively; the production and sales of diesel vehicles were 368,000 units and 366,000 units respectively, showing an increase of 13.0% year-on-year. The production and sales of new energy vehicles were 1.366 million units and 1.367 million units, showing a year-on-year increase of 7.5% and 10.9% respectively. Among them, the production and sales of battery electric vehicles were 1.105 million units and 1.115 million units; the production and sales of plug-in hybrid electric vehicles were 260,000 units and 251,000 units respectively; and the production and sales of fuel cell electric vehicles were both 1,000 units.

By the end of 2019, the population of natural gas vehicles in China reached 7.32 million units, including 6.72 million units of CNG vehicles and 0.6 million units of LNG vehicles. In 2020, the sales volume of commercial natural gas vehicles was 169,619 units and the top five provinces by sales were Shanxi, Hebei, Shaanxi, Xinjiang and Shandong.

Research and Demonstration Focus

Promotion of Methanol Gasoline Pilot Project

In October 2020, Shanxi Province issued “The implementation plan for accelerating the development of the methanol automobile industry and the vehicle promotion of the province.” Shanxi will strengthen the rational layout of the methanol automobile industry, expand the “coal-coke-gas-alcohol-machine” industrial chain, and improve the industrialization and market application of methanol vehicles. Shanxi plans to speed up the construction of a methanol automobile manufacturing system, taking the methanol fuel production and methanol automobile promotion and application as the main direction. The focuses will be on the planning and layout of methanol vehicle production bases across the province in Taiyuan, Jinzhong, Changzhi and Yuncheng, and to build vehicle methanol fuel production bases in Datong, Jincheng, Changzhi, Linfen, and Lvliang.

By the end of 2021, Shanxi is expected to have an annual production capacity of 150,000 methanol vehicles. As many as 5,000 units of M100 methanol vehicles will be promoted in the fields of cruising taxis and online ride-hailing cars, and more than 100 methanol refueling stations will be built in key cities of Taiyuan, Jinzhong, Changzhi and Yuncheng. By the end of 2022, Shanxi will make efforts to operate three to five methanol vehicles demonstration projects or routes, promote more than 20,000 units of M100 methanol vehicles and build more than 200 methanol refueling stations.

Promotion of Ethanol Gasoline Pilot Project

Since 2004, China has promoted ethanol fuel in areas such as Heilongjiang, Jilin, Liaoning, Henan, Anhui and Tianjin.

The raw materials for biofuel ethanol production in China are mainly grain and non-grain. Among them, the production capacity of biofuel ethanol using grain as raw material accounts for 98% of the total production capacity. Corn accounts for 90% of the total production capacity, which takes the largest proportion.

In 2020, the price of biofuel ethanol increased rapidly, reaching RMB 6,400 yuan/ton, or \$990/ton (US), which increased by 25% compared with that at the beginning of 2020. One of the main reasons was that the Covid-19 pandemic caused explosive growth in demand for disinfection alcohol. The price of the raw materials for producing biofuel ethanol increased continuously. The positivity of manufactures declined because the biofuel ethanol price was not competitive with the gasoline price. The promotion of ethanol gasoline slowed down.

Outlook

Driven by the goal of carbon neutrality and the “Development Plan for the New Energy Vehicle Industry (2021-2035)”, the new energy vehicles in China will develop fast. Fuel cell electric vehicles are expected to realize commercialization by 2035.

Meanwhile, China will insist on the diversity of vehicle fuels development. China will actively promote the construction of natural gas pipelines, natural gas receiving facilities and the use of natural gas and other clean energy vehicles. Natural gas commercial vehicles will develop rapidly. On the premise of ensuring food security, China will continue to promote ethanol gasoline. The application of methanol vehicles in some areas with resources and experiences will be implemented, such as in Shanxi, Shaanxi, Guizhou, and Gansu. The application of M100 methanol vehicles will be accelerated.

Additional Information Sources

- National Development and Reform Commission, <https://www.ndrc.gov.cn/fggz/jjyxtj/mdyqy/>
- China Association of Automobile Manufacturers (CAAM), <http://www.caam.org.cn/>
- China Society of Automotive Engineers (China-SAE), <http://www.sae-china.org/>
- China Automotive Technology and Research Center (CATARC), <https://www.catarc.ac.cn/>
- Asia Pacific Natural Gas Vehicles Association (ANGVA), <http://www.angva.org/>
- Methanol Institute, A Brief Review of Chinas Methanol Vehicle Pilot and Policy, <https://www.methanol.org/methanol-news-en/>
- Ministry of Industry and Information Technology (MIIT), <http://www.miit.gov.cn/>