

METHANOL FUEL IN CHINA 2020 **REPORT LAUNCH**



May 17th, 2021, Monday



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**China Association of
Alcohol and Ether Fuel
and Automobiles**





Methanol Fuel in China 2020

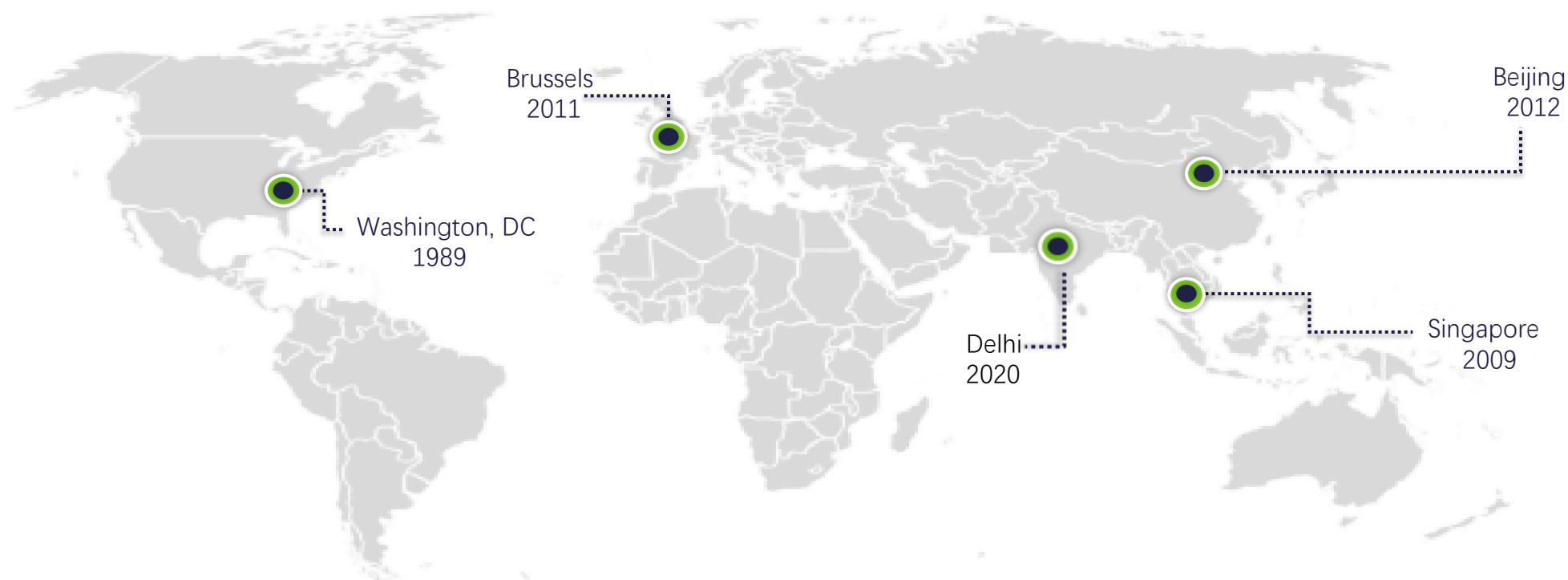
Report Launch

Timothy Chan
Manager, Government and Public Affairs

May 17 2021

Singapore | Washington | Brussels | Beijing | Delhi

- The Methanol Institute (MI) was established in 1989
- Three decades later, MI is recognized as the trade association for the global methanol industry
- Facilitating methanol's expansion from our Singapore headquarters and regional offices in Washington DC, Brussels, Singapore, Beijing and Delhi.



Members



Tier 1



Tier 2



Tier 3



ecofuel



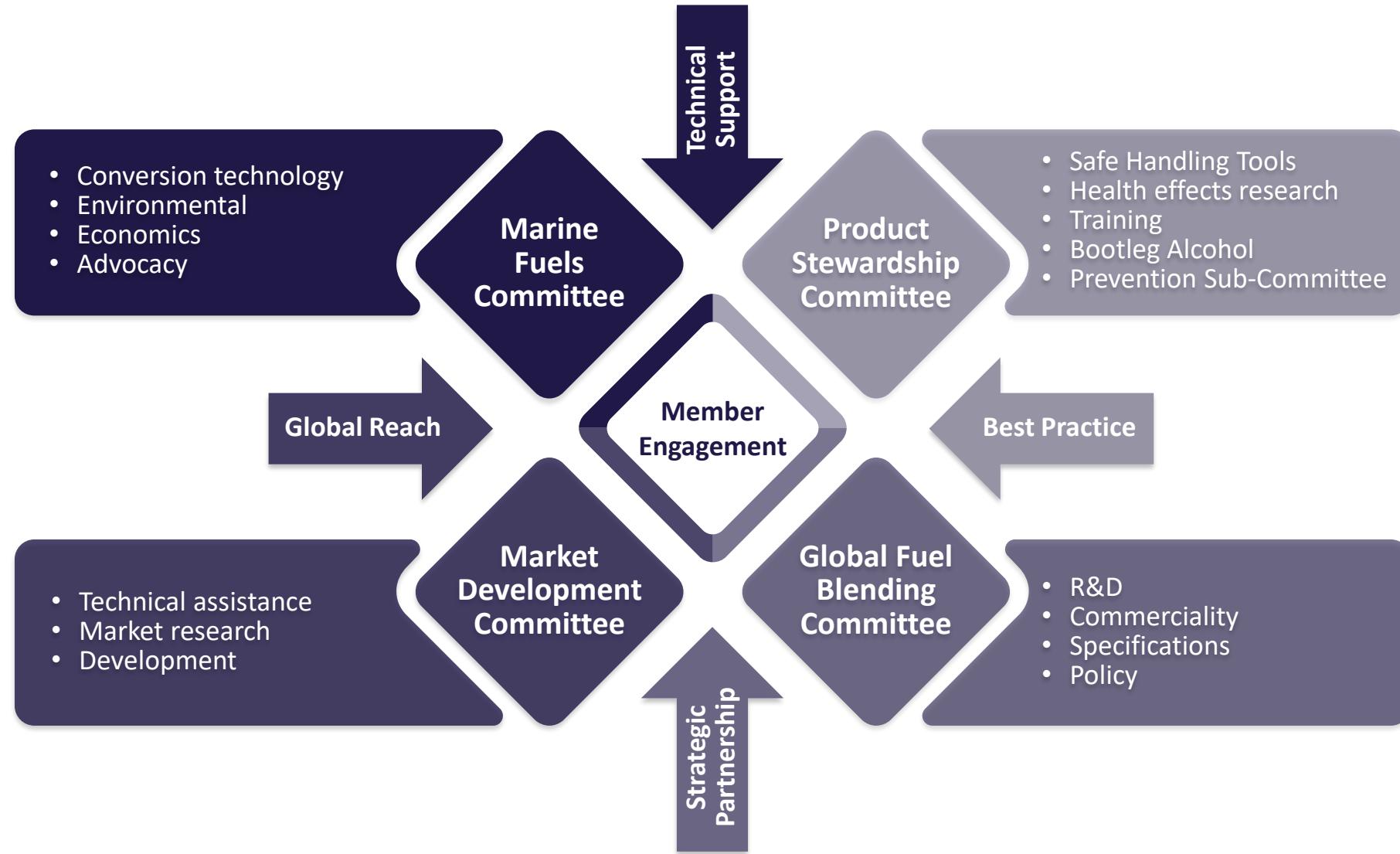
Johnson Matthey
Inspiring science, enhancing life



Tier 4



Our Committee Structure



Methanol Fuel in China 2020 Report



- MI and partners found a need to develop a better understanding of the methanol fuel market in China
- It is a rapidly growing market that involves a variety of methanol applications
- The market represents a significant portion of methanol consumption in the largest methanol market in the world
- Report was published to shed light on the intricacies of the market
- International replication of lessons learnt in the Chinese market



METHANOL FUEL IN CHINA 2020

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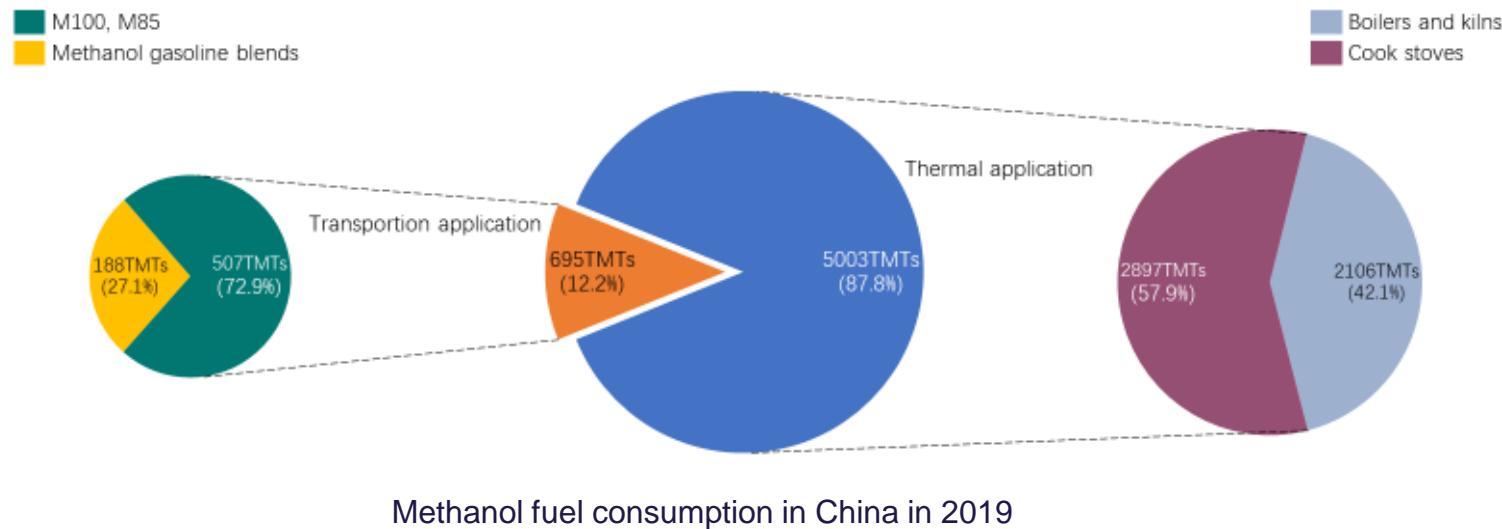




Methanol Fuel in China 2020 Report Launch

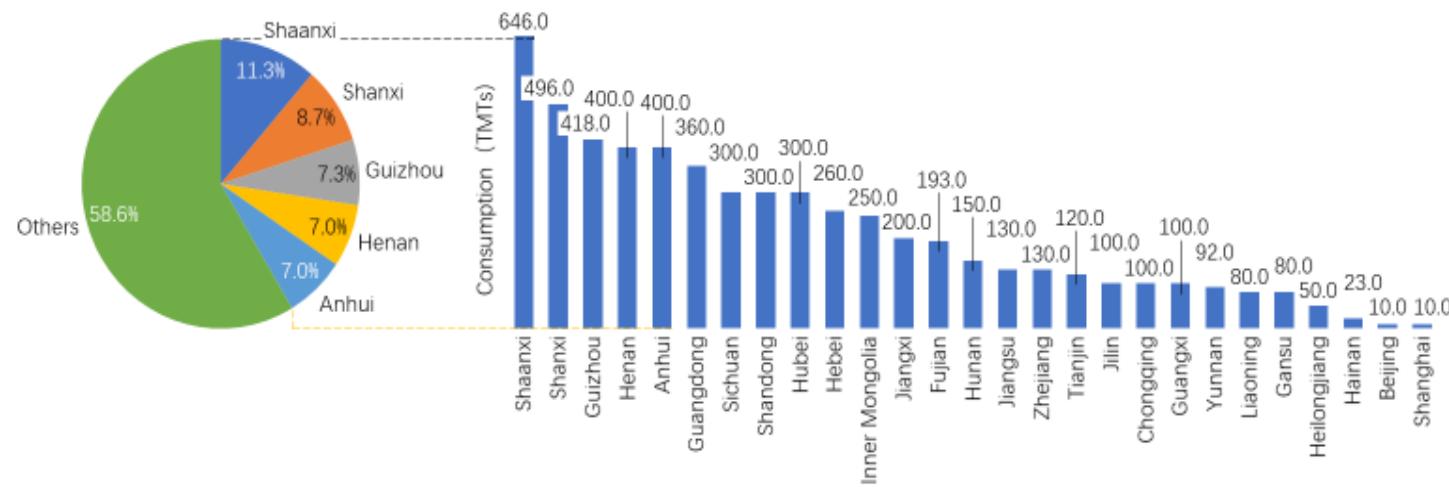
Yuan Fang
Consultant of MI

- Methanol fuel is primarily applied in transportation application and thermal application in China.
 - Transportation fuel includes methanol vehicle fuel M100, M85 and methanol gasoline blending, as well as marine fuel, fuel-cell and other fledgling applications.
 - Thermal application includes boilers, kilns, and cook stoves.

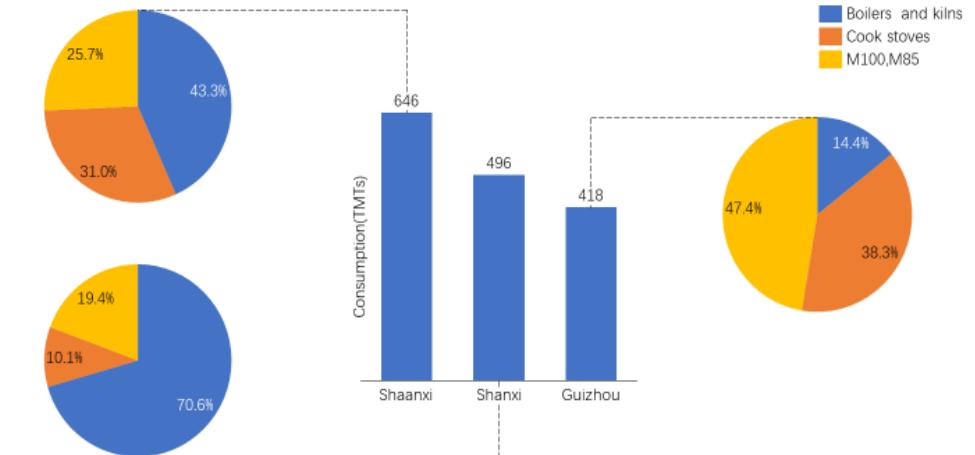


Market overview in 2019

- Shaanxi, Shanxi, Guizhou, Henan and Anhui provinces were the dominant market for methanol fuel, accounting for 41.4% of total consumption.
 - In Shaanxi and Shanxi, methanol fuel is mainly used for boilers, kilns, and cook stoves.
 - Guiyang is at the leading position of transportation fuel application, especially M100 methanol fuel.



Methanol fuel consumption in provinces in China in 2019



Methanol fuel consumption of Shannxi, Shanxi and Guizhou provinces in segment markets in 2019

Transportation application in 2019: Policy influence

- In March 2019, “Guidance of Developing Methanol Vehicles Applications in Some Parts of China” launches pilot projects of certified dedicated methanol vehicles in Shanxi, Shaanxi, Guizhou and Gansu provinces to speed up the development of M100 vehicles.
 - The guideline calls for improving methanol fuel producing and refueling system, MFVs standard system, and policies of applications.
 - This guideline represents that the compliance and legitimacy of certified dedicated M100 vehicles have been recognized by the central government and large-scale commercial application can be expected.



M100, M85 consumption of provinces in China in 2019

- Clean fuel is largely demanded in the market.
 - The consistently increasing vehicles in China will lead to serious environmental problems.
 - The latest population in China is over 1.4 billion, and annual average income of just over 10,000 dollars. The number of vehicles per capita in China is still much smaller than the other countries with similar GDP.
 - On-line shopping has rapidly and wildly expended from urban to rural, which promotes the boost of diesel trucks.
- As an environmentally friendly, safe, and reliable fuel, methanol fuel has been verified by large-scale applications, and has obtained special attention from the government and been generally accepted by the market.



19,401 MFVs

- In 2019, M100 methanol fuel had a rapid development in some specific regions, with the total amount of 19,401 MFVs in China by the end of the year.

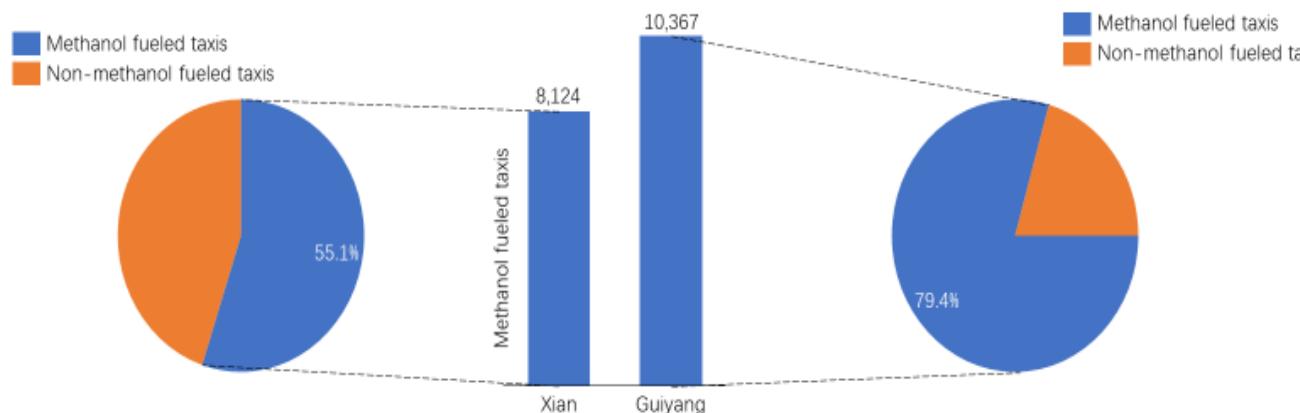


0.695 MMT

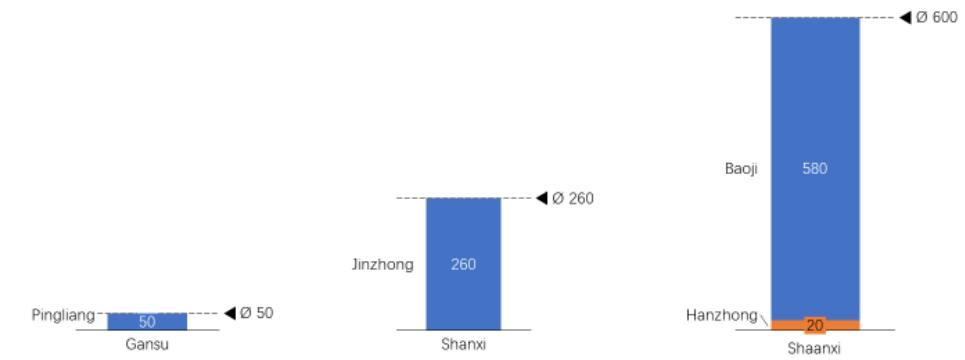
- The total consumption of all transportation fuel (gasoline blending, M100 and M85 methanol fuel) reached to 0.695 MMT, accounting for 12.2% of methanol fuel demand.

Transportation application in 2019: Taxis

- The population of methanol fueled taxis in Xi'an is 8,124, accounting for 55.1% of total amount of taxies in Xi'an, while the statistic in Guiyang reaches to 13,052, accounting for 79% of total amount of taxis in Guiyang. Gansu province has released an action plan in 2019, which plans to gradually deploy 10,000 methanol taxis totally in the market during 2019-2025. Until the end of 2019, Lanzhou and Pingliang city in Gansu province had put 150 and 50 methanol taxis in the local market separately.



The amount of methanol fueled taxis in Xi'an and Guiyang city in 2019



The amount of methanol fuel taxis in cities of Shaanxi, Shanxi and Gansu provinces besides Xi'an city in 2019

Transportation application in 2019: Trucks

- Trucks -- especially heavy-duty trucks -- are a market for methanol fuel in the future with great potential. The pollution caused by the emissions of trucks has come under criticism for years. The central government has been upgrading the quality standard of truck fuel and calling for clean fuel substitution to diesel fuel. Shaanxi Heavy Duty Automobile Co., LTD, Chinese Heavy Truck Co., LTD and Hualing Xingma Automobile Co., LTD have already developed methanol/diesel dual fuel heavy duty trucks
- In 2019, Geely Auto Group also launched M100 trucks with price from 353,000 RMB, which is only around 5% higher than traditional diesel trucks. In the meanwhile, battery electric trucks are reported from 1 million RMB. Geely also promises the endurance mileage of its M100 trucks can achieve 1500 kilometers with standard fueling.



Geely Yuancheng M100 Methanol fuel truck*

* from:<http://www.360che.com/tech/190829/116424.html>

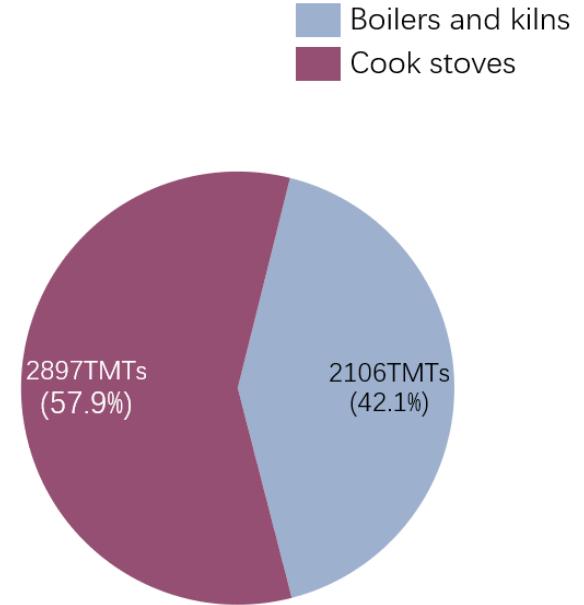
Transportation application in 2019: Methanol gasoline blending



- The development of methanol gasoline blending pilot projects is nearly suspended, causing dramatical decrease in sales since 2014.
 - “Guidance of Developing Methanol Vehicles Applications in Some Parts of China” strictly forbade the blending of methanol in normal gasoline, and also prohibited the retrofit of traditional vehicles into methanol fuel or methanol gasoline blending vehicles.
 - Due to State Taxation Administration, consumption tax policy of methanol gasoline blending is similar as it of oil.

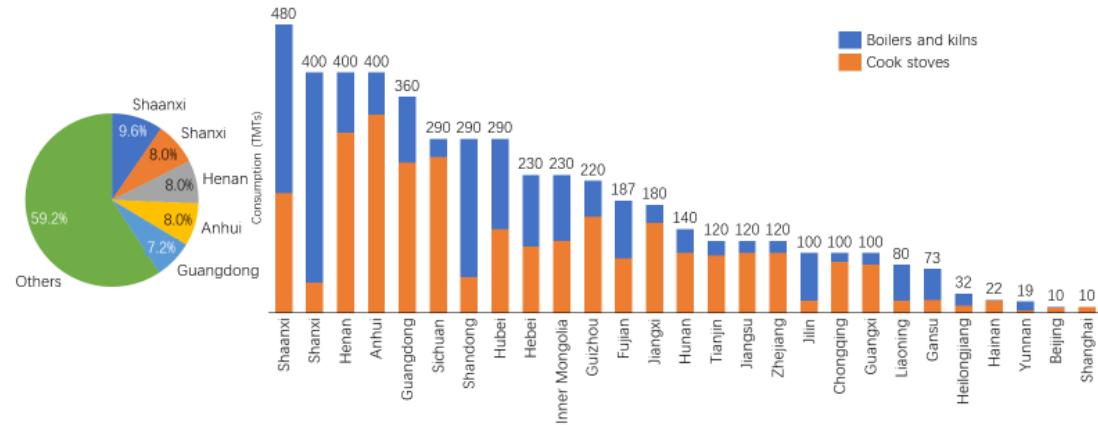
Thermal application in 2019

- The largest methanol fuel segment in China is for thermal applications, namely boilers, kilns, and cook stoves. Its consumption reached 5.003 MMTs in 2019, accounting for 87.8% of total consumption of methanol fuel.
- The consumption of methanol fuel in cook stoves occupied the largest proportion, with consumption of 2.897 MMTs, accounting for 57.9% of consumption in thermal application



Thermal fuel consumption in China in 2019

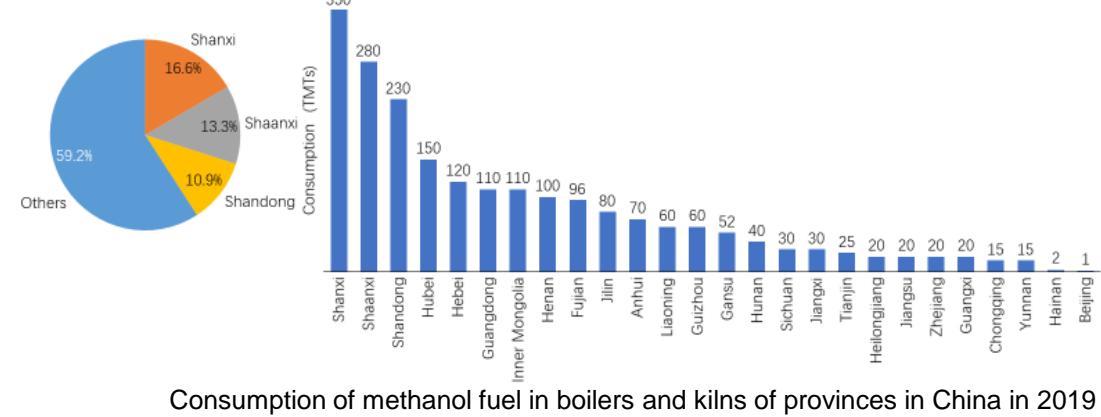
- Shaanxi, Shanxi, Henan, Anhui and Guangdong provinces are the places where methanol fuel gains most popularity and is widely used in boilers, kilns, and cook stoves.
- The consumption of these five provinces made up 40.8% of the overall consumption in thermal application in China.



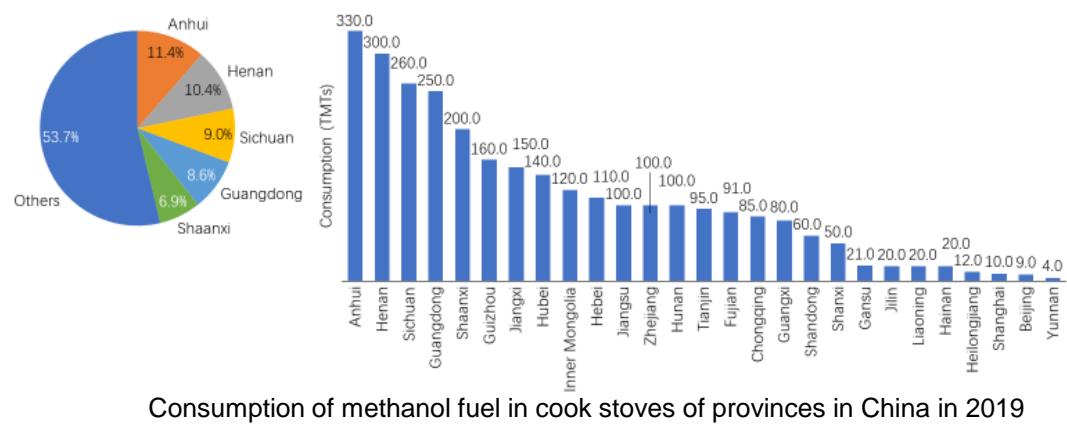
Consumption of methanol fuel for thermal application of provinces in China in 2019

Thermal application in 2019

- In 2019, Shanxi, Shaanxi and Shandong each consumed over 0.2 MMT of methanol fuel in boilers and kilns on average. They have consumed 0.860 MMT in total, accounting for 40.8% of the overall methanol fuel consumption in boilers and kilns across the whole country.

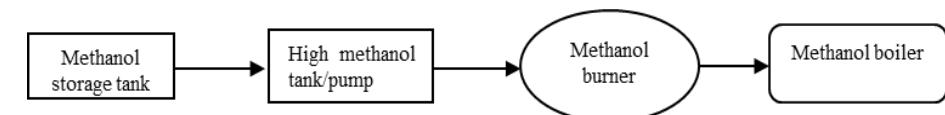


- Among provinces of Anhui, Henan, Sichuan, Guangdong and Shaanxi, each consumed over 0.200 MMT of methanol fuel in cook stoves. These five provinces consumed 0.190 MMT in total, accounting for 46.3% of total methanol fuel consumption in cook stoves.



Thermal application in 2019: Boiler

- Boilers include industrial boilers, hot water boilers and household furnaces, etc.. In the “Publication Of Winter Heating Plan In Northern China(2017-2020)”, the central government directed that by 2021, clean heating rate in northern China shall reach 70%, and 0.15 billion tons bulk coal should be replaced.
 - Currently, companies in China have already developed 35 steam tons of methanol fuel burners and large steam tons methanol fuel and natural gas blending burners.
 - Wall-hung methanol furnaces have appeared in the market in recent years. Heating from these units can cover an area of 2400 square meters at most. These heating systems can be widely used in such places as family residences, offices, and small hotels.



The structure of methanol boiler basics



10 million RMB



93 boilers



200,000 square meters

- Jinzhong city is located in Shanxi province, and is rich in coal. It is one of the most seriously polluted areas in China. The local government initiated a pilot project of replacing coal with methanol fuel in 2018.
- The government totally invested around 10 million RMB, and retrofitted 93 boilers, covering 200,000 square meters of heat area.

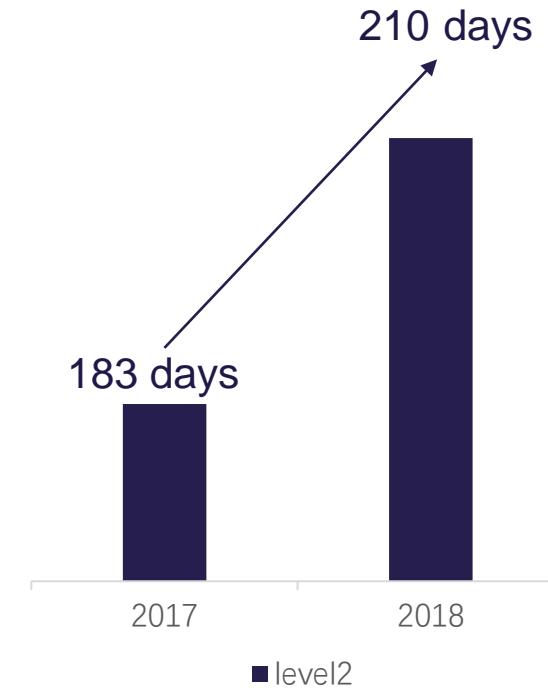
Thermal application in 2019: Example 1



12 TMTs



385 tons sulfur dioxides
350 tons soot (PM)
36 tons nitrogen oxides



- It is reported that the retrofitted methanol fuel boilers have effectively improved the environment, with reduction of 12 TMTs coal, 385 tons of sulfur dioxides, 350 tons of soot (PM) and 36 tons of nitrogen oxides.
- it has brought a significant result for urban air quality in the city.. In 2018 the city recorded fewer days at level three with 210 days at level 2, versus only 183 days in 2017.

Thermal application in 2019: Kiln

- Kilns are used to take advantage of thermal energy generated by solid, liquid or gas fuel during burning, to process products by smelting, calcining, firing, fusing and others. In 2019, four Ministries jointly release the “Comprehensive Management Schemes for Air Pollution of Industrial Kiln”, which directed that 20% of particulate matter PM2.5 in and around Beijing-Tianjin-Hebei region is generated by kiln emission. A large number kilns in China are antiquated production facilities with high energy consumption and serious pollution.



Thermal application in 2019: Kiln

- Different from the replacement of coal with natural gas and electricity which needs a whole set of high-capacity transformer, gas pipeline and other requirements, methanol fuel applied in industrial kilns is much easier, only requiring the retrofitting of the equipment itself with low cost. Methanol fuel is an ideal distributed clean energy.
- Methanol has high self-sufficient rate in China. The abundant capacity of methanol makes it possible to be the main alternative clean fuel in boilers and kilns.
- Due to clean exhaust gas, for some specific sintering products, kilns with methanol fuel make better quality.



A ceramic kiln of methanol fuel and its products

- In 2019, methanol fuel in cook stoves occupied the largest methanol fuel market, with consumption of 2.89 MMTs, accounting for 50.8% of total consumption.
- Application scenarios of methanol fueled cook stoves mainly places which serve a large amount of people per meal, and consume huge quantities of fuel each day, or rural places where clean fuel replacement is urgent but other clean fuel is not suitable, not available or too expensive.



Thermal application in 2019: Example 2

- The consumption of methanol fuel in cook stoves in Anhui province was found to be the largest in China, achieving 0.330 MMT. Anhui Shengbao is the biggest methanol fueled cook stoves producer in Hefei city.
- Intelligent methanol fueled cook stoves from Shengbao are the industry benchmark for the market. The system includes methanol fuel safety monitor systems with international patent, electrical vaporizing burner, sensors for gas leak, electric leakage, temperature, voltage and so on.



Intelligent methanol fueled stoves in Anhui Shengbao company

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