China: The Leader in Methanol Transportation

A look at the growth and prominence of methanol use

Demand for methanol in China has been growing steadily since the 1980's, and has accelerated in recent years as China embraces methanol as a clean alternative transportation fuel. China is blazing the trail forward in methanol fuel blending, with demand stemming primarily from the low cost of methanol compared to high global energy prices. Methanol is seen as a strategic fuel by the rapidly growing nation due to its clean fuel benefits, favorable economics, the ease of adopting methanol in current fueling infrastructure, and the advantage of being able to use alternative feedstocks in a nation that is lacking in domestic oil reserves. Methanol offers the ideal solution for China to meet the growth in fuel demand and develop their domestic energy economy, as it can be made from a number of readily available feedstocks including coal, natural gas and biomass. Rising energy prices in the global and Chinese markets continue to sustain the methanol economic advantage and the abundance of coal resources as a feedstock have led China to become the top producer and consumer of methanol in the world. With methanol pricing far below that of wholesale gasoline in China, and the ability to produce abundant quantities domestically, China continues to dominate the methanol fuel market.

"As China's industrialization and urbanization continue to advance, the country needs to minimize consumption and promote environmental-friendliness. Clean fuel alternatives such as methanol fuel is undoubtedly the strategic new industry and the economical alternative energy source."

Peng Zhi Gui, Former Deputy Governor of Shanxi Province

Growth and Expansion of Methanol Market

Since 2003, when Chinese methanol production stood at 6 million metric tons, China has seen an exponential growth in consumption and production capacity of methanol. In 2010, China's methanol production capacity reached 38.4 million tons, and will be increased to 50 million tons by 2015. China consumed 22.7 million metric tons of methanol in 2010, around 40% of the global market. Increased demand in the Chinese market has been fueled by methanol gasoline blending and dimethyl ether (DME), which combined account for 33% of the Chinese methanol demand and are expected to grow by 30% this year alone. It is estimated that China used as much as 7 million tons of methanol as transportation fuels last year, representing over 5% of China's fuel pool.

Coal Consumption

China makes up for what it lacks in petroleum and natural gas with their abundance of coal, which can be converted into methanol through gasification. China's coal reserves stand at 114.5 billion tons, 4.9% of global reserves. Annual output stands at 2.8 billion tons. If all gasoline in China was replaced with neat methanol (M-100), about 240 million tons of coal would be consumed each year. The production of methanol from coal gasification is a mature technology. In addition, coke furnaces in China generate 80 billion cubic meters of waste gas each year, enough to produce 40 million metric tons of methanol (13.3 billion gallons), and significantly reduce pollution in the coal-producing regions. China is developing nationwide standards for direct methanol fuel

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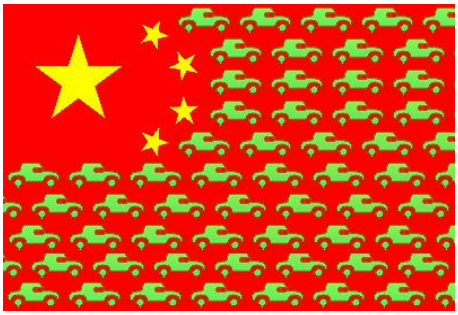
blending and dimethyl ether (DME) for DME-LPG blending for stove gas, and once these standards are firmly in place, China can rely on its domestic energy reserves to meet the staggering demand anticipated over the coming decades.



Methanol as an Environmentally Benign Alternative

Compared to gasoline and diesel fuel, methanol offers a substantial improvement over the toxic emissions that are a part of traditional fuels. Benzene, xylene, and particulate matter are all eliminated, and since methanol is less reactive in the atmosphere, it also reduces ground-level smog production which has a major impact on health in urban environments. With the chemical structure CH_3OH, methanol is the simplest alcohol, with the lowest carbon content and highest hydrogen content of any liquid fuel. Methanol can not only be used as a direct transportation fuel but also as a hydrogen carrier fuel for fuel cell technologies and a fuel for electric power generation. As the world's leader in the use of methanol as an energy resource, China is paving the way for environmental innovation with millions of miles of experience integrating methanol into their transportation economy.

Methanol on the Move

In 2009, national fuel blending standards for M85 and M100 went into effect across China, and currently a national M15 standard is in the final stages of adoption. These standards, along with the lower cost of methanol compared to gasoline and domestic availability will ensure the expansion of methanol in the marketplace. Methanol blended fuel is at least 50% cheaper than regular petrol for drivers at the pump. The current market price for methanol is 2,700yuan/ton, which converts to about 2.16yuan/litre. Shanghai's petrol is selling at 7.39yuan/litre, and methanol blended fuel for 3.5yuan/litre on average. Major Chinese automakers such as FAW Group, Shanghai Huapu, Geely Group, Chang'an, Shanghai Maple and SAIC are already gearing up for mass production of methanol capable vehicles and fleets of buses and taxis. Large- and small-scale methanol fuel promotions have also been on-going in 26 provinces and counties. The M15 methanol blended fuel is already widely used in five provinces – Shanxi, Shaanxi, Zhejiang, Guizhou, and Heilongjiang with localized standards implemented by provincial governments. In Shanxi province alone, there are more than 1,000 petrol stations which have been converted to include M15 and another 40 M85-M100 refueling points. Within the next five years, the Shanxi government plans to produce 3 million tons of methanol fuel, convert more than 200,000 vehicles to use methanol fuel, and convert another 2,000 refueling stations. China is well positioned to continue as the leading force in the global methanol market. The development of a methanol-based transportation system will also allow China to readily adopt bio-methanol products made from timber, agricultural waste, and other renewable resources as technologies advance and costs reach parity with petroleum products. China's example is one of incremental innovation that is paving the way for a sustainable, domestically-fueled transportation economy that serves as a model to the world for future expansion.