



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update November 2017: China

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1. New Policy Initiatives on Hydrogen and Fuel Cell

- On April 6, 2017, China's Ministry of Industry and Information Technology (MIIT), the National Development and Reform Commission (NDRC), and the Ministry of Science and Technology (MoST) jointly announced the national Mid-to-Long Term Development Plan of Auto Industry to provide development guidance of the auto industry. According to this plan, by 2020, the annual sales/production target of new energy vehicles (NEVs) is expected to reach 2M units, and the NEV sales/production is expected to account for 20% of total auto sales/production by 2025. The RD&D of fuel cell vehicle was one of the key tasks. (http://www.most.gov.cn/tztq/201705/t20170510_132694.htm)
- On September 5, 2017, the Shanghai Municipal Government released the Shanghai Development Plan on Fuel Cell Vehicles. Shanghai is set to build 5-10 hydrogen-refueling stations (HRS) and launch 3,000 vehicles, including fuel cell buses and logistics vehicles, by 2020. It also expects to attract more than 100 enterprises related to the fuel cell vehicle industry and establish a research and development center, with the annual economic output of the fuel cell industry reaching 15 billion yuan (US\$2.3billion) by 2020. The plan includes 50 HRS by 2025, with at least 20,000 passenger cars and 10,000 cars for special use in operation. (<http://www.stcsm.gov.cn/gk/zc/zcfq/gfxwz/fkwwj/350830.htm>)
- On September 27, 2017, the MIIT released the Measures for the Parallel Point-based Administration of Corporate Average Fuel Consumption and New-Energy Vehicle for Passenger Vehicle Enterprises (Measures), which will come into effect on April 1, 2018. The core idea of the Measures is to adopt point-based measures to administrate in parallel the corporate average fuel consumption of passenger vehicles (CAFC) and the production volume of new energy vehicles (NEV); and, to directly set the bottom line for CAFC points and NEV points on:
 - (i) Domestic passenger vehicle manufacturers who have obtained the entry permit for passenger vehicle manufacturing enterprises and China Compulsory Certification from the MIIT; and
 - (ii) Imported passenger vehicle distributors who sell imported passenger vehicles with China Compulsory Certification in the PRC market (such manufacturers and distributors collectively referred to as the "PV Companies"),so as to advocate from a regulatory perspective that these PV Companies improve the fuel consumption efficiency of passenger vehicles and the production and import volume of NEV. (<http://www.miit.gov.cn/n1146290/n4388791/c5826378/content.html>)



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2. Hydrogen and Fuel Cell R&D Update

Nothing new to report.

3. Demonstration and Deployments Update

- In August 2017, it was reported Beijing SinoHytec Co. built an automatic production line of hydrogen fuel cell engines in Zhangjiakou city, Hebei province. Zhangjiakou and Beijing will co-host the Winter Olympics in 2022 and by then, SinoHytec will build a comprehensive system for using hydrogen as a fuel in Zhangjiakou and construct an expressway with hydrogen refueling stations for vehicles between the two cities. Zhangjiakou is advantageous for developing hydrogen energy as it has a demonstration zone of renewable energy and will have many wind power to hydrogen production facilities.



- UNDP/GEF FCB commercialization demonstration project was launched in Nanhai District, Foshan City on September 7. It is reported that more than 100 fuel cell vehicles will be involved in the demonstration. A new hydrogen refueling station, named Ruihui Hydrogen Refueling Station was officially opened in Nanhai on that day. Nanhai also plans to build a Guangdong New Energy Car Core Component Industry Base (Base) covering an area of over 500 hectares in Danzao Town. The Base will develop core components of new energy cars, especially hydrogen fuel cell vehicles.





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- A hydrogen fuel cell powered tram was put into commercial operation in Tangshan, North China's Hebei province, Oct 26, 2017. The tram was developed by China Railway Rolling Corporation (CRRC) Tangshan Co Ltd. It operates on a 136-year-old railway in Tangshan city, one of China's earliest industrial cities, and links several of its industrial heritage sites.



- On October 30, a 70MPa hydrogen refueling station was opened by Toyota Motor Engineering & Manufacturing (China) Co., Ltd. in Changshu, Jiangsu province. Toyota will begin related tests of its FCEV Mirai in China.



4. Events and Solicitations

On November 9-10, 2017, the 2nd International Fuel Cell Vehicle Congress was held in Rugao, Jiangsu province. This congress was organized by SAE-China and International Hydrogen Fuel Cell Association. More than 700 delegates attended this congress, and the FCVs of Toyota, Honda, Hyundai, SAIC were shown at this congress.

The International Hydrogen Fuel Cell Association (IHFCA) is in a preparatory stage. As of October 1, 2017, IHFCA has 43 initial members. The aim of IHFCA is to bring together all technologies and resources needed to accelerate FCV and hydrogen infrastructure commercialization and sustainable development in China. (<http://www.ihfca.org.cn/>)



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5. Investments: Government and Collaborative Hydrogen and Fuel Cell Funding

The Ministry of Science and Technology (MoST) of China has announced a Call for proposal for the 2018 fund for "New energy vehicles" National Key R&D Program in October 2017, in which there is one project on FCV RD&D. The government funding is approximately 150 million RMB.

6. Regulations, Codes & Standards Update

8 new regulations about H₂&FCV were published in October 2017. Including:

- GB/T 34537-2017 《Hydrogen and compressed natural gas (HCNG) blended as vehicle fuel》;
- GB/T 34540-2017 《Specification of hydrogen production by methanol reforming and pressure swing adsorption》;
- GB/Z 34541-2017 《Safety operation management regulation for hydrogen fueling facilities of hydrogen vehicles》;
- GB/T 34542.1-2017 《Storage and transportation systems for gaseous hydrogen—Part 1: General requirements》;
- GB/T 34544-2017 《Safety test methods for onboard low pressure hydrogen storage devices for small fuel cell vehicles》;
- GB/T 34583-2017 《Safety technical requirements for hydrogen storage devices used in hydrogen fuelling station》;
- GB/T 34584-2017 《Safety technical regulations for hydrogen refueling station》;
- GB/T 34593-2017 《Test methods of hydrogen emission for fuel cell engine》



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Summary of Country Update November 2017: China

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
Fuel Cell Vehicles ¹	5000 by 2020 (see FCV Technology Roadmap)	Approx. 60	FCV Technology Roadmap is released	• Subsidy for purchase, 200K RMB
FCBus	No national target, Foshan City plans for 300 FCBs by 2017	Approx. 100		• Subsidy for purchase, 300K~500K RMB
Fuel Cell Trucks ²	No national target	Approx. 500		Subsidy for purchase, 300K~500K RMB
Forklifts	No national target	2		• No support policy
H ₂ Refueling Stations	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
70 MPa On-Site Production	No target	1		• Subsidy for installation of a new hydrogen refuelling station with 200kg H2 capacity , 4M RMB
70 MPa Delivered	No target	1		• Subsidy for installation of a new hydrogen refuelling station with 200kg H2 capacity , 4M RMB

¹ Includes Fuel Cell Electric Vehicles with Range Extenders

²As above



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35 MPa On-Site Production	No target	1		• Subsidy for installation of a new hydrogen refuelling station with 200kg H2 capacity , 4M RMB
35 MPa Delivered	No target	7	Many cities have plans for building HRS, such as Fosan, Rugao, Yancheng, Wuhan, Beijing, Shanghai, etc.	Subsidy for installation of a new hydrogen refuelling station with 200kg H2 capacity , 4M RMB
Stationary	Target Number³	Current Status	Partnerships, Strategic Approach	Policy Support
Small ⁴	No target			
Medium ⁵	No target			
Large ⁶	No target	1		
District Grid ⁷	No target			
Regional Grid ⁸	No target			
Telecom backup	No target	Approx. 50 units		
H₂ Production	Target⁹	Current Status	Partnerships, Strategic Approach	Policy Support

³ Targets can be units installed and/or total installed capacity in the size range indicated

⁴ <5 kW (e.g., Residential Use)

⁵ 5kW – 400 kW (e.g., Distributed Residential Use)

⁶ 0.3MW – 10 MW (e.g., Industrial Use)

⁷ 1MW – 30 MW (e.g., Grid Stability, Ancillary Services)

⁸ 30MW plus (e.g., Grid Storage and Systems Management)

⁹ Target can be by quantity (Nm³, kg, t) and by percentage of total production; also, reference to efficiency capabilities can be a target



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Fossil Fuels ¹⁰	No target			
Water Electrolysis ¹¹ (PEM, Alkaline, SOEC)	No target			
By-productH ₂	No target			
Energy Storage from Renewables	Target¹²	Current Status	Partnership, Strategic Approach	Policy Support
Power to Power ¹³ Capacity	No target			
Power to Gas ¹⁴ Capacity	No target	Two pilot projects are under construction		

¹⁰Hydrogen produced by reforming processes

¹¹ Please indicate if targets relate to a specific technology (PEM, Alkaline, SOEC)

¹² Can be expressed in MW of Installed Capacity to use the electricity from renewable energy generation, and Annual MWh of stored energy capacity

¹³ Operator has an obligation to return the electricity stored through the use of hydrogen back to electricity

¹⁴ Operator has the opportunity to provide the stored energy in the form of hydrogen back to the energy system through multiple channels (e.g., merchant product, enriched natural gas, synthetic methane for transportation, heating, electricity)