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Editorial

Hydrogen Energy: A Global Trend and China's Strategy

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In addressing the issue of global climate change and optimizing the world's energy structure, the development and utilization of new energy have become a strategic choice for global energy transformation. Hydrogen energy is of far-reaching significance for energy security, industrial emission reduction, and green economic growth. As of early 2021, over 30 countries have released hydrogen roadmaps. In the next 30 years, the global hydrogen energy industry will go through a period of rapid development. Large investments will be made in technology innovation, and the cost of hydrogen energy will be significantly reduced. The hydrogen economy will become an important choice for the "deep decarbonization" of human society.

In January 2021, President Xi Jinping stated at the World Economic Forum Davos Agenda dialogue meeting that China would continue to promote sustainable development, strengthen the construction of an ecological civilization, ensure that carbon dioxide emissions peak before 2030, and achieve the goal of carbon neutrality by 2060. This is China's national policy of actively responding to climate change; it is also a national strategy based on scientific argumentation. After years of unremitting efforts in science, technology, and industry, China has made great progress in hydrogen energy utilization, safety, and market development. In the next stage, clean energy sources such as wind energy, solar energy, and hydropower will be used to produce green hydrogen on a large scale, which will play a key role in peaking carbon dioxide emissions and achieving carbon neutrality in China.

At the beginning of this century, as the director of the Hydrogen Energy Professional Committee of the China Renewable Energy Association, I participated in the formulation of China's hydrogen energy vision plan and hydrogen energy development roadmap. Later, a number of projects were arranged in the national scientific research plan on hydrogen energy generation, storage, transportation, and utilization, which initially laid the foundation for China's hydrogen energy development. In 2016, China issued the *Energy Technology Revolution and Innovation Action Plan (2016–2030)*, which set the tone for the development of the hydrogen energy industry from a strategic perspective. Currently, more than 23 provincial governments in China have issued development plans or action plans for the hydrogen energy industry. Beijing, Shanghai, Shandong, Guangdong, Jiangsu, and other provinces and cities are relying on their own resource endowments to develop hydrogen technology, and are endeavoring to promote the industrialization of hydrogen energy and fuel cells. The *White Paper on China's Hydrogen Energy and Fuel Cell Industry*, which was released in 2019, predicted that hydrogen energy would account for at least 10% of China's final energy system by 2050; that the demand for hydrogen energy would be close to 60 million tonnes, which could reduce carbon dioxide emissions by 700 million tonnes; and that the annual output value of the industrial chain would reach about 12 trillion CNY.

In view of the significance of hydrogen energy to the transformation and upgrading of the world's future energy structure, we have chosen hydrogen energy as the hot topic for this issue, and have invited famous strategists, engineering experts, and technical experts, including Professor Michel Latroche, Professor Nobuyuki Nishimiya, Vice President Xiaoqiang Zhang, Academician Wen Ling, Professor Xuguang Tan, and Professor Lijun Jiang, to write comments on hydrogen energy development. Topics covered in this issue include: the visions of France, Germany, and the European Union on the future research and innovation of hydrogen energy; the enlightenment of Japan's hydrogen energy strategy and implementation; the development trend of China's hydrogen energy industry; the medium- and long-term development plan of Shandong's hydrogen energy industry; and achievements that have been made in hydrogen fuel cell heavy trucks and solid-state hydrogen storage technology innovation and applications. These topics embody a recognition of hydrogen energy development goals and tasks, and of the prospect of future hydrogen energy applications.

With this topic of global hydrogen trends and China's hydrogen strategy, we are organizing the commentaries in *Engineering* in a thematic way for the first time. Here, we would like to express our sincere thanks to all the authors for their active contributions to *Engineering*'s "Views & Comments" column; we hope that these commentaries can promote the development of the world's hydrogen industry.

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