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NTU consortium to speed up commercial usage of hydrogen

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Nanyang Technological University (NTU) president Subra Suresh (background), representatives of NTU and the National University of Singapore, and various industry players at the signing of a new research collaboration agreement to accelerate the commercial usage of hydrogen as a renewable energy source in Singapore. PHOTO: NTU

Two local universities, with support from the industry, aim to develop new hydrogen extraction technologies to accelerate the commercial usage of hydrogen as a renewable energy source in Singapore.

Nanyang Technological University (NTU) aims to create better catalysts and more efficient reactors for improving the efficiency of extracting hydrogen from liquid organic hydrogen carriers.

This project, which holds the promise of enabling more efficient and economical transport of hydrogen, will be supported by the National University of Singapore (NUS) and industry players in Singapore and Japan. This in turn could contribute to the expansion of global hydrogen supply chains.

They aim to semi-commercialise the technology by 2025, and do so fully by 2030.

NTU's announcement yesterday comes a week after a new report said hydrogen will likely play a key role in Singapore's move to reduce emissions from its power sector, which accounts for about 40 per cent of national emissions now, to reach net zero by 2050.

Hydrogen has been touted as a cleaner fuel compared with natural gas, as it does not release any carbon dioxide when burned.

But in order to be considered a green alternative, hydrogen has to be produced using renewable energy or in a way that results in net-zero emissions.

This makes it difficult for Singapore to produce low-carbon hydrogen locally, which underlines the need for global hydrogen supply chains.

Trade and Industry Minister Gan Kim Yong noted during debate on the Singapore Green Plan that one challenge is in transporting hydrogen in large volumes, over long distances, as the technology to transport liquefied hydrogen is not yet available at scale.

Alternative carriers, such as ammonia and liquid organic hydrogen carriers, are more easily transported, but come with their own challenges, such as the need to extract hydrogen from the carriers at the destination, Mr Gan noted.

NTU president Subra Suresh said this project will help to contribute to the design of a cost-effective hydrogen supply chain network for Singapore.

It will also draw on expertise from Japanese engineering firm Chiyoda Corporation.

"The ultimate goal is to reduce the global costs of hydrogen transportation and make hydrogen a viable alternative to conventional fuels, based on state-of-the-art facilities," Professor Suresh added.

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