

SP GROUP SETS UP FIRST ZERO-EMISSION BUILDING POWERED BY GREEN HYDROGEN IN SOUTHEAST ASIA

Singapore, 30 October 2019 – SP Group (SP) has established the first zero-emission building in Southeast Asia that is powered by green hydrogen. Located at SP’s training centre at Woodleigh Park, the self-sustaining building is 100% powered with renewable energy via an innovative Hydrogen Energy System and is disconnected from the national electricity grid.

Mr Brandon Chia, Head, Centre of Excellence, SP Group said: “Buildings contribute 40 per cent of energy related carbon emissions worldwide¹. The Hydrogen Energy System provides a safe and compact way of storing green hydrogen which powers the region’s first zero-emission building. We believe this can be a significant contributor toward Singapore’s climate change pledge to cut national emissions intensity by 36 per cent below 2005 levels by 2030.”

The challenge to achieving zero emission

The world in its fight against climate change is using various means to lower carbon emissions. One way is to use renewable energy sources. However, in urban places such as Singapore, due to limited land and inconsistent solar energy, achieving zero emission with 100% renewable energy is extremely challenging.

Zero-emission solution

An alternative is hydrogen as a green energy source. In the Hydrogen Energy System used by SP, electricity from green sources, such as solar, is used to conduct electrolysis. The hydrogen generated from this process is bonded with special metal alloy powders to form metal hydride, compacted and stored in tanks. When electricity supply is required, the stored hydrogen from the metal hydride tanks is slowly released and converted to electricity via fuel cells. As green energy sources are used for electrolysis, this entire process of converting hydrogen to electricity is 100 per cent green, with zero carbon emission.

¹ The buildings and building construction sectors combined are responsible for nearly 40% of total direct and indirect CO2 emissions (International Energy Agency).

Safe hydrogen storage

While there have been other energy systems using hydrogen as a fuel, the key challenge of hydrogen lies in having a storage solution that is safe for deployment in highly-urbanised areas such as Singapore. The system uses special metal alloy as a storage medium to bond with hydrogen. This allows for the storage of a large volume of hydrogen at a much lower pressure over a long period of time without any deterioration. When electricity is needed, the stored hydrogen is released in a slow and regulated manner, making it safer and more compact to be stored in an urban setting.

Encourages greater mix of renewable energy

The Hydrogen Energy System can mitigate electricity supply fluctuations and intermittency issues – common shortcomings of renewable energy. When there is surplus renewable energy, it can be stored in the form of hydrogen and converted back to electricity when there is a deficit of renewable energy. This ensures that the grid remains stable even with a greater mix of renewable energy introduced, hence encouraging the use of green energy.

SP is working with Marubeni Corporation and Tohoku University on the Hydrogen Energy System with special metal alloy storage tanks from Japan, and to customise and integrate it for use in Singapore.

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About SP Group

SP Group is a leading energy utilities group in the Asia Pacific. It owns and operates electricity and gas transmission and distribution businesses in Singapore and Australia, and district cooling businesses in Singapore and China. SP Group is committed to providing customers with reliable and efficient energy utilities services. About 1.5 million industrial, commercial and residential customers in Singapore benefit from SP Group's world-class transmission, distribution and market support services. These networks are amongst the most reliable and cost-effective world-wide. SP Group also drives digital solutions to empower customers to manage their utilities, reduce consumption and save cost.

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