News Release

SP Group starts trial of vehicle-to-grid integration to pave the way for greater EV adoption

Singapore, 8 July 2021 – SP Group (SP) today announced the start of its trial of vehicle-to-grid[1] (V2G) technology. A first in Southeast Asia, SP will test and verify the possibility of tapping energy stored in electric vehicles (EVs) to enhance grid reliability to cater for the demand on the power grid to support more than 600,000[2] vehicles when Singapore phases out Internal Combustion Engine vehicles by 2040.

When charged, an electric vehicle stores energy in its Lithium-ion batteries. The vehicular batteries can act as small Energy Storage Systems (ESS). When renewable energy sources such as solar power fluctuate due to weather conditions, these ESSs can be a key solution to transfer energy back to balance the power grid. If V2G technology is proven viable, it can be a win-win for the electricity system and EV owners, acting as a cost-effective solution to supplement the larger ESSs to overcome intermittency while EV owners can be paid for use of the EV batteries when needed.

As the national power grid operator and a leading player in sustainable energy solutions, SP Group is taking the lead to harness V2G technology and cater for this increased demand while maintaining world-class reliability and stability of the grid.

SP is providing four V2G charging points at SP's premises for the trial which will be completed in June 2022. It seeks to demonstrate V2G capability and applications including frequency regulation, the injection of power from EVs to reduce demand from traditional sources, mitigation of too high or low voltage in the distribution system, and EV charging during peak and off-peak periods.

[1] Vehicle-to-grid or V2G enables the charged power to be pushed back to the power grid from the battery of an electric car to balance variations in energy production and consumption.
[2] Source: Land Transport Authority, 2020

Mr Stanley Huang, Group CEO, SP Group, said: "Our trial of vehicle-to-grid integration is another step towards supporting Singapore's green energy transformation. At SP, we have dual roles to play. As the national grid operator, we are building a resilient and smart grid for the future, ensuring that our energy system caters to the increased load due to the conversion to EVs. To empower a sustainable energy future, we are proactively investing in and leveraging smart energy solutions to enhance our grid's capacity for renewable energy sources."

SP announced its investment in The Mobility House (TMH) in September 2020 to explore vehicle-to-grid feasibility, and is increasing its investment in the V2G technology leader in Europe. Operating from Munich, Zurich and Belmont (California), TMH provides a non-proprietary software for integrating vehicle batteries into power grids, using intelligent charging and storage solutions.

What is vehicle-to-grid?

- V2G technology allows energy transfer between the batteries within an EV and the power grid. This is more sophisticated than uni-directional charging of EVs.
- The application of V2G technology could balance and support our energy grid.
- Renewables such as solar power is intermittent and managing this intermittency is important to ensure a stable power supply to customers. Mitigating intermittency has traditionally been performed by power plants. With energy storage solutions integrated with V2G technology, customers are able to contribute as well. When solar generation drops due to rain or cloud cover, the EVs plugged into the system can balance out the fall in supply. During periods of significant solar generation, the EVs can store the excess energy.
- With a well-functioning V2G landscape, customers can play a more active role and our energy system would be able to accommodate larger capacities of renewable energy.

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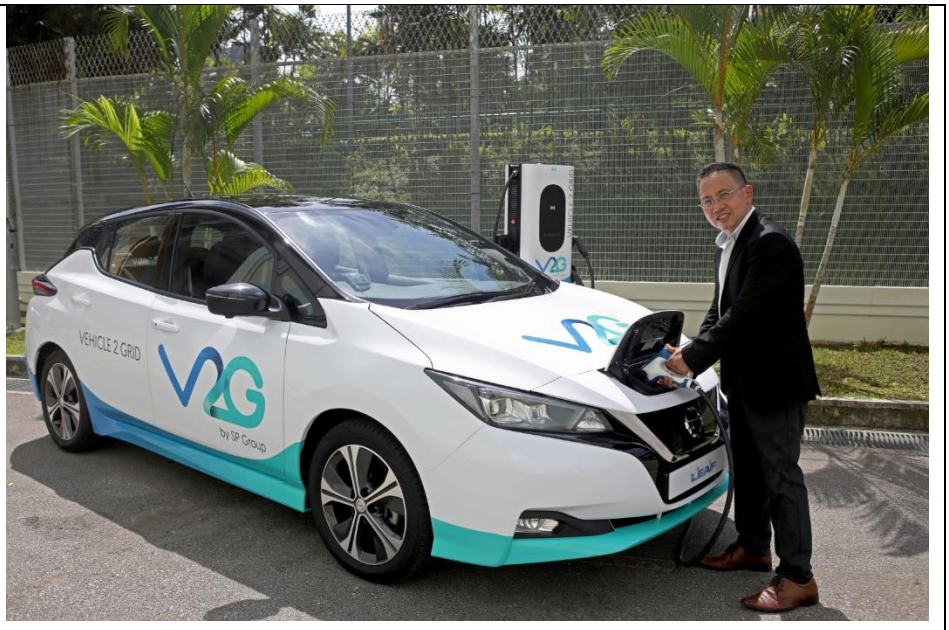
Photos

	 Mr Jimmy Khoo, CEO of SP PowerGrid, with the V2G-capable Nissan LEAF and V2G bidirectional charger that had just arrived in Singapore for the trial.
	Nissan LEAF – V2G 
Battery	Li-ion / 40 kWh
Motor Power Output	110 kW (148 HP)
Driving Range	311 km (full charged)
EV Charging Port	Type 2 (AC) / ChaDeMo (DC)

	V2G Bi-directional Charger

	
Max DC Output Power	10kW
DC Output Voltage Range	170 – 500V DC
Max DC Output Current	28 A DC
Power Factor (> 50% load)	➢ 0.99
Efficiency DC Plug	98% at full load Plug 1  CCS IEC 62 196-3 Plug 2  JEVS G105

About SP Group

SP Group is a leading utilities group in the Asia Pacific, enabling a low-carbon, smart energy future for its customers. It owns and operates electricity and gas transmission and distribution businesses in Singapore and Australia, and sustainable energy solutions in Singapore and China.

As Singapore's national grid operator, about 1.6 million industrial, commercial and residential customers benefit from its world-class transmission, distribution and market support services. These networks are amongst the most reliable and cost-effective world-wide.

Beyond traditional utilities services, SP Group provides a suite of sustainable and renewable energy solutions such as microgrids, cooling and heating systems for business districts and residential townships, solar energy solutions, electric vehicle fast charging and digital energy solutions for customers in Singapore and the region.

For more information, please visit spgroup.com.sg or for follow us on Facebook at fb.com/SPGroupSG, on LinkedIn at spgrp.sg/linkedin and on Twitter @SPGroupSG.