

2nd World Congress on **Wind and Renewable Energy**
&
5th World Congress and Expo on **Green Energy**

June 14-16, 2018 | London, UK

Solar power fluctuation mitigation**Terence Goh**

Singapore Power Group, Singapore

The primary application of a tender bid on battery energy storage system (BESS) in an Asia Pacific (APAC) country was to evaluate solar smoothing. Solar smoothing, or ramp rate control, refers to the use of the BESS application to mitigate rapid fluctuations in PV power output (eg. during transient cloud shadows on PV arrays) by adding power to or subtracting power from the output of a PV system in order to smooth out the high frequency components of the PV power generated. As utility-scale battery storage for renewable integration in the APAC country is yet at a pilot stage and there is a dearth of limited operational data and references available, an interested bid developer, has engaged the team to undertake an investigation in ramp rate control by energy storage. This presentation shall highlight: the battery ramp rate control result based on the technical assessment of the 5 MW/2.5 MWh BESS module's behaviour for charging and discharging to the grid, as based on simulated modelling against the solar+BESS operational requirements (e.g. ramp rates, SOC range and DOD limits, etc.); the expected solar fluctuations for different panel configurations (fixed tilt and tracker) at a given site and; sensitivity analysis on key factors related to ramp rate limit and BESS round trip efficiency.

terence.goh@nus.edu.sg

Notes: