



Supercapacitors Strengthen Renewable Energy Utilization



Towards the end of 2017, the United States had over 50 gigawatts (GW) of installed Photovoltaic (PV) solar generation capacity¹ and over 80 GW of wind generation². Similarly, but even more prevalent, the European Union had just over 100 GW of installed PV solar generation³ and nearly 170 GW of wind generation⁴. These are peak generation figures. Additionally, China total installed PV solar generation capacity is a staggering 130 GW, with 53 GW added in 2017⁵.

With the continued increase in renewable distributed generation, using this

energy supply can be more of a stumbling block than generating it. Utilities desire a firm, consistent supply of energy, from all of its sources, in order to meet the demand instantaneously. If supply is not consistent, whether from overcast days or shifting cloud cover, then it can be taken offline as it cannot reliably support grid needs. This can drastically reduce the utilization of the renewable source and effect the revenue return on the physical assets. To assist with this firming of renewable generation, energy storage is often integrated to balance supply and demand.

Supercapacitor modules are a compelling choice when energy density, or capacity, must be balanced with power density—or how fast that energy must be absorbed or delivered. This capability is required on a real-time basis to match demand and control the ramp up or down of the energy supplied by renewable technologies.

Shifting cloud cover and changing power loads for distributed grid generation and consumption results in minute-by-minute variation in power surplus or deficit. These surpluses or deficits can be absorbed or supplied as needed by supercapacitors.

The XLM Supercapacitor Module from Eaton can be wired in series and parallel configurations to meet application requirements; this includes voltage levels, power charging and discharging needs (kW) and bulk energy storage requirements (kWh). The XLM Module enables high power density and uses environmentally friendly materials resulting in RoHS compliance. Supercapacitor modules offer millions of charge/discharge cycles regardless of depth of discharge that can result in up to a 20 year lifespan.

Eaton's XLM supercapacitor can help efficiently and rapidly balance supply and demand in distributed or decentralized

energy systems supplemented by alternative energy sources.

This supercapacitor module is a high-power, high reliability, ultra-high capacitance energy storage device. It can be used as the sole energy storage solution or used in combination with batteries to increase the life of an energy storage system and eliminate the need for replacement parts and batteries. Having the right power system helps improve return on investment in alternative energy applications.

- 1 SEIA
- 2 AWEA
- 3 EurObserver
- 4 Wind Europe
- 5 Forbes

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