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(54) **INTEGRATING ENERGY STORAGE UNITS IN CONVERTERS FOR USE IN PV-BASED INVERTERS**

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(57) **ABSTRACT**

Systems and methods relating to the integration of energy storage subsystems into components for use with systems that harvest energy from PV panels and convert that energy for use with a power grid. Various configurations of converters that integrate energy storage cells and the inverters that use such converters are presented. Half-bridge and full bridge configurations for the converters are presented. The integrated energy storage cells may be battery cells, supercapacitor cells, or a combination of the two. Digital control systems for controlling the converters as well as the charge and discharge cycles for the energy storage cells are also presented.