



(54) **SYSTEMS AND METHODS FOR INCREASING OUTPUT CURRENT QUALITY, OUTPUT POWER, AND RELIABILITY OF GRID-INTERACTIVE INVERTERS**

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(57) **ABSTRACT**

Various enhancements to grid-interactive inverters in accordance with embodiments of the invention are disclosed. One embodiment includes input terminals configured to receive a direct current, output terminals configured to provide an alternating output current to the utility grid, a controller, an output current sensor, and a DC-AC inverter stage comprising a plurality of switches controlled by control signals generated by the controller. In addition, the controller is configured to: generate control signals that cause the switches in the DC-AC inverter stage to switch a direct current in a bidirectional manner; measure the alternating output current; perform frequency decomposition of the output current; and generate control signals that cause the switches in the DC-AC inverter stage to switch current in a way that the magnitude of a plurality of unwanted current components is subtracted from the resulting output current.

