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(19) **United States**(12) **Patent Application Publication****Kutcherlapati et al.**(10) **Pub. No.: US 2024/0178782 A1**(43) **Pub. Date: May 30, 2024**(54) **SYSTEMS AND METHODS FOR
SELECTIVELY ENABLING POWER FACTOR
CONTROL IN AN ELECTRIC MOTOR**(52) **U.S. Cl.**
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29, 2022.**Publication Classification**(51) **Int. Cl.**
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H02M 1/42 (2006.01)(57) **ABSTRACT**

An electric motor is provided. The electric motor includes a motor controller configured to convert AC power to a variable frequency variable voltage power for driving the electric motor according to a commanded motor output. The motor controller includes a PFC circuit configured to control a power factor of the electric motor and a microcontroller coupled to the PFC circuit and configured to activate the PFC circuit when the commanded motor output is greater than a threshold motor output, deactivate the PFC circuit when the commanded motor output is less than or equal to the threshold motor output, and generate a control signal based on the commanded motor output. The motor controller further includes an inverter configured to receive the control signal and generate the variable frequency variable voltage power according to the commanded motor output.

