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(54) **POWER DISTRIBUTION WITHIN AN ELECTRIC MACHINE**

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(57) **ABSTRACT**

An electric machine includes a stator and a rotor energizable by magnetic fields produced by the stator when receiving a stator current to produce relative motion between the rotor and the stator. A controller is configured to send the stator current through the stator at a current angle measured from the closest one of a pole of the rotor, determine a desired operational output of the electric machine, and determine a desired rotor motion corresponding to the desired operational output of the electric machine. The controller is further configured to calculate a vector control modulation applied to the stator that elicits the desired rotor motion, and adjust the current angle of the stator current based on the vector control modulation to cause the rotor to perform the desired rotor motion and achieve the desired operational output of the electric machine.