

CIRCUITRY AND METHOD FOR
CONTROLLABLE SLEW RATE

ABSTRACT OF THE DISCLOSURE

A circuit for controlling the slew rate in the stator coils of a polyphase, dc motor is provided. The circuit includes a first steady state control circuitry (12), a low side commutation circuitry (60), a second steady state control circuitry (62), and a high side commutation circuitry (64). The first steady state control circuitry (12) regulates the current through an A-coil (14) and a C-coil (18) after a high side commutation. The A-coil (14) couples to a voltage source through an HSDA (22) at one end and couples to the C-coil (18) through a center tap at the other end. The C-coil (18) couples to an LSDC (24) at its other end during this state. The low side commutation circuitry (60) performs a low side commutation by controlling the current slew rate of the C-coil (18) and a B-coil (16) as the current in the C-coil (18) is reduced to zero and the current in the B-coil (16) is increased from zero to a steady state level. The B-coil (16) couples to the center tap on one end and to an LSDB (52) at its other end. The second steady state control circuitry (62) regulates the current through the A-coil (14) and a B-coil (16) after a low side commutation. The high side commutation circuitry (64) performs a high side commutation by controlling the current slew rate of the C-coil (18) and the A-coil (14) as the current in the A-coil (14) is reduced to zero and the current in the C-coil (18) is increased from zero to a steady state level. The C-coil (18) couples between an HSDC (66) and the center tap during this state.

Figure 4