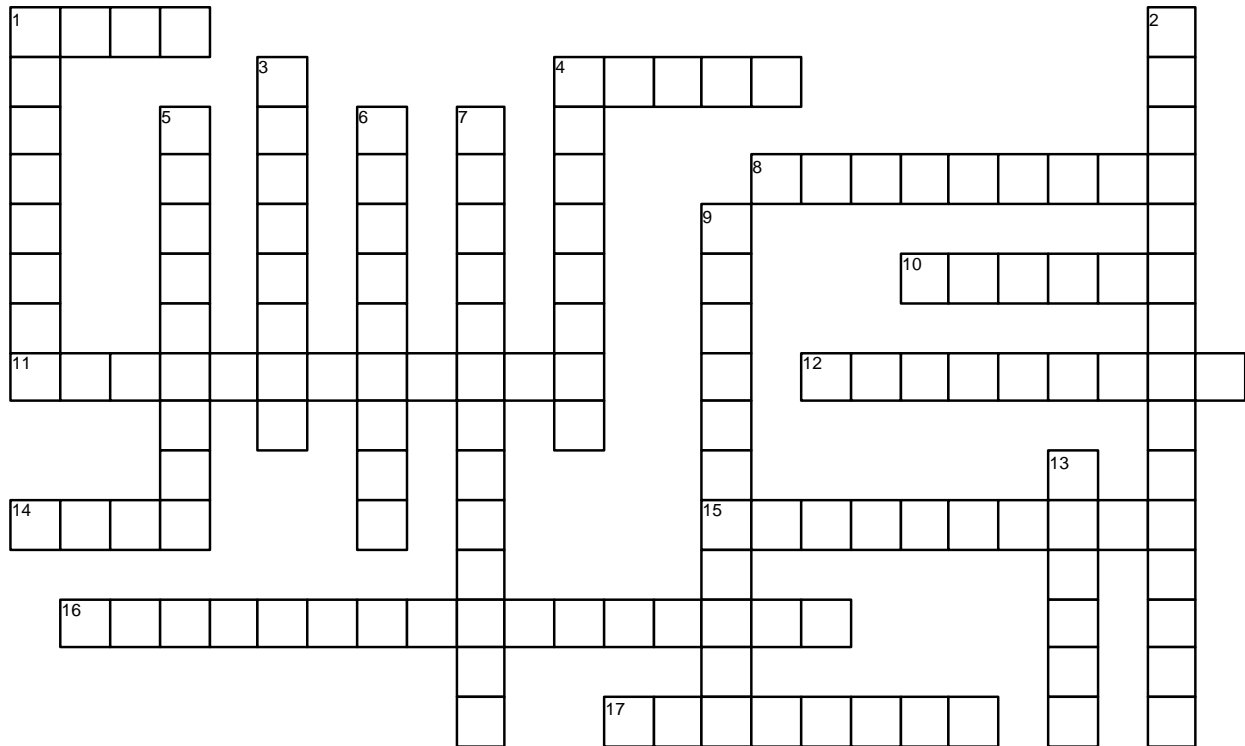


EV and HEV Motors, Converters, and Inverters

Chapter 11



<http://jameshalderman.com>

ACROSS

- 1 Abbreviation for surface permanent magnets.
- 4 The force is described by the Lorentz force law and is perpendicular to both the wire and the magnetic field. In an electric motor, the rotating part (usually on the inside) is called the _____, and the stationary part is called the stator.
- 8 _____ are electronic devices that can turn DC (direct current) to AC (alternating current).
- 10 _____ converters are electronic devices used to transform DC voltage from one level of DC voltage to another higher or lower-level voltage.
- 11 _____ rotor is composed of parallel thick copper or aluminum conductors connected to a ring of the same material at the ends.
- 12 Magnetic flux cylinders have direction, just as the flux lines surrounding a bar magnet have direction. Most automotive circuits use the conventional theory of current flow (+ to -), and therefore the _____ rule is used to determine the direction of the magnetic flux lines.
- 14 Abbreviation for interior permanent magnets.
- 15 A rotary switch called a _____ reverses the direction of the electric current, twice every cycle, to flow through the armature so that the poles of the electromagnet push and pull against the permanent magnets on the outside of the motor.
- 16 The creation of a magnetic field by the use of an electrical current is called _____.
- 17 An induced current moves so that its magnetic field opposes the motion that induced the current. This principle is called _____.

DOWN

- 1 _____ are capacitors and resistors arranged in a circuit to control the high-voltage surges that can occur when circuits containing coils are switched on and off.
- 2 _____ are used to enhance high-voltage systems that operate on a lower high-voltage battery.
- 3 The _____, made up of many conductors, is installed inside this strong magnetic field, with very little clearance between the armature and the field coils.
- 4 Most electric motors use an internal sensor to detect rotor position, speed, and direction that is called a _____ or encoder.
- 5 The magnetic field strength around a conductor may be controlled by changing the current. These magnetic lines of force are called _____.
- 6 AC induction motors and AC synchronous motors are types of _____ motors.
- 7 The current flow through the MG ECU is controlled by six _____ bipolar transistors.
- 9 An _____ motor uses electromagnetic induction from the stator to induce a current, and therefore creates a magnetic field in the rotor without the need for brushes.
- 13 The force is described by the Lorentz force law and is perpendicular to both the wire and the magnetic field. In an electric motor, the rotating part (usually on the inside) is called the rotor, and the stationary part is called the _____.