

Electric Motor

Electric Motor, also known as eMotor, is an electric motor used in the propulsion of a vehicle. The eMotor of Electrical Vehicles (EV) is responsible for **converting electrical energy to mechanical energy** in such a way that the vehicle is propelled to overcome aerodynamic drag, rolling resistance drag, and kinetic resistance. eMotors are found in BEVs and hybrids, and are typically colocated with the gearbox/transmission and power electronics.

There are two types of electric motors in terms of input voltages: DC motor and AC motor. Although there are unique advantages of each type, AC motor is more commonly used in electrical vehicles at the present market. An overview of eMotor types can be found [through this link](#). The most common EV eMotors are discussed in this [presentation](#). An example of eMotor teardown can be found [here](#).

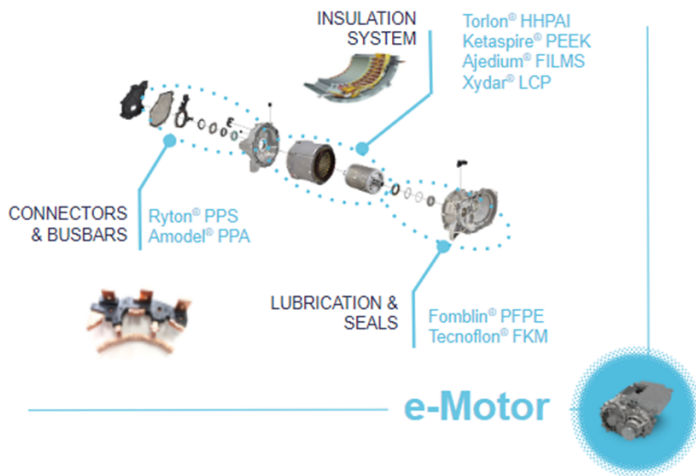
Trends in eMotor Design include,

- Reduce cost
- Increase power/efficiency with same size motor or smaller
- Optimize heat transfer out
- Integrate emotor with edrive and power electronics
- Downsize emotor to improve vehicle packaging space
- Reduce weight to increase vehicle range (i.e., varnish less, composite housings)
- Minimize electrical and magnetic losses

These development trends challenge material performance at higher temperature (T) and higher electrical stress (E) with the combination of chemical resistance (A) and mechanical endurance (M) requirements.

Solvay offers [solutions](#) for different parts used in eMotors.

- Insulation systems
- Connectors, busbars and sensors
- Lubrication, cooling and seals



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