Vehicle Electrification System Standards

XI. High Voltage Power Electronics Cooling Systems

XI.b High Voltage Power Electronics Cooling Systems Components

Overview:

High Voltage Power Electronics Cooling Systems Components

- Coolant
- Electric Coolant Pump
- 2/3/4 Way Valve
- Heat Exchanger (Radiator)
- Cooling Fan
- Cooling Fan Speed Controls
- Cooling Ducting
- HVAC Controller
- Powertrain Control Module

Description:

Power Electronics systems operate at elevated temperatures and require a cooling system to ensure that, the electronics contained within the power electronics enclosures, maintain a safe operating temperature. Students need to understand the importance, placement, service, and diagnostics of these systems to ensure high levels of operation and long service life of power electronics components.

Outcome (Goal):

The Students will be able to Identify all power electronics cooling system components, trace the routing of all electrical harnesses and cooling system hoses/ducting, test, diagnose, and service the cooling system.

Objective:

Students shall be able to:

1. Identify all components that comprise the Power Electronics Cooling system.
2. Use OEM service information, identify and locate each Power Electronic system component on a live vehicle and complete the associated worksheet provided by the instructor.

Task:

1. Given a live vehicle topology diagram or live vehicle, the Students will be able to identify all Power Electronics cooling system components
2. Given a vehicle diagram, Students will be able to trace the Power Electronics electrical and cooling circuits by using OEM service information diagrams and a worksheet
3. When provided a worksheet and OEM service information, the students will match Power Electronics component to an acronym list
4. When provided a list of definitions, students will match them to the parts list nomenclature.

To comment or offer suggestions on this standard, contact Ken Mays:

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