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## Vehicle Electrification System Standards

### XI. High Voltage Power Electronics Cooling Systems

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## 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

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### 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.

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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.

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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.
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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.
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