

Read This Before Adding an EV to Your Fleet

Battery electric trucks and buses are here. School districts, an early EV beachhead, are carting kids to school in fully electric, zero-emissions buses, while fleets with short-haul applications, typically less than 150 miles, are using battery electric trucks from the likes of Freightliner, Volvo, Peterbilt and Kenworth. Battery electric Mack Trucks haul refuse and the likes of Orange EV and Kalmar Ottawa terminal tractors move trailers around fleet yards. Electric trucks aren't a headline-grabbing concept, they're hard-working iron making an impact in sustainability strategies in transportation segments.

It's exciting, but there are also major differences when it comes to service and support of these vehicles. The experts at Valvoline have pulled together this guide to help fleets of all sizes and applications prepare for electric vehicle operation.





Safety First, Always



**HEAVY
DUTY**

Park your truck management bravado at the door. It's best to come to battery electric vehicle management and service with fresh eyes. These are high-voltage battery electric trucks that come with unique safety considerations. Respect the new dangers you're introducing into your operation and train appropriately. Your first go-to source of safety and training information is the truck or bus OEM. You should be talking with your OEM of choice well before the electric truck arrives at your service door.

It's worth repeating: Your tried-and-true technicians have been diesel technicians, and now you need high-voltage, electrical-system diagnostic and repair professionals. It's going to take a different breed of tech to service these trucks and the OEM training is your first step in preparing them for electric vehicle service. This should include teaching technicians how to safely shut down and disconnect high-voltage battery systems and how to properly troubleshoot and service any of the high-voltage components.

That's not to say you have to train your entire technician staff. The bulk of your truck service workload will still be diesel. To get started, select one or two technicians to be the EV service leaders who will undergo all of the training. Daimler Truck, for example, requires a rigorous three-day high-voltage electrical safety course and a technical service and maintenance course for high-voltage vehicles.

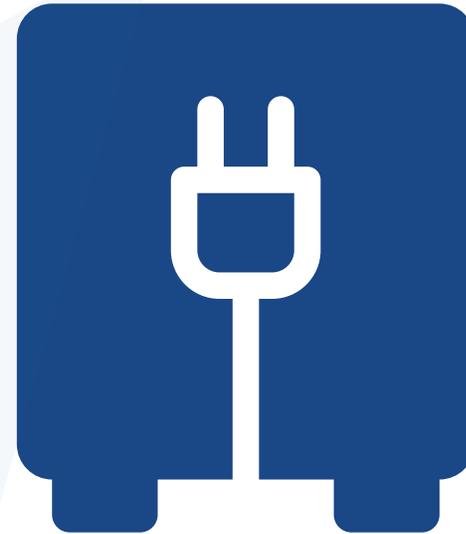
For the rest of your technician staff, it's important that they are trained on the EV safety basics, personal protective equipment (PPE), and service bay practices. (We'll get to those in a minute.) They'll need to take a battery safety course, also available from OEMs, and a short electrical safety familiarization course is necessary to work on any low-voltage systems.

As far as PPE, be prepared to invest in plenty of electrical safety gloves, cotton undergloves, leather overgloves, face shields, dielectric overboots and insulating rubber aprons to name a few. Again, your OEMs can also let you know of any additional safety equipment that they require.

Tools may also need to be updated with insulated hand tools such as sockets, screwdrivers and pliers, to name a few, and you'll need lockout devices on the battery connectors so that they cannot be connected by unauthorized technicians.



Changes to the Service Bay

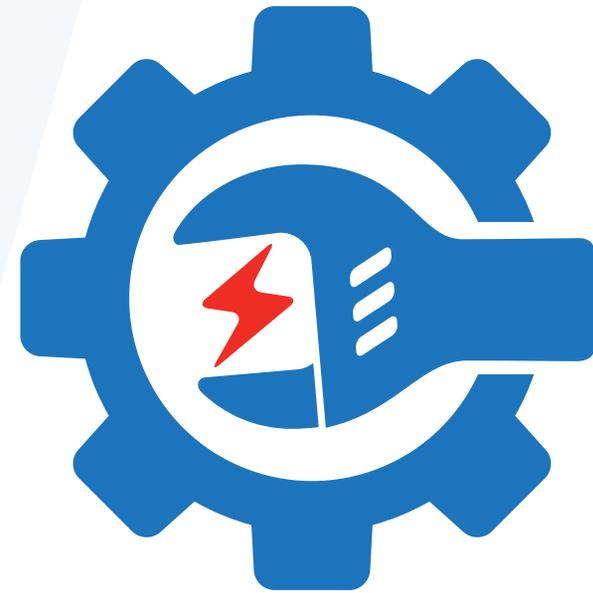


A common recommendation is to designate a bay (or bays, depending on the size of your operation) to electric vehicle service. That's not to say that the bay only can service electric vehicles, but when one rolls into the shop, this is the bay it should be parked in. Some OEMs, like Peterbilt, for example, recommend having a trained observer outside of the battery electric vehicle work area to assist in the case of an emergency. Placards and signage should also be present to inform others in the shop that high-voltage service work is being performed and to prevent anyone from entering the area.

The bay will also need charging capability. There are two options: Installing a permanently mounted charger near the bay or utilizing a mobile charger. Both hold advantages and disadvantages. Installing charging infrastructure can be costly and time consuming, but offers the flexibility and speed to charge vehicles efficiently. Mobile charging can be put to work for far less of an investment, but it's often seen as a temporary or transitional technology as it doesn't offer the capacity and speed that comes with installed infrastructure. The choice will be determined by your EV investment level, site suitability and sustainability strategy.



Service Needs of a Battery Electric Vehicle





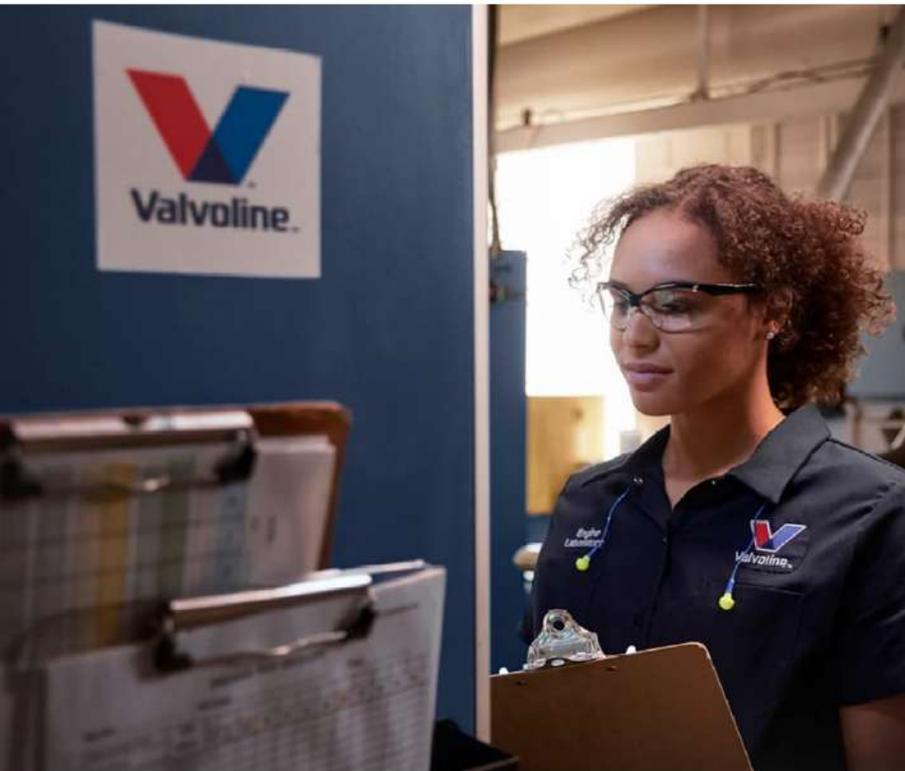
It's a misnomer to think that battery electric trucks won't need service. It's a common conceit that the service needs will be less than those of diesel trucks, but service needs persist. Tires are one of the first that spring to mind, but brakes will still need to be checked according to PM schedules (even with regenerative braking, a system that uses the electrical motors to reduce the vehicle's speed).

The biggest difference comes with the battery. Different size vehicles will have different size battery packs. To keep batteries operating efficiently, these vehicles employ thermal management systems. These systems include heat transfer fluids. The larger the battery pack, the more heat transfer fluid is needed. Thinking about other fluids—the vehicle may also still need driveline fluids for differentials.

The biggest difference in servicing a battery electric truck vs. battery electric bus would be PM intervals. Much like diesel vehicles, OEMs will set the necessary PM schedule. For example, a bus will turn much more than an on-highway truck, meaning the kingpins and steering joints will need to be greased at much shorter intervals.

Pick the Right Partners





One of the most important aspects to building out your perfect EV service bay is to remember: You're not alone. Certainly OEMs will be a go-to source of EV information and training, but don't discount the well-established partnerships with your current vendors or the opportunity to forge new relationships with a company like Valvoline. In Valvoline's case, the company has long-standing relationships with OEMs, and Valvoline's knowledge base spans a multitude of applications and industries. Their global reach gives them a direct line to the latest vehicle prototypes, fluids, and common challenges. Valvoline uses that information in its dedicated EV testing facility and offers its technical experts to help its customers advance their operations—regardless of the powertrain technology that propels them forward.



Kilowatts vs. Kilowatt Hours

Kilowatt Hour (kWh) is how we look at a fuel tank—it is the amount of energy you can store in the batteries for use.

Kilowatts is an instantaneous reading of how much power is going to a certain place, not a quantity of potential energy.



Valvoline Heavy Duty.
How the tough get going.

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