

COMPETENCY PROFILE:

# ELECTRIC VEHICLE SERVICE TECHNICIAN

## ROLE OVERVIEW

Like traditional combustion vehicles, electric vehicles require a certain level of maintenance and repair throughout their lifecycle. Electric vehicle (EV) service technicians work to diagnose, service, and repair high-voltage electric vehicles. The high-voltage battery adds a layer of complexity beyond traditional combustion engine vehicles.

EV service technicians work in automotive repair shops. They need high mechanical and electrical knowledge and often read technical manuals to ensure the vehicles are maintained and repaired to each manufacturer's specifications.

## ALSO KNOWN AS:

- Automotive Service Technician
- Electric Vehicle Battery Technician

## NATIONAL OCCUPATIONAL CLASSIFICATION:

- 72410 – Automotive service technicians, truck and bus mechanics, and mechanical repairers

## EDUCATION AND EXPERIENCE

- A high school diploma or GED certificate provides essential literacy and numeracy skills for technical training and understanding of technical manuals and diagnostics.
- Completion of an apprenticeship or specialized training program in EV technologies is necessary. Such programs offer hands-on experience with battery systems, electric motors, and EV maintenance and repair, available through vocational schools, community colleges, or specialized EV training centers.
- The profession is regulated provincially, with certification, licensing, and training requirements varying by region. Technicians must understand and adhere to their province's regulations, including passing exams, completing approved training, and engaging in continuing education.
- Technicians need in-depth knowledge of EV technology, including high-voltage systems, electric powertrain components, EV-specific software, and safety practices for handling EVs.
- Gaining hands-on experience through apprenticeships, on-the-job training, and other learning opportunities is critical. It enables technicians to apply knowledge, refine troubleshooting skills, and stay updated with EV technology advancements.
- Due to the fast-paced evolution of EV technology, ongoing education is essential. Technicians should continuously update their skills through courses, workshops, and certifications related to new technologies, diagnostic tools, and repair techniques.

## TECHNICAL



### Diagrams and Modelling

Applies an analytical understanding of technical wiring and mechanical diagrams to ensure that each vehicle component is maintained or repaired to the manufacturer's specifications.

- Reads and accurately follows EV wiring diagrams to ensure the vehicle is properly connected.
- Wiring schematics are used to determine best practices for connecting multiple systems in an EV.
- Locates and interprets the vehicle manufacturer's manual to ensure the appropriate repairs and maintenance are done for each car.

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### Electric Systems

Identifies faults and applies appropriate processes and procedures to maintain electrical systems, ensuring they meet quality assurance and operating specifications.

- Understands the fundamental electromechanical functions of an EV motor to repair the vehicle safely and efficiently.
- Uses applicable electrical safety principles when working on EVs to avoid dangerous incidents.
- Applies an understanding of electrical circuits to diagnose and inspect where issues occur.

- Chooses the appropriate testing indicators when testing the vehicle's different electric/electronic components to diagnose any experienced issues.
  - Ensures that the wiring is completed safely to avoid short circuits and other electric issues.
  - Diagnoses problems in new cars by connecting them to specialized computers, which provides an extra layer of protection and catches issues in the vehicle's software.
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## **Mechanical Systems**

Identifies faults and applies appropriate processes and procedures to maintain mechanical systems, ensuring they meet quality assurance and operating specifications.

- Chooses the appropriate testing indicators when testing different parts of the vehicle to diagnose any experienced issues.
  - Evaluate power systems technologies and models to propose solutions to improve system efficiency and reliability.
  - Works on the hardware integrated into EVs as necessary to ensure all aspects of the vehicle are functional.
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## **Troubleshooting**

Identifies operating problems and inefficiencies in current equipment, processes, or systems and reports issues to determine effective solutions.

- Completes service records and repair documentation to facilitate preventive maintenance and equipment replacement follow-up.
- Documents the solution or service performed when receiving abnormal or unique fault codes on an electric vehicle's components to record the solution and improve the ease of service for the next technician.
- Identifies and reports major equipment/tool maintenance needs to maintenance personnel to ensure safe and efficient operations.
- Uses specialized instruments to test the electrical components of electric batteries and other system components to diagnose the root cause of the problem.



## Communication

Positively directs outcomes by delivering communication that better understands goals and objectives, captures interest, and gains support for immediate action.

- Actively participates in or leads team discussions to generate ideas and solutions, solve problems, and improve overall organizational performance.
- Asks questions when assigned unfamiliar tasks to ensure understanding and accuracy in repairing EVs.
- Develop and maintain relationships with clients and customers to ensure optimum customer service and maintenance of EVs.
- Communicate any potential unforeseen fixes with customers to inform decision-making and prioritize which parts to fix.
- Uses non-technical language to effectively communicate vehicle state and necessary repairs to clients of all experience levels.

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## Customer Service

Demonstrates a commitment to working with customers to assess needs and satisfy requirements and expectations.

- Actively listens to customers to address questions or concerns to improve overall experience.
- Anticipates customer needs and manages customer expectations to ensure customer satisfaction and loyalty.
- Maintains a professional demeanour when responding to customer inquiries to help customers and ensure customers receive the support desired.
- Promptly responds to changing circumstances and communicates changes with customers to ensure understanding.
- Locates the customer and vehicle information in the shop's database (where applicable) to determine the vehicle's repair history and provide better service.

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## Problem-Solving

Identifies problems and uses logic, judgment, and evidence to evaluate alternative scenarios and recommend solutions to achieve a desired goal.

- Identifies service and maintenance issues to equipment and vehicles and appropriately contacts technical staff to alleviate mechanical problems.
- Identifies relationships between components and systems to develop solutions to resolve problems and repair/maintain EVs.
- Determines which parts must be prioritized during maintenance/repair to make EVs run as efficiently as possible.

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## **Teamwork**

Actively participates in working with and helping others to accomplish a common objective.

- Assesses own workplace practices to discuss opportunities to improve workflow and productivity.
- Participates in training activities and incorporates acquired skills and knowledge to improve operational performance.
- Recommends improvements or solutions to supervisors to enhance operational efficiency.
- Supports the decisions of senior employees and works to achieve the specified outcome.
- Works with team members to divide up tasks efficiently and effectively.



## Health and Safety Procedures

Adheres to and advocates specific workplace safe operating procedures and occupational health and safety requirements within a defined jurisdiction to ensure the health and safety of self and others.

- Conducts all operations within the company's established safety management system to prevent workplace incidents.
- Documents all incident/near-miss reports to document incidents and adhere to safe operating procedures while working.
- Uses appropriate Personal and Protective Equipment (PPE) in all circumstances to protect from injuries.
- Operates all instruments and workplace equipment within safety standards when repairing or maintaining vehicles to ensure all safety.

*This profile is a living document. If you have any feedback or would like to help us improve the profile, please reach out to [research@eco.ca](mailto:research@eco.ca).*