

### Alternating current (AC)

Type of electric current which periodically switches its direction of flow.

### Ampere (A)

It is the SI unit of electric current, which is equivalent to flow of 1 Coulomb electric charge per second. It is represented by the symbol  $A$ .

### Ampere-hour (Ah)

The ampere-hour is a physical unit for measuring electric charge and indicates the charge (often called “*capacity*” in conversational language) of a battery. One ampere hour is the charge quantity which passes a conductor within 1 hour at a constant current of 1 Ampere. It is denoted by the symbol  $Ah$ .

### Anode

An anode is the electrode through which an electric current flows into a polarized electrical device. In an electrochemical device, it is also the electrode at which oxidation reaction occurs.

### Battery (auxiliary)

In an electric drive vehicle, the auxiliary battery provides electricity to start the car before the traction battery is engaged and is also used to power the vehicle accessories.



### **Battery Electric Vehicle (BEV)**

A type of electric vehicle that solely relies on energy stored in rechargeable battery packs for propulsion.

### **Battery Management System (BMS)**

It is in the form of a mini-onboard computer to monitor the entire battery system as well as individual batteries. May also be built into the charging system.

### **Battery power converter**

It is a DC-to-DC power electronic converter that converts the voltage of the traction battery pack to the higher-voltage voltage of the DC-bus used for power exchange with the traction motor.

### **Capacitor**

A device used to store an electric charge, consisting of one or more pairs of conductors separated by an insulator.

### **Cathode**

A cathode is the electrode from which an electric current leaves a polarized electrical device. In an electrochemical device, it is also the electrode at which reduction occurs.

### **Charging port or vehicle inlet**

It is a connector present on the electric vehicle to allow it to be connected to an external source of electricity for charging.



### **Contactless Power Transfer (CPT)**

It is an induction based wireless electric power transmission method.

### **Control Pilot (CP)**

Designation of the connection point contact/the cable, via which the communication information is transmitted.

### **Controller**

A device which controls the speed of the electric vehicle by regulating the current and voltage in the motor.

### **Depth of Discharge (DOD)**

A measure of how much energy has been withdrawn from a battery. It is expressed as a percentage of the total battery capacity. For example: if you use 25 Ah of a 100 Ah battery, that is running the battery to 25% DOD.

### **Direct Current (DC)**

Type of electric current which flows only in one direction.

### **Distribution System Operator (DSO)**

Refers to a natural or legal person responsible for operating, ensuring the maintenance of and, if necessary, developing the distribution system in a given area and, where applicable, its interconnections with other systems and for ensuring the long term ability of the system to meet reasonable demands for the distribution of electricity.



### **Duty cycle**

A duty cycle is the fraction of one period in which a signal or system is active. Duty cycle is commonly expressed as a percentage or a ratio. A period is the time it takes for a signal to complete an on-and-off cycle.

### **Electric Vehicle (EV)**

Any vehicle propelled by an electric drivetrain taking power from a rechargeable battery or from a portable, electrical energy source like fuel cell or solar panels, which is manufactured for use on public roads. This includes pure electrics, hybrids, plug-in hybrids and hydrogen fuel cell vehicles.

### **EVSE (Electric Vehicle Supply Equipment)**

Infrastructure designed to supply power to EVs. EVSE can charge a wide variety of EVs including BEVs and PHEVs.

### **Electrolyte**

A chemical compound that ionizes when in dissolved or molten state to produce an electrically conductive medium.

### **Fuel Cell Vehicle (FCV)**

A type of electric vehicle powered by a fuel cell. It uses a liquid, usually hydrogen, to store energy instead of a battery.



### **Greenhouse gas (GHG)**

Any gas in the atmosphere that absorbs or emits radiation within the thermal infrared region. These gases such as carbon dioxide and methane are primarily responsible for the greenhouse effect.

### **Hybrid Electric Vehicle (HEV)**

A type of electric vehicle driven by at least one electric motor and one additional energy converter (e.g. a conventional internal combustion engine with petrol or diesel).

### **Internal Combustion Engine (ICE)**

An engine that converts the chemical energy liberated through combustion of fuel, into a mechanical energy that is used to propel the vehicle.

### **Inverter**

It is a power electronics device which converts direct current to alternating current.

### **Microgrid**

It is a localized grouping of electricity sources and loads that normally operates connected to and synchronous with the traditional centralized electrical grid, but can disconnect and function autonomously as physical and/or economic conditions dictate.



### **Motor drive**

It is a DC-to-AC (or at times DC-to-DC) power electronic converter, used to convert power from the high voltage DC bus to AC (or at times DC) power for the operation of motor. The converter is bidirectional for operation in both driving and regenerative braking mode.

### **On-board charger**

It is an AC-to-DC power electronic converter that takes the incoming AC electricity supplied via the charge port and converts it to DC power for charging the traction battery. Using the battery management system, it regulates the battery characteristics such as voltage, current, temperature, and state of charge.

### **Plug-in Electric Vehicle (PEV)**

Any motor vehicle that can be recharged from an external source of electricity. The electricity is stored in rechargeable battery packs and either drives or contributes to driving the wheels.

### **Plug-in Hybrid Electric Vehicle (PHEV)**

A vehicle with a similar configuration to a regular hybrid vehicle but with a larger battery pack which can be charged by plugging in to a regular electricity supply.

### **Power electronics controller**

This unit controls the flow of electrical power in the different power electronic converters in the electric car.



### Power electronic converter

A power electronic converter is made of high power fast-acting semiconductor devices, which act as high-speed switches. Different switching states alter the input voltage and current through the use of capacitive and inductive elements. The result is an output voltage and current, which is at a different level to the input.

### Proximity Pilot (PP)

A contact to establish the current carrying capacity of the charging cable and to activate the immobilizer.

### Range

It is the total distance traversed by an electric vehicle on purely electric power before it needs a recharge.

### Rectifier

It is a power electronic device which converts alternating current to direct current.

### Specific energy

Specific energy is energy per unit mass. The SI unit for specific energy is the joule per kilogram (J/kg). It is used to quantify, for example, stored heat and other thermodynamic properties of substances such as specific internal energy, specific enthalpy, specific Gibbs free energy, and specific Helmholtz free energy. It may also be used for the kinetic energy or potential energy of a body.



### State of Charge (SOC)

It is defined as the ratio of the current capacity of the battery to the maximum amount of charge that the battery can store.

### Traction battery pack

It is a high voltage battery used to store energy in the electric car and provide power for use by the electric traction motor.

### Traction electric motor/generator

It is the main propulsion device in an electric car that converts electrical energy from the traction battery to mechanical energy for rotating the wheels. It also generates electricity by extracting energy from the rotating wheels while braking, transferring that energy back to the traction battery pack.

### Transmission

For an electric car, usually a single gear transmission with differential is used to transfer mechanical power from the traction motor to drive the wheels.

### Transmission System Operator (TSO)

It is an entity entrusted with transporting energy in the form of natural gas or electrical power on a national or regional level, using fixed infrastructure.

### Vehicle to everything (V2X)

It is a term used to denote the flow of electricity from the vehicle battery to an external load such as the grid, a home or another vehicle.





### **Volt (V)**

It is the SI unit of electromotive force, the difference of potential that would carry 1 ampere of current against 1 ohm resistance. It is represented by the symbol  $V$ .

### **Watt (W)**

It is the SI unit of power, which is equivalent to 1 Joule of work per second. It is represented by the symbol  $W$ .

### **Watt-hour (Wh)**

It is a unit of energy equivalent to one watt of power expended for one hour of time denoted by the symbol  $Wh$ .

### **Well-to-wheel efficiency**

Well-to-wheel efficiency is the specific life cycle assessment used for transport fuels and vehicles considering all energy losses right from the source of fuel, all the way to the wheels of the vehicles. The well-to-wheel analysis is used to assess total energy consumption, energy conversion efficiency and emissions, including their carbon footprint.

