

# Electrical Power Generation

In general, energy can be defined as anything that has "the potential for causing changes". The most common definition of energy is the work that a certain force (gravitational, electromagnetic) can do. Energy is conserved, meaning that it cannot be created or destroyed, but only converted from one form into another; for instance, a battery converts chemical energy into electrical energy.

The aim of this is guide is to guide users on how to transform and use electric energy and electric power used for equipment and devices needed in the humanitarian interventions, including; understand basic electric concepts, knowing how to properly size installations, and how to efficiently manage electrical installations.

## Common Terms in Power Generation

<b>AC</b>	Short for Alternating Current.
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<b>DC</b>	Short for Direct Current.
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<b>Electrons</b>	Small charged particles that exist as part of the molecular structure of materials.
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<b>Free electron</b>	An electron that is easily separated from the nucleus of the atom to which it belongs.
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<b>Conductors</b>	Bodies that possess free electrons (metals, for example, but also the human body and the earth).
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<b>Insulators</b>	Bodies that do not possess free electrons (e.g., glass, plastic and wood).
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<b>Voltage (U)</b>	The difference in charge between two points.
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<b>Current (I)</b>	The rate at which charge is flowing.
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<b>Resistance (R)</b>	A material's tendency to resist the flow of charge (current).
<b>Circuit</b>	A closed loop that allows charge to move from one place to another.
<b>Resistor</b>	Any material that allows electrical energy to be converted to thermal energy.
<b>Overload</b>	Additional power available for a short amount of time.
<b>VRLA Battery</b>	Short for Valve Regulated Lead Acid Battery.
<b>Absorption voltage Range</b>	The level of charge that can be applied without overheating the battery.
<b>Float voltage Range</b>	The voltage at which a battery is maintained after being fully charged.
<b>Distribution Panel</b>	This is a circuit breaker and contains many electrical circuits. Using this, a circuit can be turned on or off.
<b>Circuit Breakers and Fuses</b>	These protect wires from overheating and are found in the distribution panel box. When there is an overload, that is, too much current flowing, the fuses will blow or the circuit breakers will trip.
<b>Switches</b>	Switches can energise circuits, that is, they allow a current to flow through. If carelessly used, these can cause damage to a person and to equipment. Receptacles connect the appliances to a circuit.

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**Grounding/earthing** connecting metal parts of electric appliances to earth.

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**(W)** Short for Watt, the Power unit measure.

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**(Wh)** Short for Watt-hour, the Energy unit measure

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**(V)** Short for Volts, the Voltage unit measure

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**(A)** A Short for Ampere, the Electrical Current unit measure

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## Comparison of UK-US Terminology

For the purpose of this guide US terminology is more frequently used.

UK	US
2-way lighting, switch	Switch 3-way lighting, switch
Cooker	Range
Distribution board	Distribution panel, breaker panel
Earth, earthing	Ground, grounding
Fitting	Fixture
Residual current device (RCD)	Ground fault circuit interrupter (GFCI)
Skirting board	Baseboard
Strapper	Traveler

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