

# Solar Power 101: An Introduction

Provided by Azimuth Solar



As concern over the increasing cost of energy grows, many people are looking into alternative sources of power, like solar. There are four main components in a basic solar setup: Solar Panels, Charge Controller, Batteries and Inverter. All components and the wiring connecting them need to be carefully chosen and sized appropriately to work together. Use this guide to demystify the terminology behind solar, and kick-start your journey to energy independence!

**Solar Panels** absorb sunlight and convert it into electricity through the **Photovoltaic Effect (PV)**. They are available in rigid glass panels (seen on rooftops), flexible panels (for curved surfaces), folding solar panels and blankets. Panels are rated by their maximum power output in **Watts**, and produce **Direct Current (DC)**. Many factors, such as angle of the sun (azimuth), shading, temperature and weather, influence how much power a panel will produce.

**Charge Controllers** are an important buffer between Solar Panels and the Batteries they charge. They monitor the settings of both the panel(s) and the battery and make adjustments during charging so that the power from the panels does not overload the battery. There are two types of charge controllers **Maximum Power Point Tracking (MPPT)** and **Pulse-Width Modulation (PWM)**. MPPT charge controllers are more efficient and are programmable to work with a wider range of batteries and settings.



**Batteries** are used to store the power your panels produce. Battery capacity is determined by multiplying the **Voltage (V)** by the **Amps (Ah)** to get the **Watt-hours (Wh)**. Example: a 12V 100Ah battery can store 1,200Wh of power. Batteries come in a wide range of sizes and chemistries. Your optimal battery choice will depend on what you're using them for, your budget and the conditions of use.

The **Inverter** transforms the **Direct Current (DC)** stored in your battery to **Alternating Current (AC)**. Your fridge, television, coffee pot and most electronics in your home run off of AC power. USB plug-ins, most RV appliances, and well pumps are examples of DC appliances that do not need an inverter and can be powered directly from the battery. Inverters come in two types: **Pure Sine Wave** and **Modified Sine Wave**. Pure Sine Wave is preferred. Modified Sine Wave is cheaper but can damage sensitive electronics. For ease of use, some inverters come with plug-in outlets built into them.

## Azimuth Solar Products Inc.

Come visit our Kelowna showroom to see the exciting new products we have in stock!

High Performance Deep Cycle Batteries

Compact Solar Kits

Emergency Power Banks

Cables & Connectors

Inverters & Charge Controllers

Solar Panels

**Or shop online & choose free pick-up in store!**

Local: 236-420-4228 • [www.azimuthsolar.ca](http://www.azimuthsolar.ca)  
 Showroom: 1050 Richter St., Kelowna, BC

## Little Owl ACADEMY

Daycare • Preschool • Out-of-School Care

**Offering:**

- Preschool Enhanced Daycare 3-5yrs
- Infant Toddler 0-3
- Out of School Care 5-12yrs Servicing (Watson Road, Glenmore, North Glenmore Elementary)
- Jr. Kindergarten 3-5yrs
- Preschool 2.5-4yrs
- Yoga, Music, Brain Gym, Phonics, Science and Art

(250) 470-1171  
[www.littleowlacademy.ca](http://www.littleowlacademy.ca)  
 Glenmore@LittleOwlAcademy.Ca  
 615 - 1984 Kane Road, Kelowna BC