Inverters Role in a Photovoltaic System

Introduction to Inverters

An **inverter** converts **direct current (DC) input** from the PV array or battery into **alternating current (AC) output**. PV modules produce only DC. However, electrical energy is transmitted and distributed in AC form and appliances consume AC power. Therefore, inverters are essential in grid-connected PV systems. Further inverter functions are **maximum power point tracking (MPPT)** which ensures that the array produces the maximum possible power under fluctuating conditions, **Monitoring of Power Generation** from the PV array, and **Provision of Electrical Safety.**

There are two main types of inverters: **single-phase** and **three-phase.** Single-phase inverters deliver AC to one phase of a power transmission line, whereas three-phase inverters deliver AC to all three phases of a power transmission line. PV systems above 5 kWp usually require three-phase inverters because one line cannot absorb all the power delivered.

There are three different sizes of inverters with respect to their power capacity:

• **Module inverters (Micro-inverters)** which are directly connected to a PV module (e.g. up to 300 W)

• **String inverters** which are connected to one or a few strings of PV modules. Each string can have, for instance, up to 20 modules. These are the most widely used types of inverters.

• **Central inverters** which are used in large PV farms of several megawatts, because many strings can be connected to the inverter.

For off-grid applications, different inverter types can be used, For example, battery inverters (power input from batteries only) or inverter-chargers with integrated solar charge controllers.

Contact us today to get the best possible solar plant solution at your facility.

www.circuitenergy.ca

70 East Beaver Creek Rd unit 32 Richmond Hill, ON L4B 3B2 Phone : 1 866 895 4545