Phocos' **Power+** Technology

Oversize your PV array for optimal power output

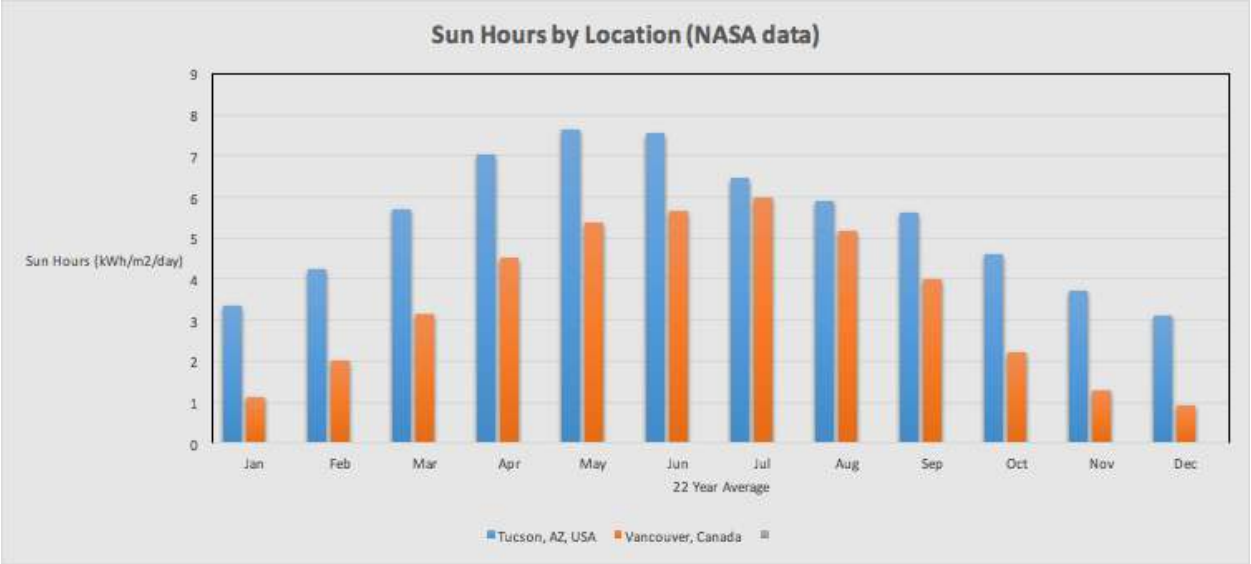
What is **Power+** Technology?

Power+ technology is a feature in Phocos' Maximum Power Point Tracking controllers that allows you to oversize your PV array by 50% in order to maximize you power production in colder, less sunny winter months without risking damage of your controller during hotter, sunnier summer months.

Why would you oversize your PV array?

There is a high variation of irradiance between winter and summer, thus a high variation in power output of PV arrays. Oversizing PV arrays leads to increased system reliability and fewer potential outages.

For example, let's look at the variation in sun hours over the course of a year in both Tucson, AZ and Vancouver, BC.



Notice the drastic difference between the average sun hours in Winter vs. Summer in Vancouver, BC. This variation in solar irradiance makes it difficult for a PV array to produce enough power to sufficiently charge the system battery in winter months.

One way of addressing such a drastic change in irradiance is to oversize your PV array to compensate for fewer sun hours in Winter. However, this can force you to use a much higher current charge controller which would add cost to the total system.

With all Phocos' MPPT charge controllers with **Power+** technology you can oversize your PV array by 50%.

How **Power+** technology works

For example, an MPPT charge controller rated to a maximum power of 250W is capable of converting up to 250W to charge current. In order to avoid damage to the controller you are advised not to exceed the rated power. This makes it difficult to produce the amount of power your battery needs in months of low irradiance.

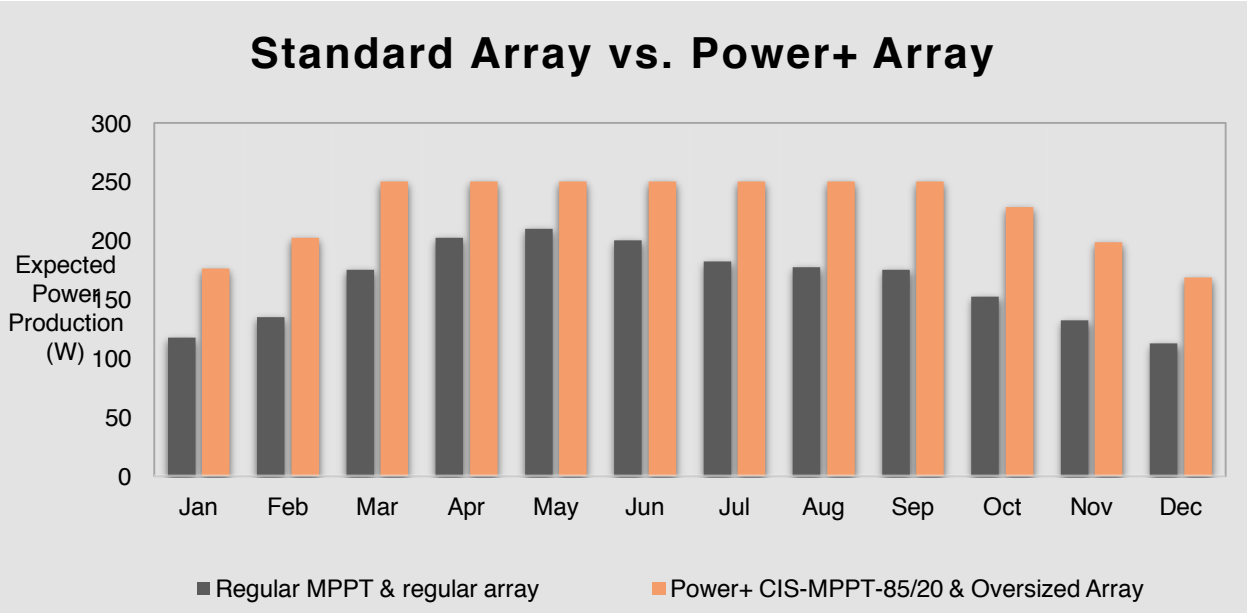
In Vancouver, you can expect six hours of usable sunlight in July. This equals a maximum of 1500Wh on a given day. But in December, the average amount of usable sunlight is less than one hour per day, or a maximum of only 250Wh on a given day.

But with **Power+** technology feature on our CIS-MPPT 85/20, you can oversize your PV array to a max array of 375W in a 12V system which is 50% higher than rated power.

This allows you to produce greater power yield in winter months without risking damage from overcurrent in summer months.

In addition, **Power+** technology allows for the use of 300W+, 72-cell modules which are commonly found in the market today.

Standard array compared to **Power+** array



The chart above illustrates the adder power yield of a **Power+** oversized system compared to a system using the rated maximum PV power. As you can see, the biggest gains are seen in the fall and winter months. In summer months, the **Power+** technology limits power conversion to approximately 250W so the controller won't be damages by overcurrent.

Power+ technology is available on these Phocos products:

- MPPT 100/30
- CIS-MPPT 85/20
- CIS-MPPT 50/10
- CML-MPPT 50/10

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