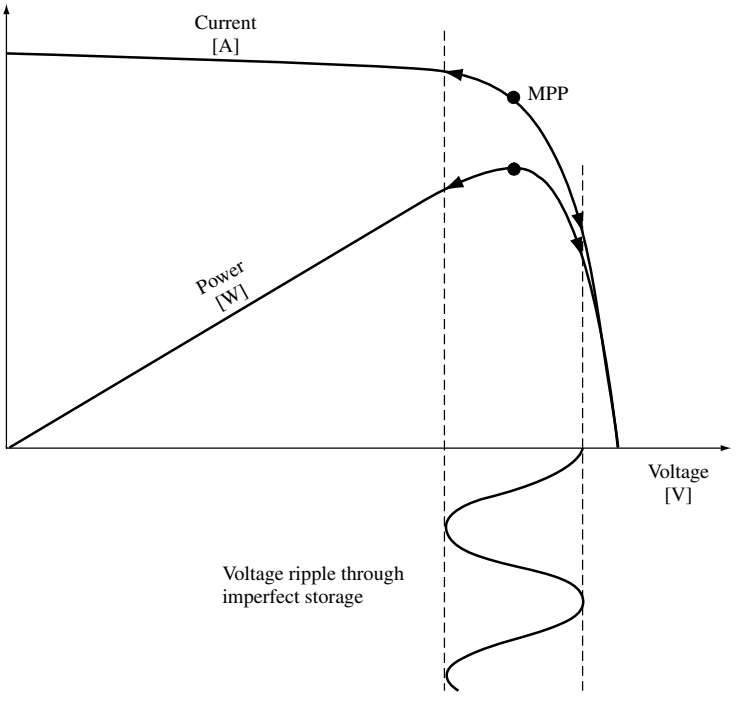

Figure 19.18 Deviations from the MPP through DC voltage ripple caused by the working principle of single-phase inverters

into the grid is pulsewise, each single-phase inverter needs a storage element that can be realised either using a capacitor or an inductor [3]. Since for economic reasons these storage elements must be limited, a voltage ripple can be found with all single-phase inverters at the DC side. This ripple forces the PV generator to deviate from the MPP as shown in Figure 19.18.

Well-designed single-phase inverters show DC voltage ripple with a negligible influence on MPP deviations. It should be noted at this point that three-phase inverters inject a continuous power into the grid, which eliminates the need for this kind of storage.

19.2.3 Inverters for Stand-alone Operation

Typical inverters for this type are often supplied by batteries. They have to provide constant voltage and frequency to the loads irrespective of the actual load profile. In case of reactive loads they have to provide and to absorb reactive power.

In hybrid PV systems, they should be able to operate in a bi-directional mode. This means that they should be able to recharge the battery in case of surplus power at the AC side.

Basically, both inverter types for a grid-connected and stand-alone operation have very similar hardware elements with respect to power electronics. Differences are found in inverter control.