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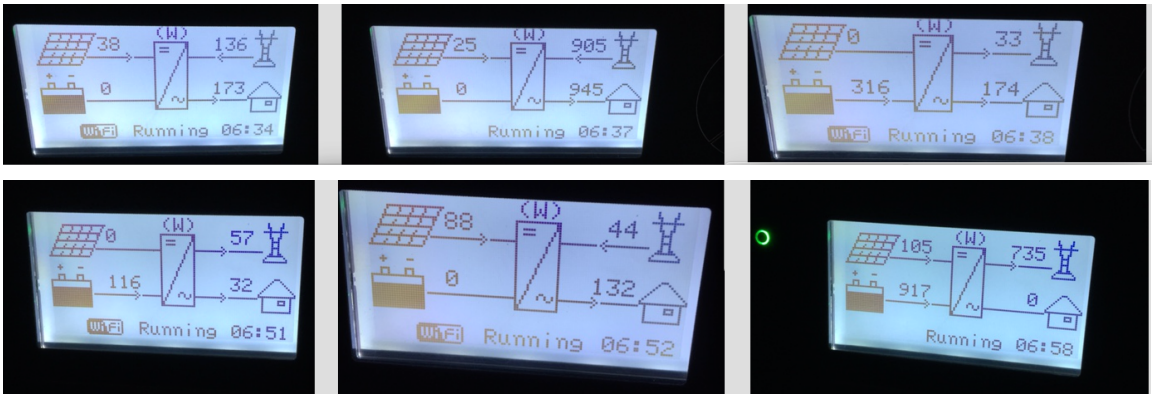
Power flows do not add up with low PV due to dynamic process and meter reading



When a customer sees that the energy flows do not add up, the values are normal due to our EMS calculation: Loads = PV +/- battery (discharge or charge) +/- grid power (import or export)

The SH5K energy management adjustment cycle is relatively long (about several seconds adjustment time), while the PV power tracking period is relatively fast (about several hundreds ms adjustment). When the system is working near dawn or dusk, the PV power is low and will change faster than the battery EMS. So if the PV power suddenly drops, some power will be drawn from the grid to charge the battery until it adjusts. Similarly, if the PV power increases as it will during the dawn in the photos, power can be exported to the grid until the battery next adjusts to draw power to it. This is a dynamic process.

For the last photo, we believe that it is a transient process when the load suddenly drops to 0 W, so the values may not match for the PV power, the battery and the grid due to the difference between the adjustment time as outlined above.

This scenario may occur in the morning or at night when the PV power is small. The actual system should have losses and the losses will be considered in the PV. The value for solar power may be negative, but it is modified to 0 W. Hence, the battery added and the PV power may be less than the grid and the load.