Test system for BESS

For testing the characteristic of battery energy storage systems

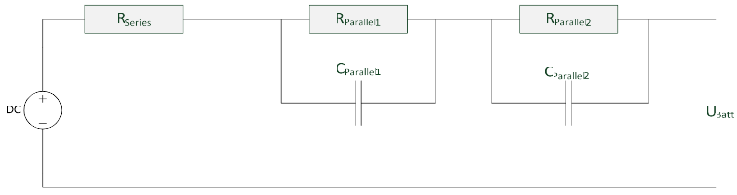
Technical relationship:

Battery model according to Rincon-Mora

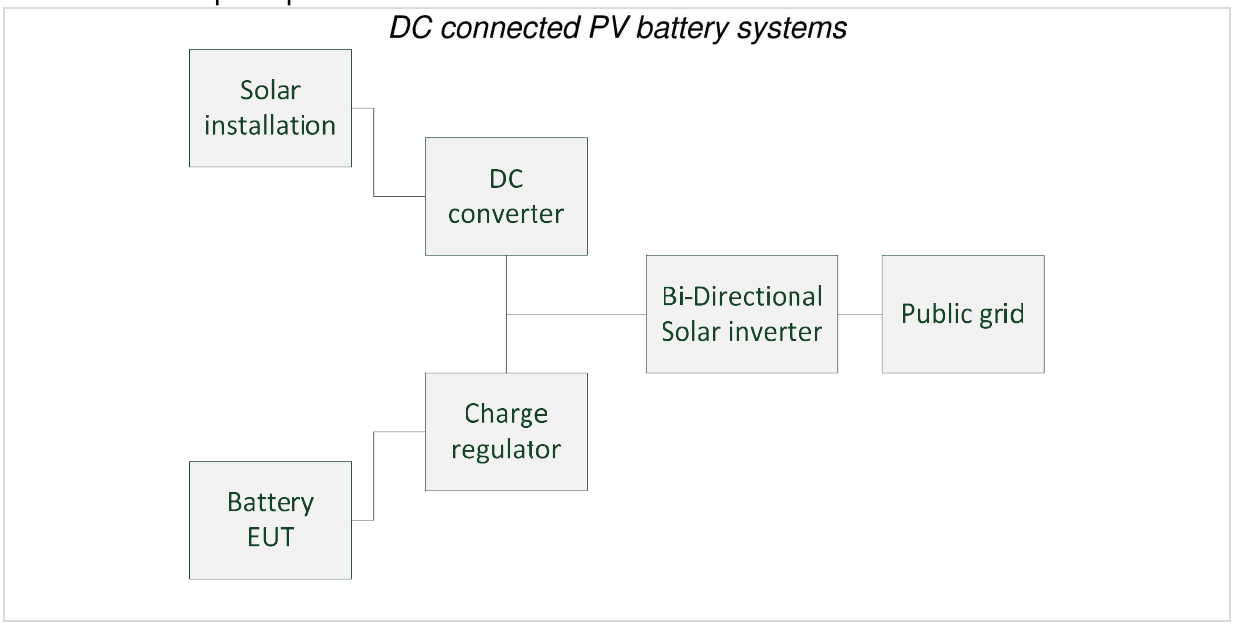
Overall test system for solar inverters extendable to BESS test system

The test system for BESS is an optional extension of an existing solar inverter test system. The functional principle of the Spitzenberger & Spies BESS test system is based on the battery model of Rincon-Mora.

Battery model according to Rincon-Mora:

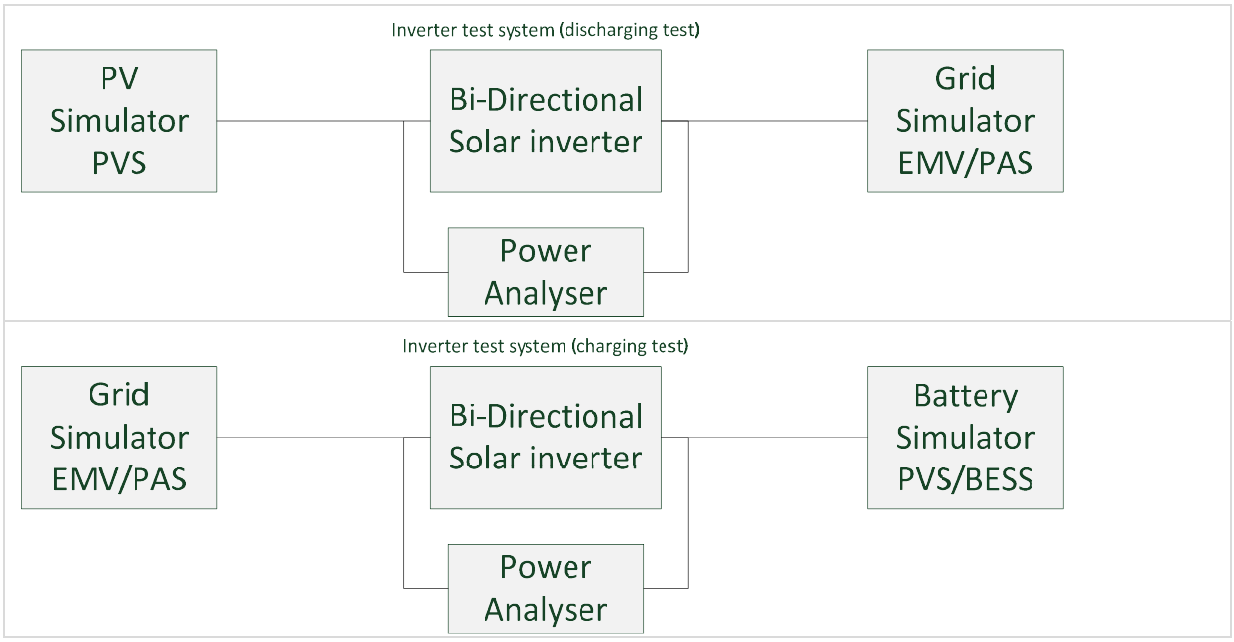


The functional principle of the EUT:

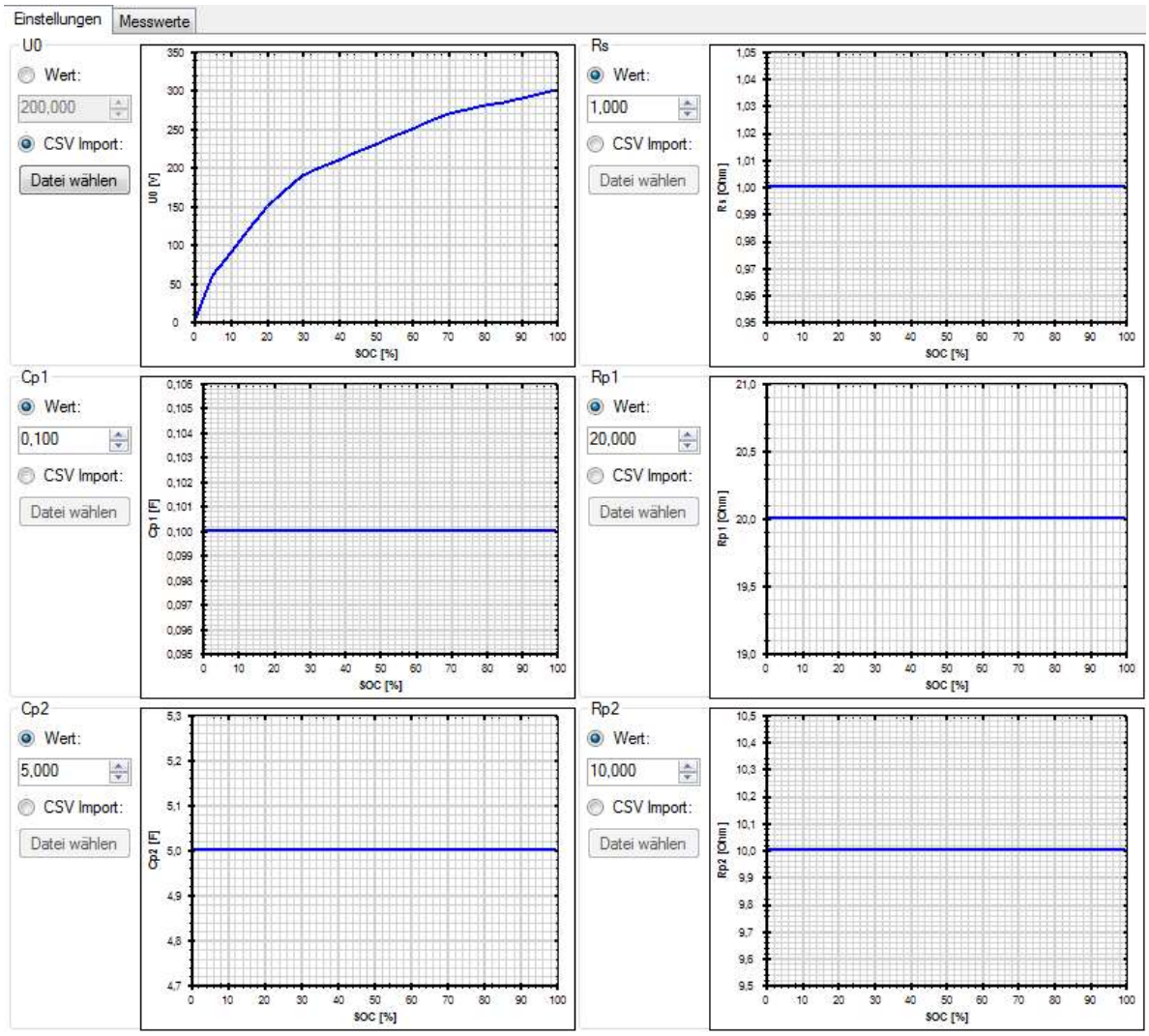


The PV Simulator PVS can operate either as generator / simulator of the PV installation or as battery simulator.
Due to different types of solar generators the PVS/BESS series has five voltage ranges:

- 400V / 500V / 600V / 800V / 950V



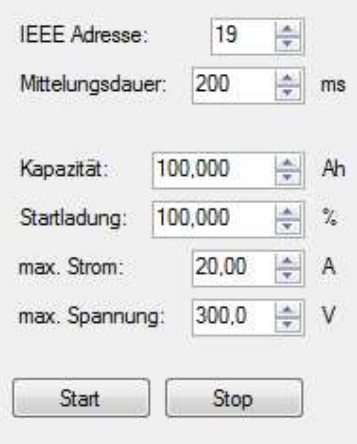
Model parameters of the software:



The input parameters of the battery characteristic in relation to the percentage of charge:

- *U_0: the battery voltage*
- *R_S: the serial impedance*
- *R_1: the parallel impedance 1*
- *C_1: the parallel capacitance 1*
- *R_2: the parallel impedance 2*
- *C_2: the parallel capacitance 2*

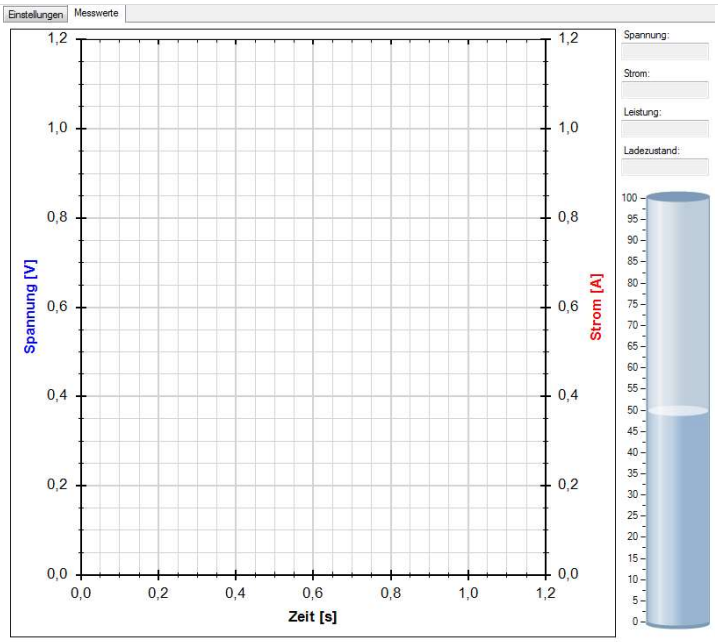
The battery test software solution:



The input values for the battery characteristic are:

- *Capacity (Ah)*
- *Charging percentage at system startup (%)*
- *Maximum current capability (A)*
- *Maximum voltage capability (V)*

The measured values:



The measurement results are displayed in the above voltage / current diagram.