Caspoc

Fast and Easy Power Electronics and Electrical Drives Simulation

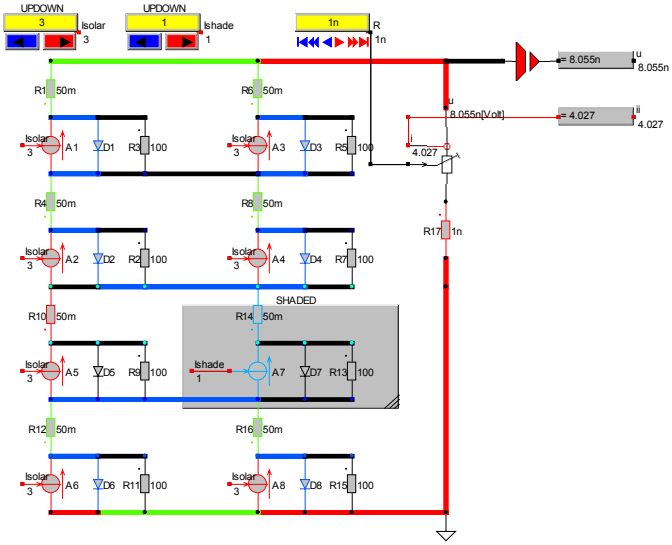
Solar Cell, Solar Panels, MPP and Grid Converters

The *Photo-Voltaic* library is especially developed for the design of nowadays Green Energy Solar systems.

Complete Solar systems including solar cell structures, MPP and grid connection! Include Solar cell model, Bypass-diodes, Maximum Power Point tracker and Grid-converter in one model. Simulate sunlight density cycles and observe the power management in the entire system.

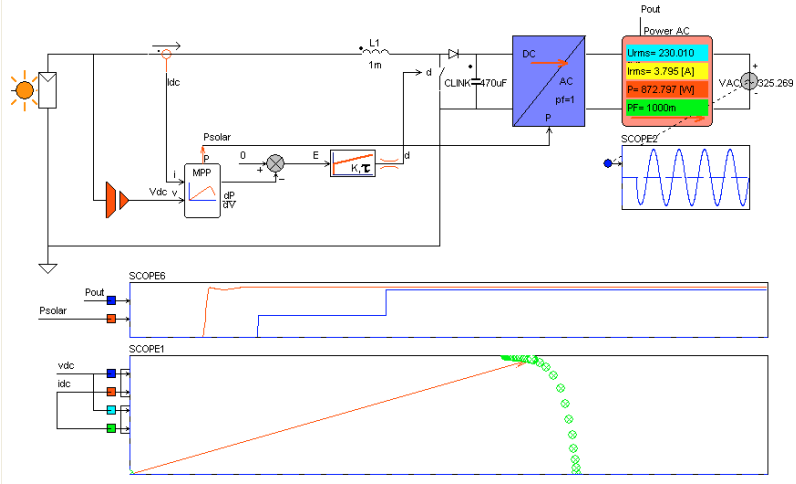
Detailed Solar Cell modeling with bypass and shading

Use Animation to simulate the effect of shading in your panel and the functioning of bypass diodes.



MPP control with Single Phase Grid Inverter

The simulation below shows the MPP controller with the DCDC boost converter. The grid inverter is controlled by the amount of real power to be fed into the grid. Various MPP controllers can be tested.



Summarizing;
detailed solar cell modeling with MPP control
and single/three phase grid-inverter
quick and easy.

Features:

- Solar Cell basic model
- Solar Cell detailed model, including temperature dependency and losses.
- Maximum Power Point trackers, such as dP/dV, Incremental Conductance and Search
- Variable Sunlight density and Solar Cell temperature
- Solar Panel modeling including Bypass diodes and shading
- Plotting of V-I characteristics
- MPP control with DCDC converters
- Transformer and transformer-less grid inverters
- Single Phase and Three Phase grid inverters
- Grid synchronization for Single and Three phase inverters
- Modulation; Pulse Width Modulation (PWM), Space Vector Modulation (SVM), Centerline, Continuous and Discontinuous
- Deadtime compensation
- Park and Clark transformations
- Vector Control blocks
- Mosfet inverters with Space Vector Modulation (SVM)
- IGBT inverters with Space Vector Modulation (SVM)
- Mosfet inverters with Space Vector Modulation (SVM) and thermal model
- IGBT inverters with Space Vector Modulation (SVM) and thermal model
- IGBT six-pack inverter with thermal model and temperature dependency of the IGBT's

In depth literature on Photo-voltaic modeling with many Caspoc Tutorials

Example package on Green Energy is for tutors who have a need or desire to comprehend and apply the theory and simulation methods which are applied by Green Energy specialist throughout the world.