

SIMCOUPLER MODULE

For co-simulation with Matlab/Simulink®

Making best use of PSIM and Matlab/Simulink in a complementary way

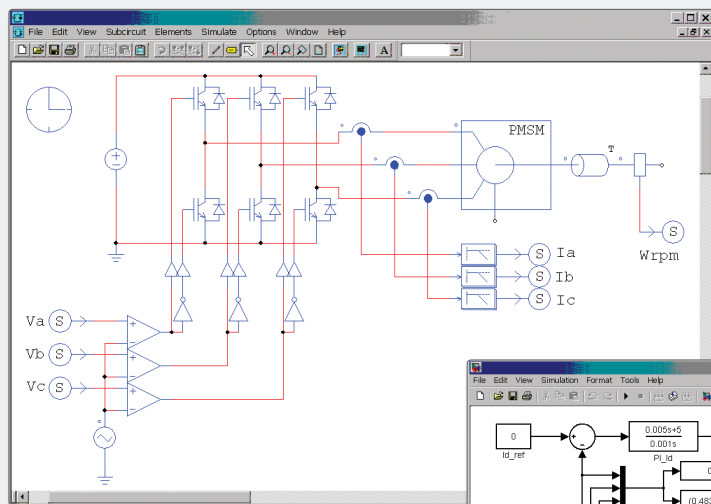
The SimCoupler Module provides the link for co-simulation between PSIM and Matlab/Simulink. With the link, part of a system can be implemented in PSIM, and the rest of the system in Matlab/Simulink.

The SimCoupler Module allows Matlab/Simulink users to make full use PSIM's capability in power electronics and motor drive simulation, and to reuse legacy models that one already built in Simulink. At the same time, the SimCoupler Module gives power electronics researchers and engineers the option to simulate control in the Matlab/Simulink environment, and it further enhances PSIM's control simulation capability by providing access to various Simulink toolboxes.

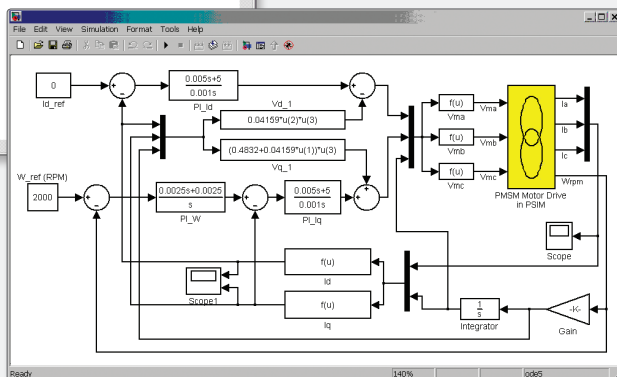
Setup of the co-simulation with SimCoupler is easy and straightforward, with minimum user input.

As an example, the example below shows a PMSM drive system with the power converter and motor in PSIM, and control in Simulink. In PSIM, three motor currents and the speed are measured and passed to Simulink. In return, three modulation signals in Simulink are sent back to PSIM.

With SimCoupler, one can take full advantage of PSIM's power simulation capability and Matlab/Simulink's control simulation capability in a complementary way.



Left: Power stage of a PMSM drive system implemented in PSIM



Left: Control of a PMSM drive system implemented in Simulink

FEATURES AND BENEFITS

- Easy to set up co-simulation with minimum user input
- Waveform display in both PSIM and Simulink
- Best use of both software in a complementary way



RENEWABLE ENERGY MODULE

For solar power, wind power, and battery storage systems

For all your simulation needs for renewable energy applications

The Renewable Energy Module provides the necessary models and function blocks for renewable energy applications. It includes solar module models, sample MPPT (Maximum Power Point Tracking) blocks, and tools that allow users to extract solar module parameters directly from a manufacturer datasheet. This makes it very easy to model a real-world photovoltaic system with little effort.

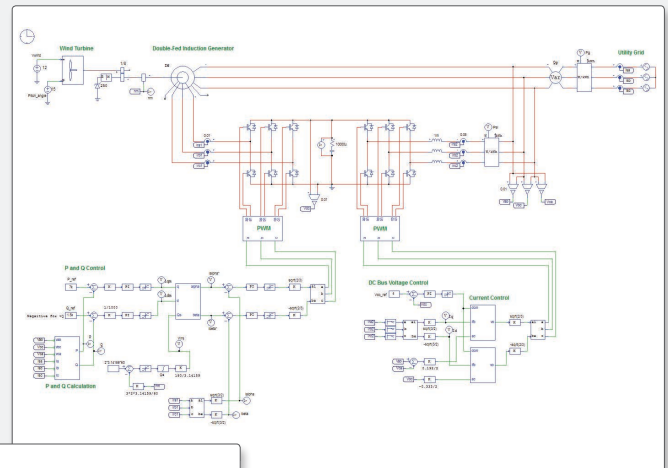
In addition, it provides the wind turbine model, and together with the Motor Drive Module, the

capability to simulate wind power systems. Three complete sample wind power systems, based on double-fed induction generator, permanent-magnet synchronous generator, and squirrel-cage induction generator, are provided. These examples provide an excellent starting point to build and design your own wind power systems.

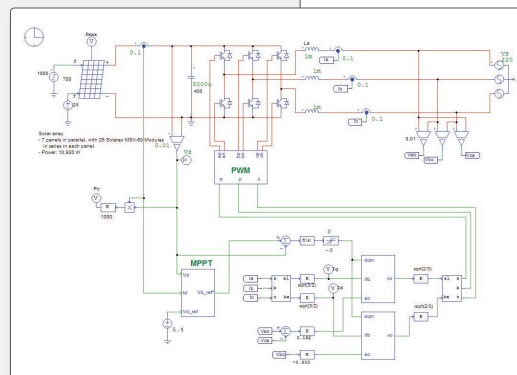
Furthermore, battery models are provided, allowing users to simulate battery charging and discharging process and energy storage systems.

FEATURES

- Lithium-Ion battery model
- Solar module with temperature and light intensity effect
- Parameter extraction directly from solar module datasheet
- MPPT blocks
- Wind turbine model and complete wind power system examples



Above: Wind power system with double-fed induction generator



Left: 3-phase grid-connected PV inverter with MPPT

