

Processor-in-the-loop

- Support for multiple MCUs
- Embedded frameworks
- Peripheral block library
- ▶ plexim.com/plecs/pil

Controls

- Analog
- Digital
- PWM-Generators
- ▶ plexim.com/plecs/control

Electrical circuits

- Ideal Switches
- Electric Machines
- Linear/Nonlinear Components
- ▶ plexim.com/plecs/electrical

Thermal

- Loss Look-up Tables
- Heat Sink Concept
- Thermal Networks
- ▶ plexim.com/plecs/thermal

Mechanical

- Translational / Rotational Motion
- Friction
- Non-Idealities
- Torsional Stiffness
- ▶ plexim.com/plecs/mechanical

Magnetics

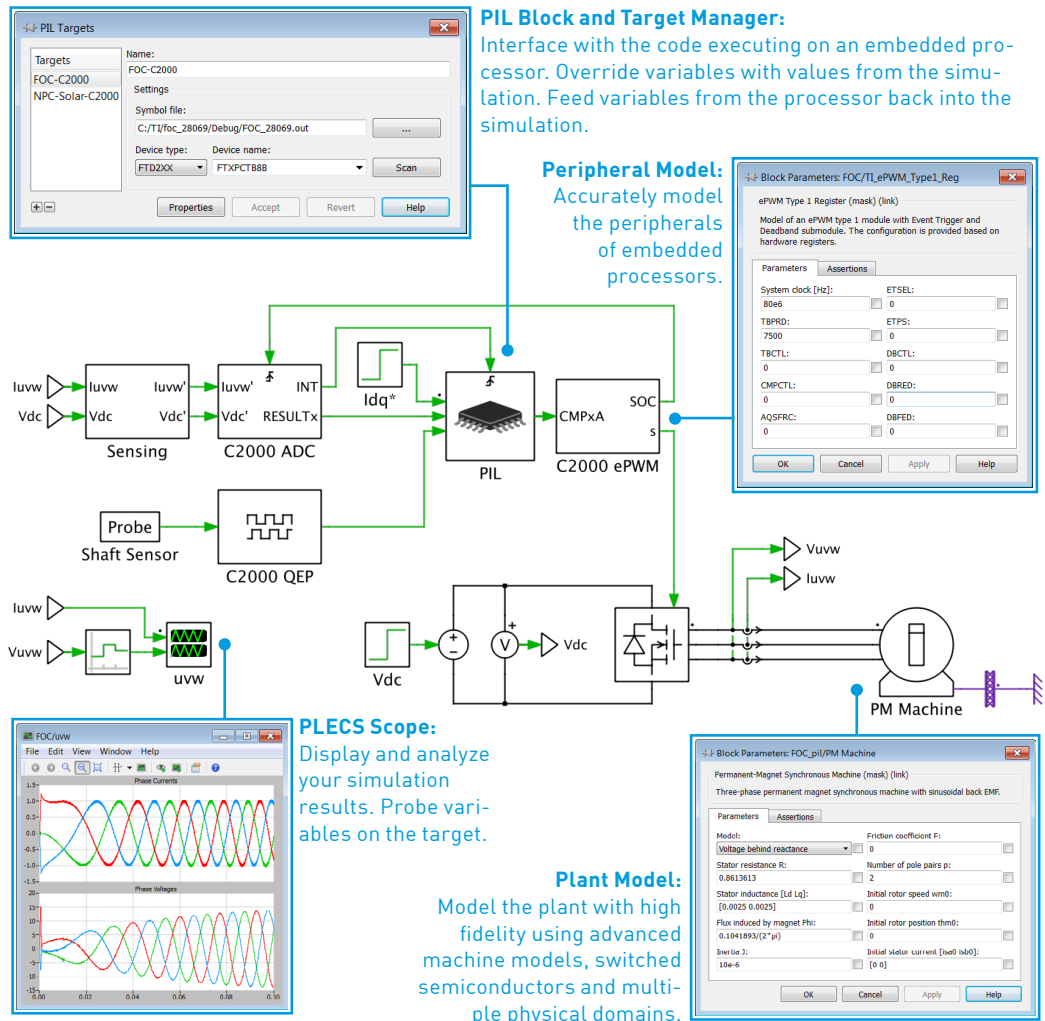
- Complex Geometric Structures
- Saturation
- Hysteresis
- ▶ plexim.com/plecs/magnetic

PROCESSOR-IN-THE-LOOP (PIL)

Develop, test and validate your embedded control code on the actual processor in the virtual world of a PLECS model.

Field-Oriented Motor Control on TI C2000™ MCU

This example demonstrates how embedded code executing on a TI Piccolo 28069 MCU can be tied into a PLECS motor drive plant model. A PIL block is used to interface and communicate with the processor. High-fidelity peripheral models accurately represent the behavior of the Piccolo ADC, PWM and QEP modules.



PLECS® is the tool of choice for high-speed simulations of power electronic systems. It is available in two editions: PLECS Blockset for seamless integration with MATLAB®/Simulink®, and PLECS Standalone, a completely independent product. PLECS PIL is licensed as a separate feature.

Trial license

Get a free trial license valid for 30 days!

▶ plexim.com/trial

Seminars

Participate and learn all aspects of the PLECS simulation software.

▶ plexim.com/events/seminars

Trainings

Become an expert with a training at your company.

Contact us

▶ info@plexim.com

Services and support

Benefit from the expertise of our engineers.

▶ plexim.com/support

Store

Find our current price list at

▶ plexim.com/store

Conferences

Meet us at many conferences worldwide.

▶ plexim.com/events

Contact

For inquiries please contact us.

▶ plexim.com/company/contact

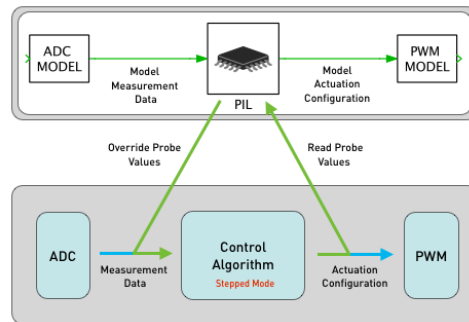
PLECS PIL

The PLECS PIL package is a complete solution for Processor-In-the-Loop (PIL) simulations.

Why PIL?

When developing embedded control algorithms, engineers often wish to test their code by executing it inside a circuit simulator.

With the PLECS PIL package, this can be done by executing actual code on real hardware. The embedded code is equipped with read and override probes to permit dynamic transition between normal operation and PIL mode.



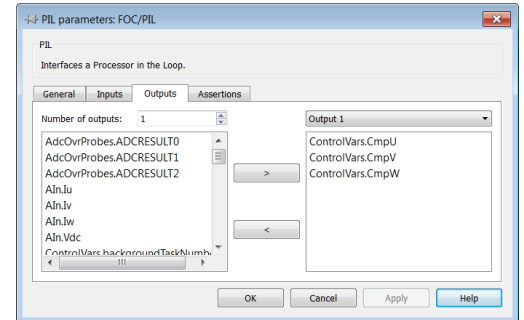
In PIL mode, values calculated by the simulation tool are used as inputs to the embedded algorithm, instead of reading the physical sensors. Similarly, outputs of the control algorithms executing on the processor are fed back into the simulation to drive the virtual environment.

With PLECS PIL, you can:

- ▶ Develop and test real code without the need for any hardware other than the MCU.
- ▶ Expose platform-specific software defects such as overflow conditions and casting errors.
- ▶ Detect and analyze potential problems related to the multi-threaded execution of control algorithms, including jitter and resource corruption.
- ▶ Unit-test code modules.
- ▶ Verify and validate software from ADC to PWM.

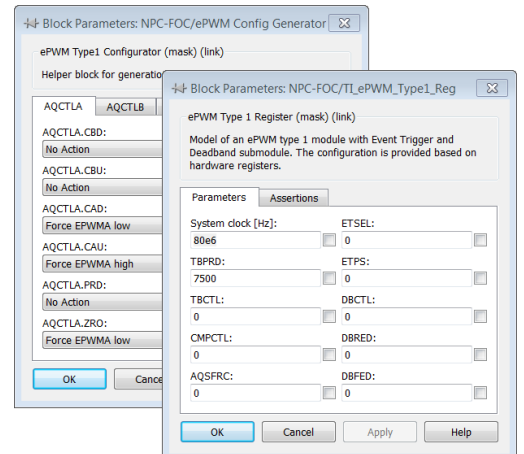
PIL Component Library

The PLECS PIL package contains a specialized PIL Block that serves as the interface between simulation model and embedded processor.



It automatically extracts the variables of the embedded code from the binary file and makes them available via input and output ports.

Also included is a collection of high-fidelity peripheral blocks to accurately model the behavior of advanced MCU peripherals such as ADC, PWM and Capture modules.



Embedded Framework

PIL Framework libraries and demo applications make the integration of PIL into your project straightforward.

Several communication interfaces are supported by the framework libraries and by PLECS to efficiently link the processor with the circuit simulator.