

How to Simulate a Drive with a Machine

Prerequisites

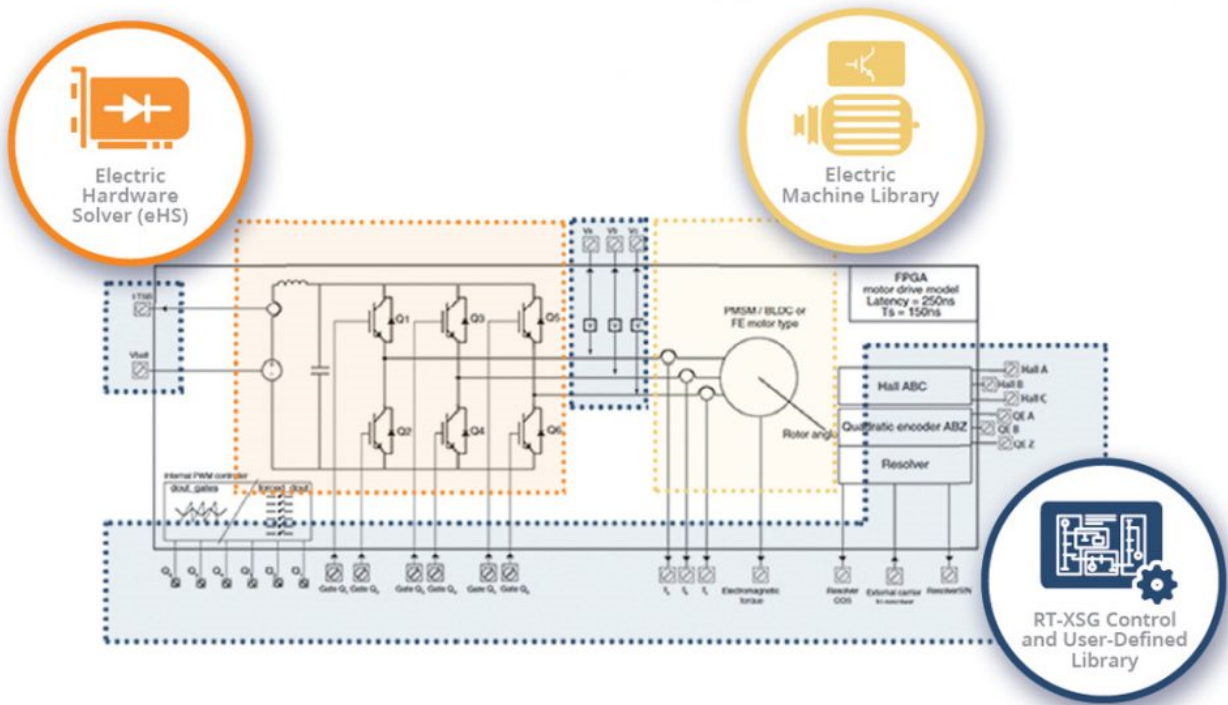
[How to Add the Power Electronics Add-On to the System Definition](#)

[How to Create a Circuit Model](#)

[How to Add a Circuit Model to the System Definition](#)

Procedure

Different modeling resources within the FPGA design are used to simulate different parts of the electrical model. For example, in the case of a drive system, the circuit containing linear elements is simulated using the [eHS Solver](#), whereas the machine configuration is simulated with a [Machine Model](#) (see image below). Due to this inherent decoupling of the two parts of the simulation, additional considerations must be made when simulating a drive coupled to a machine.



Interface Requirements to Couple a Drive and a Machine

To couple a drive circuit with a machine, such as a PMSM, a specific set of [Sources](#) and [Measurements](#) must be added to the circuit model. In the case of the PMSM, typically, it is important to include the following interface elements:

- Measurements for the three phase voltages (V_a , V_b , V_c) that will be output from the drive model (eHS) and fed into the machine model
- Sources for the currents (I_a , I_b) that will be output from the machine model and injected into the drive model (eHS)
- RC snubbers to compensate for the decoupling of the two solvers on the FPGA. Please see [Tuning the Snubber Values](#) for more information.

