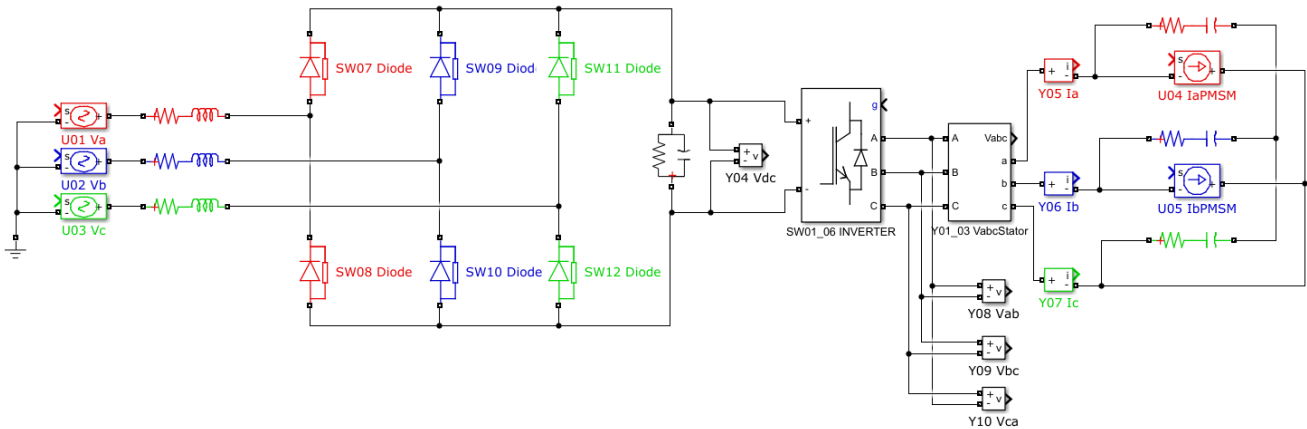


# 4. Dual PMSM SH Local Control

This tutorial describes how to configure the OPAL-RT Power Electronics Add-On to simulate a grid-tied PMSM drive and machine with a closed-loop controller. We will discuss deploying, running, and monitoring the simulation in real-time.

The eHS circuit model used in this example was created using the [Simscape Electrical Specialized Power Systems Simulink Blockset](#) (see below). It represents a grid-tied, three-phase diode rectifier for charging the DC Link, as well as a two-Level, three-phase universal bridge. The bridge is electrically connected to the PMSM SH model through the project configuration. We generate three sine waves using the built-in FPGA signal generators to simulate the  $U01 Va$ ,  $U02 Vb$ , and  $U03 Vc$  AC sources in the electrical circuit. The universal bridge gates  $SW01\_06 INVERTER$  are controlled using signals from the Sinusoidal PWM generators. The PMSM calculated currents are fed back to the universal bridge through the current sources  $U04 IaPMSM$  and  $U05 IbPMSM$ .



The tutorial has been split into the following sections:

## 4.0 Opening the Example

## 4.1 Configuring the Real-Time Controller

## 4.2 Selecting the Hardware Configuration

## 4.3 Configuring the Electrical Models

## 4.4 Configuring the Sources of the Model

## 4.5 Configuring the Switches of the Model

## 4.6 Setting Default Values for the Signal Generators

## 4.7 Configuring the Waveforms of the Simulation

## 4.8 Configuring the Local Controller

## 4.9 Deploying and Running the Simulation

## 4.10 Controlling and Monitoring the Simulation