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CHAIR OF ELECTROMAGNETIC COMPATIBILITY

Overview of control systems for three-phase voltage source inverters

Background and problem: Three-Phase voltage source inverters are the most popular rectifiers used in power engineering. Mc photovoltaic converters, active front ends for motor and generator- or active Filter for power quality applications use such inverte topologies and have a lot of control strategies for their semiconductor devices. In general, three-phase voltage source inverters consists of three IGBT bridges and a large capacitor as an energy storage. In order to get desired gating signals for the IGBTs, there are many possibilities to operate the input voltages and currents.

Task: The task of this project is to give an overview of processing measurement signals (e.g. Phase Locked Loop – PLL), differe reference frames (e.g. aß, dq), control of calculated signals (PID controller, hysteresis control, resonant control) and the realizati of these controlled signals to gating signals for the IGBTs (e.g. PWM, Space vector modulation).

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