

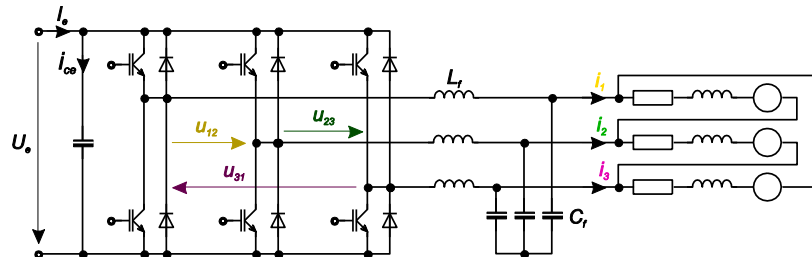
Master's Thesis

Controller for PWM Inverters with output filter

Motivation

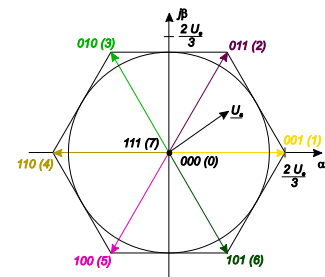
Utilising the potential of new semiconductors (made from new materials), enabling faster switching and higher switching frequencies, for three-phase voltage source PWM inverters feeding electrical machines, suggests the use of output filters. In addition to answering increased awareness of electromagnetic compatibility, this also allows to reduce switching losses, which are significantly influenced by cable and winding capacitances. From an economic point of view, it would be advantageous

to dimension the filter elements as small as possible, which creates the special challenge with regard to dynamic requirements of the control algorithm.



Research Questions

- What are the challenges arising from small filter time constants?
- How can these be met?



Tasks

- Literature study on the dimensioning of filter elements for three-phase voltage source PWM inverters and the control of machine currents.
- Identification of the special challenges that arise from small filter time constants.
- Testing and optimisation of the control for the machine currents in simulation and then implementation in the laboratory using existing, real-time hardware.

Contact

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