

THE IMPACT OF WIRES AND CABLES AND THEIR PARASITIC PROPERTIES ON MODERN ELECTRIC DRIVE SYSTEMS

(Bachelor Thesis, in English)

With recent advances in electric drive systems, designers and manufacturers are leaning toward the use of high switching frequency semiconductors that allow for a reduction in the size of the converters. However, the use of such semiconductors, such as SiC-based devices, introduces new challenges: Electromagnetic Interference (EMI), which causes the flow of current noise throughout the drive system, leading to malfunction or, in the worst case, system shutdown.

In this thesis, the parasitic effects of cables within an electric drive system are investigated. The objective is to investigate the state-of-the-art in cable modelings for high frequency analysis against EMI. Appropriate simulations and comparisons of the effectiveness of different methods are also expected.

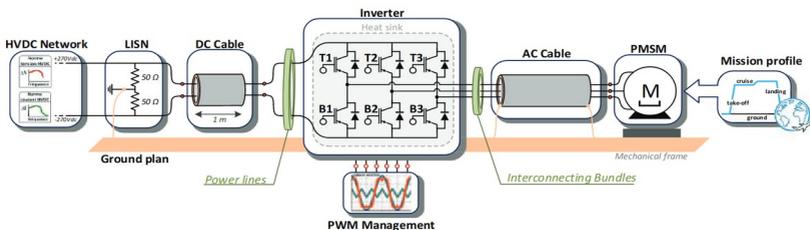


Figure 1: Main components of an electric drive system to be taken into account for EMI studies

- Basic knowledge in electric drive systems and experience in Simulink/Matlab simulations are required.
- Knowledge of high frequency circuits is a plus.

Mentoring of the thesis:

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