Master Thesis:
Multi-Level Hybrid Flying capacitor bidirectional converter analysis

Infineon Technologies Austria AG is looking for a Master of Science thesis student in Villach, Austria.

Background
Multi-Level Hybrid Flying Capacitors (MLHFC) converter are gaining interest in recent years due to their numerous and relevant advantages in comparison to traditional power converter topologies. Together with the buck and the boost topologies, is of particular interest to analyze a multi-level bidirectional buck-boost converter with a Multi-Level architecture. In addition basic control techniques have to be analyzed in order to enable an industrial application. The students will work with different cutting-edge technologies available at Infineon Technologies.

Aim of the work
The aim of the work is to analyze existing bidirectional power converters architecture and highlight the advantages of a possible MLHFC bidirectional DCDC converter, analyzing the steady-state converter operation, the flying capacitor balancing and what kind of control can be employed, in order to have a good overview of the bidirectional converter. Each topic should be:

› Analyzed from a theoretical point of view

› Simulated employing MATLAB/Simulink and/or Virtuoso

In the end, the Master thesis student should highlight both advantages and disadvantages of the analyzed topics, providing key guidelines for design purposes. Depending on the results there might be an option to become co-author of patent or of a conference/journal paper.

For the duration of the thesis, the student is expected to be located in Villach, Austria. Details upon the monthly salary for the student will be given by HR Infineon after a technical interview.

Interested applicants are invited to contact Professor Andrea Bevilacqua. For further information, please contact Nicolò Zilio at Nicolo.Zilio-EE@infineon.com.

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