Design and implementation of the communication interface for isolated DC-DC converter [SA1]

A high power DC/DC converter system with galvanic isolation for efficiently interconnecting the low voltage battery pack and the medium voltage drive bus is currently developed at HPE. An ongoing work is focusing on the implementation of the communication between the primary and secondary side bridges.

This thesis is focused on designing and implementing a synchronized interface to be used for communication between a main FPGA board and the MAX chip on the isolated DC link (as shown in figure). The synchronization is required for the gate signals which are provided from the FPGA to the MAX chip, as well as for the measurements in opposite direction (from MAX chip to the FPGA board).

After successful implementation of the communication protocol, the testing will be performed on the actual hardware setup.

**Work Description:**
- 70% VHDL programming
- 30% Verification and testing

**Prerequisites:**
- Interest in electronics and VHDL programming

**Supervision:** Milos Stojadinovic, ETL F17, stojadinovic@hpe.ee.ethz.ch

**Professor:** Prof. Dr. J. Biela