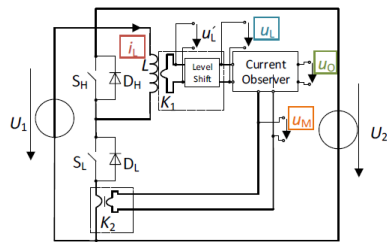


Current measurement on circuit breakers

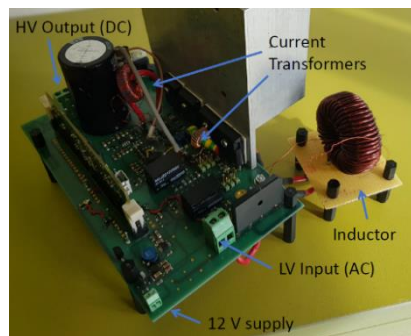
Method for current measurement in half-bridge topologies

Invention

A number of different instrument transformers are used to determine voltage and current in regulated power electronics. Current measurement becomes more and more difficult with



Circuit concept for current measurement



Prototype for current measurement

has only a minimal disruptive influence on the switching characteristics of power electronic breakers.

Current Status

A German patent application has been granted, a European and a Chinese patent application are pending. On behalf of Paderborn University, we offer interested companies the opportunity to license and develop the technology. The functionality of the technology could also be demonstrated metrologically on the basis of the implemented prototype and through an ERDF validation project.

Relevant Publications

A patent specification of the German Patent and Trade Mark Office is available. DE 10 2016 12 515.6 of 6.12.2016 "Current measurement device and method for measuring an electric current in an electric conductor".

An invention of the Paderborn University.

increasing current intensity, especially since the switching frequencies increase due to the use of modern (e.g. GaN) transistors and parasitic properties of the sensors must be minimized. The current measurement solution shown here in a typical half-bridge circuit is based on the concept of an easily implemented digital current observer and the use of an auxiliary winding K1 on the already existing power choke L and only a single current transformer K2. A low-cost DSP contains the typical digital control of the half-bridge circuit as well as the easily implemented current observer, which is largely processed in a standard peripheral unit of the DSP and therefore requires very few additional resources. The effectiveness of the digital current observer in low power bridge circuits was verified in experiments. Simulations, evaluations and analyses of the latest current observer show that the measurement with such a digital current observer can also be used for high power applications.

Commercial Opportunities

This insulating current measurement concept for bridge topologies therefore enables a cost-effective and compact measurement method which at the same time

Competitive Advantages

- Inexpensive
- Isolating measurement
- Small space requirement
- Low parasitic effects
- Low losses
- Simple circuitry

Technology Readiness Level

123456789

Technology validated in lab

Industries

- Electrical engineering
- Power electronics
- Energy supply
- HEV/PHEV/EV

Ref. No.

4700

Contact

Martin van Ackeren
E-Mail: ma@provendis.info
Phone: +49(0)208-94105-34

