Triggering of serial switching elements for high voltage systems

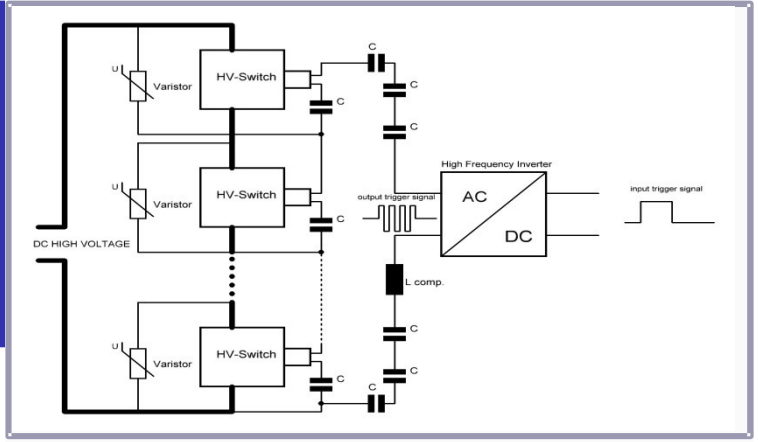
Cascadable trigger for serial switching elements

STATUS QUO

For switching high voltages there is the need for many serial switching elements (e.g. semiconductors). The insulated trigger is realized by a inductive coupling or mechanical, what makes a insulation of the full voltage necessary. With the new method a cascading of capacitive coupled elements makes this obsolete.

OUR TECHNOLOGY

With the capacitive coupling by using a very high frequency it is possible to insulate the trigger voltage from high voltage step by step, and a single element to insulate the full voltage is not required. Theoretical the number of serial elements is not limited. So the principle is working for very high voltages without the need of special parts, it can be realized by cheap standard parts.



BENEFITS

- ► simple circuit
- ► any number of cascading
- ► no single element has to insulate full voltage

APPLICATION POSSIBILITIES

The principle can be used for triggering semiconductors and for triggering mechanical switches like pyrofuses. The capacative coupling an the high frequency makes a cascading of many steps possible without a additional delay.

COMMERCIALIZATION OPPORTUNITIES

There are various possibilities for cooperation between the industrial partner and TU Darmstadt: from an exchange with the know-how carriers of the technology up to a close cooperation in case of further development needs. The technology is protected by intellectual property rights and can be used by the industry partner after a sale or licensing agreement.

CURRENT STAGE OF DEVELOPMENT TECHNOLOGY READINESS LEVEL (TRL)

9	Product ready to launch
8	
7	Prototype
6	
5	
4	
3	Proof of Concept
2	
1	Idea

The technology development is at Level 5: A bipolar 20kV power supply is realized and tested with this technology.

YOUR CONTACT PARTNERS AT TU DARMSTADT

HIGHEST

IP- and Innovation Management
+49 6151 16-57203
innovation@tu-darmstadt.de

FG Hochspannungs-technische Betriebs-mittel und Anlagen

Dr.-Ing. Thomas Wietoska
Leistungselektronik in der Hochspannungstechnik
+49 6151 16-20450
Thomas.wietoska@.tu-darmstadt.de