Current Trends in the Development of High-Current Switching Systems in Frankfurt*

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With the construction of the next-generation high-energy accelerators all components of the system have to live up to higher standards. One example of such a development are the pulse forming networks of the FAIR p-bar magnetic horn and the injection/extraction fast kicker magnets of the FAIR SIS100.

At the magnetic horn, a typical high-current application several hundred kiloamperes, rather low voltages of about 10 kV and a pulse length of some 10 microseconds are needed whereas the kicker magnets pulse forming network has to be capable of handling up to 100kV. This contribution shall give an overview about the development of switching systems for both applications including a new gas-discharge switch with minimized electrode erosion. Due to a coaxial electrode setup the magnetic fields of the discharge itself help avoiding local erosion by creation of a running arc (1).

To increase the switched current several of such electrode systems can be connected in parallel. Using one trigger system the discharge of all gaps can be initiated simultaneously.


* Work supported by BMBF