

High Current, Low Voltage Power Converters for LHC. Present Development Directions, F. BORDRY, A. DUPAQUIER, CERN, Geneva - The superconducting LHC accelerator requires high currents (~13 kA) and relatively low voltages (~10 V) for its magnets. The need to install the power converters underground is the driving force for reduced volume and high efficiency. Moreover, the machine will require a very high level of performance from the power converters, particularly in terms of DC stability and dynamic response. To meet these requirements, switch-mode techniques will be used. This paper gives a survey of current switch-mode converter topologies for high DC current output. The presentation is primarily focused on the various methods for low-loss switching in DC power converters, operating with high switching frequency (20 - 50 kHz) and a classification is given according to their relative merits. A modular concept is being studied, using several current sources in parallel, to adapt to the various circuits and also provide redundancy.