

Pulsed Power Converters for BOOSTER INJECTION

J.M. CRAVERO

07.01.2008

Magnet ratings

$$n = 4$$

$$L = 12\mu\text{H}$$

$$R = 1\text{m}\Omega$$

$$I = 10\text{ kA}$$

$$U_{m_{\max}} = 1\text{ kV}$$

Current Pulse

The magnet current is a pulse with flat-top and triggerable exponential down slope. (Another option is also possible with a linear ramp for the rising slope.) The current is adjustable from 1 to 10kA from one cycle to another (p.p.m.) with 900ms repetition time. The current fall is exponential with a time constant of 120 μs that could be reduced with some increase on magnet maximum voltage. The current stability during the flat-top is $\sim 5 \cdot 10^{-4}$.

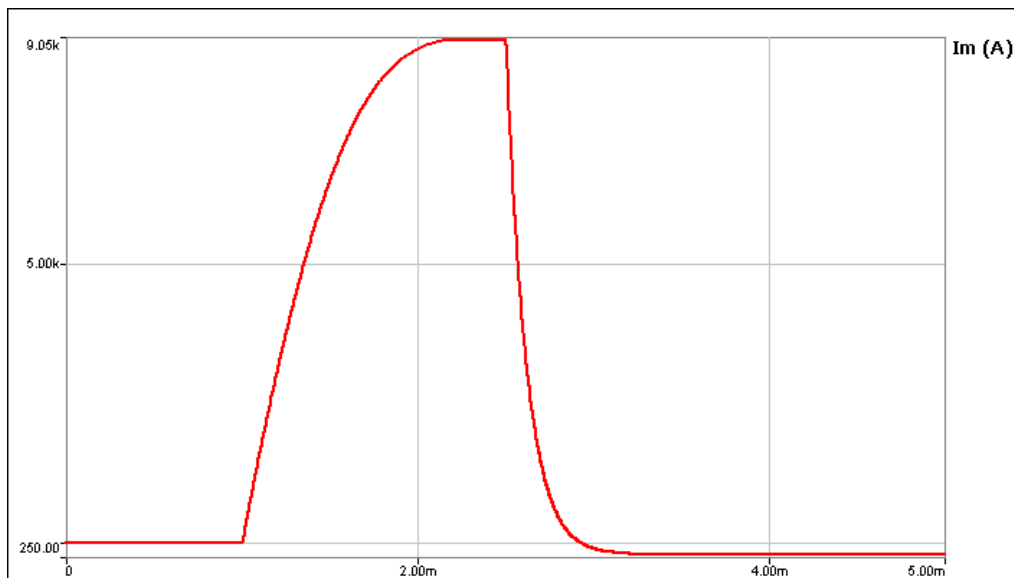


Fig.1 : Output current pulse shape

The simplified converter topology is given below, some options are still open for the converter design.

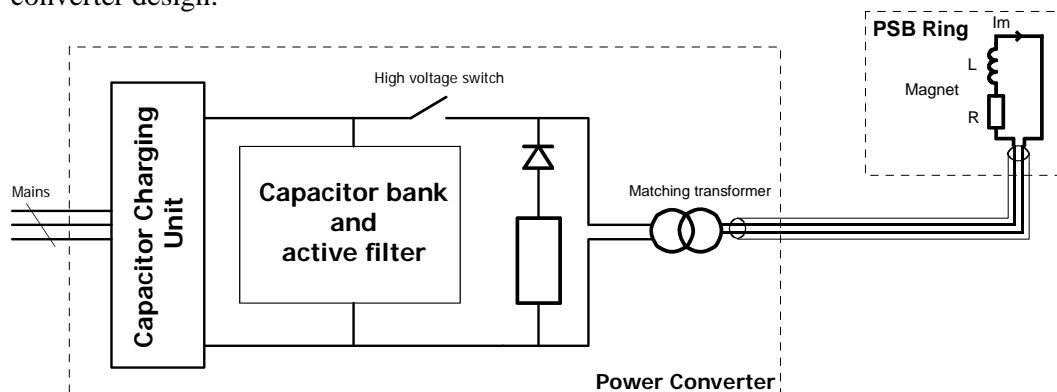


Fig.2 : Converter topology