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Analysis of the bi-bridge topology and power device circuit of the TPS booster dipole power supply

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This study primarily discusses a unique topology for constructing a double full bridge circuit. The study establishes a push-pull inverter model and analyzes the balance circuit in its architecture. This allows the power supply to initiate the balance circuit and ensures the TPS booster magnet power supply operates smoothly in a safe and balanced voltage region when magnet energy is re-covered. We employ the approach of adding Y circuits to mitigate the impact of common mode noise. Adding a Y circuit effectively suppresses the common-mode noise generation, improving the quality of the output current of the TPS dipole magnet power supply at low currents state and ramping the beam current energy from 150 MeV to 3 GeV. Furthermore, the reproducibility and stability of the injection point can enhance the injection efficiency of the TPS booster magnet power supply. This study presents the results obtained from these efforts.

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Footnotes

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