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## 5P41 - Design of A Vehicular 200-kJ Pulsed Power System for Electrothermal-Chemical Launch Experiment

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This paper has designed and established a vehicular 200-KJ pulsed power system (PPS) for Electrothermal-Chemical Launch (ETC). The PPS consists of pulsed power module, high power charger, remote control system and high power connector. Two independent 100KJ pulse forming units (PFUS) are integrated in a pulse power module. Each PFU can be controlled independently by remote computer to meet the needs of pulse waveform modulation. In each PFU, a pulse capacitor, a semiconductor switch stack, an inductor, a dump system, and a data acquisition system were integrated. The PFU was designed to be triggered for a maximum charging voltage of 10KV and the peak current up to 40KA. The high power charger was integrated into the PPS to reduce the volume of the system and improves the compactness. At the same time, the layout of each component was optimized to reduce the influence of EMI and electromagnetic force. The performance of PPS was verified through some ETC experiments. The experimental current curve showed good agreement with circuit simulation data. The design methods and results in this paper have both theoretical and pragmatic value in improving the performance of PPS for ETC system.

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