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Pulse power system for formation and acceleration of field-reversed configurations in C2-W.

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The advanced beam-driven C2-W field-reversed configuration experiment [1] utilizes two, merging compact toroid's, formed and accelerated by two theta-pinch formation systems. Two new pulse power systems (Bias and MR), configured in parallel were designed and built to drive current in 34 (17 pairs) formation coils. The total stored energy in 38 Bias power units is about 1.4 MJ and provide the initial current rise time of about 100 us. The second circuit of the pulse power system –Main Reversal (MR) –consists of 136 power units which generate current pulse with the rise time about 5 us. The total stored energy in the MR power units is ~650kJ. Each of these pulsed power units utilize both a proven technology, using existing pulsed power capacitors and ignitron switches and a relatively new pseudo spark switch technology. The system design and characteristics as well as initial results of its test and full operation will be presented.

[1] M.W. Binderbauer et al., AIP Conf. Proc. 1721, 030003 (2016).

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