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Pulse forming networks development for a 60-380 ns Pulsed Power Supply for 2 kA, 20 MeV Linear Induction Accelerator

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The pulse forming networks (PFN) were developed to provide a 2 kA, 20 MeV linear induction accelerator cells power supply. A PFN's and high-voltage capacitors manufacturing is organized at BINP. The PFN is a LC-network with nonuniform impedance made of capacitive sections with a combined paper-film dielectric filled with a castor oil in a polypropylene case. A PFN's isolation is rated at 50 kV charging voltage. The two types of PFNs are developed for 60 and 380 ns flattop duration. They are capable of producing the pulses up to 21 kV, 10 kA with a ±0.5-1% flattop voltage uniformity at a complex inductive-resistive load of the accelerating cell. The PFNs test results in the nominal regime are presented. The PFNs life test results at a higher electrical field in the dielectric are described.

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