

Manufacturing Concepts for an IFE Power Plant Using Z-Pinch Technology*

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The Z-Pinch Power Plant uses the results from Sandia National Laboratories' Z accelerator in a power plant application to generate energy pulses using inertial confinement fusion. A collaborative project has been initiated by Sandia to investigate the scientific principles of a power generation system. Research is underway to investigate the use of recyclable transmission lines to directly connect the wire array and the hohlraum directly to the pulsed power driver. The resulting power plant will require an intense on-site manufacturing system to rebuild the transmission lines, wire arrays and hohlraums at a rate of 0.1 Hz per power unit. By recycling virtually all of the materials, the system is expected to be economically competitive with other power generation technologies. Current research is investigating the available approaches to manufacturing and determining the cost effectiveness of the alternatives. This paper examines the various options available for manufacturing and development requirements leading to a Proof-of-Principle experiment to demonstrate the technology.

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