

Abstract Submitted
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Opportunities for Reduced Cost Stellarator Pilot Plants.¹ M. ZARNSTORFF, D. GATES, T. QIAN, Y. ZHAI, C. ZHU, PPPL, S. WOODRUFF, Woodruff Scientific, Inc. — High temperature superconductors and permanent magnets offer opportunities to significantly reduce the costs of stellarator pilot plants by simplifying the coil design and construction, and reducing the coil cross section by achieving higher current density. Stellarators provide the advantage of having very low recirculating power and high energy efficiency, reducing system scale at fixed output power. Since stellarator use static magnetic fields, they are particularly suited to superconducting magnets, further simplifying several design aspects. The design space for 100-300 MW-electric stellarator pilot plants will be surveyed, considering plasma and configuration constraints to identify attractive approaches to a cost-effective pilot plant and modular energy system.

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