Abstract Submitted
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Cost Modeling and Design of Field-Reversed Configuration Fusion Power Plants DAVID KIRTLEY, JOHN SLOUGH, Helion Energy, HELION TEAM — The Inductively Driven Liner (IDL) fusion concept uses the magnetically driven implosion of thin (0.5–1 mm) Aluminum hoops to magnetically compress a merged Field-Reversed Configuration (FRC) plasma to fusion conditions. Both the driver and the target have been studied experimentally and theoretically by researchers at Helion Energy, MSNW, and the University of Washington, demonstrating compression fields greater than 100 T and suitable fusion targets. In the presented study, a notional power plant facility using this approach will be described. In addition, a full cost study based on the LLNL Z-IFE and HYLIFE-II studies, the ARIES Tokamak concept, and RAND power plant studies will be described. Finally, the expected capital costs, development requirements, and LCOE for 50 and 500 MW power plants will be given. This analysis includes core FRC plant scaling, metallic liner recycling, radiation shielding, operations, and facilities capital requirements.

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