

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Upgraded Oscillating Field Current Drive on MST D.R. STONE, K.J. MCCOLLAM, P.D. NONN, J.S. SARFF, S.C. PRAGER, University of Wisconsin - Madison — The oscillating field current drive (OFCD) system for MST has been upgraded for higher power capability to investigate larger current drive. In OFCD, two frequency-matched ac magnetic fields are inductively applied to the plasma, one in the poloidal direction and the other in the toroidal direction. The fields interact to inject net magnetic helicity into the plasma depending on their phase difference, thereby driving a toroidal current. The basic design of the OFCD system remains the same: two pre-charged LC tank circuits inductively couple to MST's main magnet circuits. The upgraded tank circuits operate at double the previous voltage and are more strongly coupled to the main circuits, both of which allow more input power into the plasma. So far, the input power at the phase which produces the maximum plasma current has been increased to about 400 kW compared to 200 kW with the previous system. Larger current drive by OFCD is observed (>10% increase over the baseline current at low current). However, magnetic fluctuations due to the unavoidably larger equilibrium modulation and/or plasma-wall interaction appear to be more important as limiting factors at these higher power levels. Tests at larger baseline current are underway. This work was supported by the US DOE.

Douglas Stone
University of Wisconsin - Madison

Date submitted: 19 Jul 2007

Electronic form version 1.4