Overview of the C-2W Experimental Diagnostic Systems T. ROCHE, H. GOTA, S. PUTVINSKI, A. SMIRNOV, M. W. BINDERBAUER, THE TAE TEAM, TAE Technologies, Inc. — In TAE Technologies current experimental device, C-2W (also called Norman)[1], record breaking, advanced beam-driven field-reversed configuration (FRC) plasmas are produced and sustained in steady state utilizing variable energy neutral beams, advanced divertors, end-biasing electrodes, and an active plasma control system. Combining unmatched operating capabilities with a unique diagnostic suite[2], the C-2W machine remains the worlds premier venue for studying fast-ion-dominated FRC plasmas. C-2Ws diagnostic suite is being further expanded to measure and understand key factors of stability and confinement. These new additions include: ChERS with neutral beam, an IR camera, upgraded bolometer systems, Hall probes, Doppler-free saturation spectroscopy, and more. The suite consists of 20 separate categories and a total of 50+ individual systems all producing data for every plasma shot. The synthesis of the data produced by these systems coupled with sophisticated analysis and advanced reconstruction techniques lead to a comprehensive understanding of C-2W plasmas and guide us toward an emerging reactor design.

[1]H. Gota et al., Nucl. Fusion **59**, 112009 (2019).
[2]M.C. Thompson et al., Rev. Sci. Instrum. **89**, 10K114 (2018).

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