

INITIAL PLASMAS AND DIAGNOSTIC ENERGY CONTENT IN HELIOTRON J

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This report describes the behavior of the initial plasmas in Heliotron J since July 2000. Hydrogen has been successfully produced by electron cyclotron resonance heating (ECH) (53 GHz, $P_{\text{ECH}} \leq 400$ kW, $\Delta t \leq 50$ ms). The stored energy was measured with the diamagnetic double loops as a function of magnetic field strength ($0.61 \text{ T} < \langle B \rangle \text{ axis} < 1.44 \text{ T}$). The value of $W_p \approx 0.7$ kJ, which corresponds to $\langle \beta \rangle \approx 0.2$ %, was obtained by the second harmonic ECH at $\langle B \rangle \text{ axis} \approx 0.95$ T with the input power 400 kW, $l/2\pi = 0.18$ m and $\langle R \rangle \text{ axis} = 1.20$ m. The values of $W_p \approx 0.8$ kJ and $\langle \beta \rangle \approx 0.1$ % were obtained at $\langle B \rangle \text{ axis} \approx 1.44$ T by the off-axis fundamental ECH. Preliminary magnetic configuration scan with the vertical field coils controls the plasma position ($1.1 \text{ m} < \langle R \rangle \text{ axis} < 1.3 \text{ m}$), the rotational transform, etc. The configuration effects on the energy content are discussed.