

Abstract Submitted
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Ignitor Structural Analysis for Double X-points Configurations and Machine Cooling System¹ A. BIANCHI, ANSALDO Energia, P. FROSI, ENEA, Italy, B. COPPI, MIT — Recent activities carried out by ANSALDO for the Ignitor program include the structural analysis of the machine Load Assembly for two new scenarios that extend the operation of the machine to H- regimes, where the plasma equilibrium configuration is of the double X- point type and the out-of-plane forces increase. A complete structural analysis was carried out for three scenarios with $B_T = 13$ T and $I_p = 9$ and 10 MA and double X points just outside the plasma chamber, and $I_p = 9$ MA and double X points just inside the plasma chamber. The lowered values of the plasma current can offset the increase of stress due to the less favorable X-point configuration relative to the “extended limiter” configuration. With the cryogenic plant involving gaseous helium and studied by LINDE KRYOTECHNIK AG, the toroidal field coils reach temperatures up to 230 K and the central solenoid coils approach 220 K after a pulse at the most extreme machine parameters, while the vertical field coils remain under 100 K. Several hours are needed to re-cool the machine down to 30 K before each pulse. New calculations are underway to verify the plant cooling performance at reduced parameters but with more stringent cooling times between shots.

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