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ICC/P1-01: Magnetic System for the Upgraded Spherical Tokamak Globus-M2

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The necessity of toroidal magnetic field increase for further gain in plasma parameters is evident from experiments conducted on the spherical tokamaks. Modernization of the machines is planned for NSTX (US), MAST (UK) and Globus-M (Russia) and aimed at toroidal magnetic field magnification. For the upgraded spherical tokamak Globus-M2 it means toroidal magnetic field (TF) increase from the present value of 0.4 T up to 1 T as well as the plasma current rise up to 0.5 MA. The vacuum vessel stays unchanged in order to reduce project costs. Present parts of the magnetic system also will be used as far as possible. The key point of the design is the novel central stack with the inductor winded above. In the current report conception of tokamak upgrade is discussed and mechanical and thermal stress analysis results for the magnets under increased field and plasma current are presented.

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