

Abstract Submitted  
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**Minimum B mirror with expander aimed for transmutation and energy production** OLOV ÅGREN, Uppsala University, V.E. MOISEENKO, IPP NSC KhIPT, Kharkov, KLAUS NOACK, ANDERS HAGNESTÅL — A comparatively simple fusion driven fission device may be developed for industrial transmutation and energy production from spent nuclear waste [1-2]. This opportunity stems from the large fission to fusion power production ratio,  $P_{fis}/P_{fus} \approx 150$ , in a subcritical fusion device surrounded by a fission mantle with the neutron multiplicity  $k_{eff}=0.96$ . Power production is predicted if the electron temperature exceeds 700 eV. The expanders may improve the electron temperature by a formation of an ambipolar potential. Theoretical studies include RF heating, magnetic coil designs, fission mantle kinetics and some basic plasma investigations. A 20 m long mirror with a 40 cm plasma radius could be sufficient for a electric power production of 500 MW. [1] S. Taczanowski, “Premises for development of fusion-fission hybrid systems” in IAEA-RC-870.3, TWG-FR/132, Chennai, India 15 – 19 January 2007. [2] O. Ågren, V.E. Moiseenko, A. Hagnestål, “The straight field line mirror concept and applications”, Problems of atomic science and technology **6**. *Series: Plasma Physics*, 8 (2008).

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