

Abstract Submitted
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Generic Magnetic Fusion Reactor Revisited¹ JOHN SHEFFIELD, STANLEY MILORA, Retired — The original Generic Magnetic Fusion Reactor paper was published in 1986. This update describes what has changed in 30 years [1]. Notably, the construction of ITER is providing important benchmark numbers for technologies and costs. In addition, we use a more conservative neutron wall flux and fluence. But these cost-increasing factors are offset by greater optimism on the thermal-electric conversion efficiency and potential availability. The main examples show the cost of electricity (COE) as a function of aspect ratio and neutron flux to the first wall. The dependence of the COE on availability, thermo-electric efficiency, electrical power output, and the present day's low interest rates is also discussed. Interestingly, at fixed aspect ratio there is a shallow minimum in the COE at neutron flux around 2.5 MW/m². The possibility of operating with only a small COE penalty at even lower wall loadings (to 1.0 MW/m² at larger plant size) and the use of niobium-titanium coils are also investigated.

[1] J.Sheffield and S.L. Milora, "Generic Magnetic Fusion Reactor Revisited," submitted to Fusion Science and Technology, June 2015.

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