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Magnetomechanical Effects on MnZn Ferrites

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Abstract : In this study, the effects of hydrostatic stress on the magnetic properties of MnZn ferrite rings of different power grades, were measured and analyzed in terms of the magneto-mechanical effect on core losses was modeled via the Hodgdon-Esguerra hysteresis model. The results show excellent agreement with the model and a correlation between the permeability drop and the core loss increase in dependence of the material grade properties. These results emphasize the vulnerabilities of MnZn ferrites when subjected to mechanical perturbations, especially in real-world scenarios like under-road embedding for WPT.

Keywords : hydrostatic stress, power ferrites, core losses, wireless power transfer
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