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## **Corrosion E?ects on the Magnetic Behavior of Magnetic Circuitof an Induction Machine**

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Abstract: In This paper, the e?ect of corrosion on the magnetic behavior of a magnetic material usedas a magnetic circuit in the induction machines is studied. With this objective, the magnetic properties of the samples with corrosion and without corrosion were evaluated by the study of hysteresis loopsusing a homemade vibrating sample magnetometer (VSM). The magnetic parameters extracted from thehysteresis loops such as saturation magnetization, coercive, remanent magnetization, squareness ratio, magnetic permeability, and hysteresis area were analyzed. It was shown that more energy is required todemagnetize the sample with corrosion than the sample without corrosion, and the hysteresis loss in the case of the sample with corrosion is more than the case of the sample without corrosion. These meanthat when the corrosion is presented in the magnetic circuits of the induction machine, the hysteresisloss increases, consequentially reducing the machine e?ciency.

Keywords : corrosion, magnetic behavior, hysteresis loops