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IEEE 1451 correction engine to temperature-compensation of magnetoresistive transducers(Conference Paper)

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Краткое описание

The paper presents the comparison between polynomial approximation and artificial neural networks (ANNs) to compensate temperature dependence of a magnetic field transducer. The sensing elements are a magnetoresistance whose value can vary almost 20% in the experimental operating temperature range (20°C-100°C) and a two terminal integrated temperature sensor. The first technique to correct the temperature drift in the magnetoresistance is fully compliant with IEEE 1451.2 correction engine. It uses a segmented multinomial (multivariate polynomial) function and the coefficients and offset values stored in TEDS are determined using a least-mean-square error method. The application of an artificial neural network, well adapted to conveniently modeling strongly non-linear transducer characteristics, is the second technique to be used and leads to an improvement of magnetic transducer's accuracy from 20% to 2%. An approach to a "correction engine" covering this method is proposed. © 2005 IEEE.

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