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A SIMPLIFIED CALCULATION OF MAGNETIC FIELD STRENGTH OVER THE MIDDLE OF THE GAP OF DOUBLE-POLE MAGNETIC IRON SEPARATOR

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Author
M. Zagirnyak
Kremenchuk Mykhailo Ostrohradskyi National University,
20, Pershotravneva str., Kremenchuk, 39600, Ukraine,
e-mail: mzagirn@kdu.edu.ua

The extraction of undesirable ferromagnetic pieces from various granular materials transported by belt conveyors is a most difficult task owing to thick layer of the material in the middle of the conveyor belt. The problem is related to derivation of the approximate formula for initial value of magnetic field strength at the points located over the middle of the gap between the inclined pole pieces of U-shaped magnetic system. The desired expression is obtained by the known formula for the plane-parallel field of two infinite plates in the same plane. The expression for calculation of the field between the inclined surfaces of the pole pieces is obtained by transformation of such formula. The experimental verification is performed by physical model and industrial specimen. As confirmed by experiments, the proposed formula can be used to calculate magnetic filed in the suspended iron separators at preliminary stages. References 11, figures 3, tables 2.

Key words: calculation of magnetic field, electromagnetic iron separator, U-shaped magnetic system, plane-parallel field of infinite plates, inclined poles.

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