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Automated green sorting device for ferrous and non-ferrous material wastes using Eddy Current technique

Abstract :

This project is to design an automated green sorting device that can be used to recognize, differentiate and separate between ferrous and non-ferrous materials, as well as to perform transferring of the mentioned materials. In particular, the technique of separation is using magnetic and Eddy-current concept. Eddy-current is generated on a conductor when the conductor is placed in a magnetic field. These Eddy-currents circulate such a way that they induce their own magnetic field and causing a repulsive force (Eddy force). The analysis done is to analyzed the maximum Eddy force generated to the non-ferrous materials when the materials coming close to the Eddy-current roller. The focused parameters in this analysis are a gap distance between magnet to magnet and a gap distance between magnet to material. The results show this sorting device is completely sort the mix materials (ferrous and non-ferrous materials) up to 90% of consistency.

Keywords: Sorting machine, ferrous materials, non-ferrous materials, permanent magnet separator, eddy current technique.