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## A scenario proposal for the collection of Rare Earths Permanent Magnets adopted on modern WEEE

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### Objectives

In the framework of the Critical Raw Materials (CRM) Act, the recovery of Neodymium-Iron-Boron (NdFeB) magnets is a strategic priority. While large-scale applications like wind turbines belong to a traceable industrial sector, small EEE (power tools for kitchen, hobby, and professional use) present significant criticalities due to high product variety, low individual magnet mass, and the lack of systematic tracking. This study proposes a collection and recovery scenario specifically tailored for these small-scale devices.

### Methods

The evaluation is based on a statistical model built upon the integration of four integrated hypotheses, related to the quantities of magnets per unit; the European market penetration percentage of Nd-based permanent magnets; total EEE sales volumes across relevant categories; Application of statistical scrapping laws to determine end-of-life material stream.

### Results

The work presents a calculation model capable of generating forecasting scenarios of PM to be collected contained in small appliances and professional tools compared to current streams.

### Conclusions

The study provides an analytical tool to guide WEEE management policies toward critical material recovery.

**Primary authors:** BERZI, Lorenzo (Department Industrial Engineering of Florence); DELOGU, Massimo; GUADAGNO, Maurizio (Dipartimento di Ingegneria Industriale, Università degli Studi di Firenze); Dr CICCARELLA, Roberto (Firenze); Dr ALWAWI, Shaman (Firenze)

**Presenter:** BERZI, Lorenzo (Department Industrial Engineering of Florence)

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