

Magnetic Density Separation of Polymers

The Principle

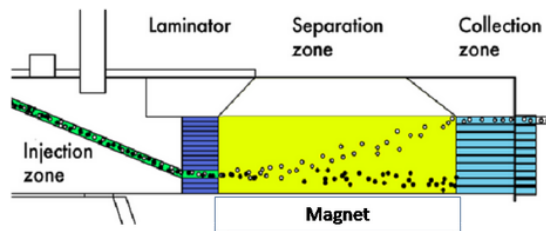
The most important feature of this new concept derives from its ability to accurately separate many different materials in a single process step, using an environmentally friendly and cheap process fluid. Because of its intrinsic flexibility, this technology can easily be implemented to separate many kinds of mixed input materials in an economically sound way. It has proven to produce pure mono material streams at high capacity. Processing costs are lower than currently used sorting technologies.

The process fluid consists of a dilute mixture of water and ferrous oxide and is brought in a magnetic field. When such liquid is placed above a magnet, it is affected by the magnetic field and by the gravitational field. A density gradient is established from the magnet upward so that the effective density of the liquid decreases with distance from the magnet since the magnetic field strength reduces. Thus, far from the magnet where the magnetic field can be ignored the density of the liquid is the water density (the low ferrous oxide concentration may be ignored). According to the same principle, when a magnet is placed above the liquid, the magnetic field affects the liquid in the opposite direction of the gravitational field creating an apparent liquid density that is lower than water. This enables materials lighter than water to sink in the liquid.

At the points where the density of the liquid equals the density of the particles, e.g. the type A material, they remain suspended. The same will happen at a lower point for the heavier type B material and at an even lower point for the heaviest type C particles.

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Benefits

The MDS is a truly breakthrough separation technology that can be regarded as an advanced sink-floating technology, though with unique distinguishing properties. It is also much wider applicable in terms of particle size and weight.

Compared to conventional technology, among its unique features MDS has:

- High quality sorting – an accuracy of density separation of less than 10 kg/m³
- Single step, multi sorting of material
- High throughputs possible
- Excellent Process and Quality Control
- Economic scalable towards user's specific situation

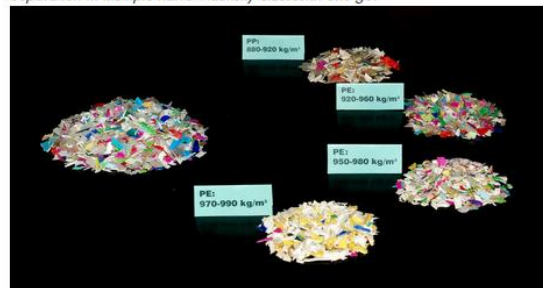
Characteristics of the material to be processed:

- Minimum particle size 10um
- Maximum particle size 14 mm
- Density range - available up on request

Urban Mining Corp is developing different machines depending on field of application:

- MDS installations for plastics (e.g. packaging polymers, technical polymers)
- MDS installations for heavy particles (e.g. heavy non-ferrous metals)
- MDS installations for analysis and small batches (e.g. seeds upgrading, coal analysis)
- MDS installations for fine materials (e.g. diamond tailings, pigments)

Separation in multiple narrow density classes in one go:



Urban Mining Corp

Gebouw 'De Coopvaert'

Blaak 520, 3011 TA Rotterdam, The Netherlands

www.umincorp.com , info@umincorp.com, Tel: +31 10 303 78 60