



# Magnetic Separator for Taconite Processing Plant

**IP Status:** Issued US Patent; **Application #:** 10/081,176

## High Grade Magnetic Material from Taconite

A magnetic grid can be used to separate magnetic material from non-magnetic material in taconite processing, yielding a higher amount of fine, high grade magnetic particles. Hydro separators and flotation plants are commonly used to separate out magnetic material; however, these separation methods often lead to the loss of fine, high grade magnetic particles, therefore lowering the yield of useful material. For any magnetic separation method, the concentration of silica in the magnetic material must be kept at a minimum for future use in blast furnace applications.

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## Magnetic Separation Method using a Magnetic Grid

Researchers have looked at the possibility of using a magnetic field to aid the separation of the magnetic particles in a hydro separator, but in large scale applications, the difficulty of providing a strong magnetic field to the center of the separation apparatus was too high. This problem has been solved by using a grid fabricated with strips of permanent magnetic sheets that provides adequate magnetic field strengths to prevent the finer magnetic particles from passing through the openings of the magnetic grid. This invention allows a greater amount of high grade magnetic particles to be captured, thereby increasing the yield.

### BENEFITS OF USING A MAGNETIC GRID FOR MAGNETIC PARTICLE SEPARATION:

- A more robust method for the separation of magnetic material from non-magnetic material.
- Allows a greater amount of fine, high grade magnetic particles to be captures, increasing the yield.
- Keeps silica contents at acceptable levels for blast furnace applications.

**Technology ID**

z00026

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