



# Mining Technology for Pellet Fine Removal

**IP Status:** Issued US Patent; **Application #:** 10/917,941

## Improved Pellet Fine Removal

In the mining and aggregate industry, the removal of impurities such as taconite fines from whole pellet products is an important task. The pellet fine removal system is a low cost means of separating contaminants such as chips and dust that slow down the flow of heat in blast furnaces from iron bearing pellets. It uses an endless conveyor belt in place of screens to lower overall costs associated with upkeep and capital input. Current mining separation technologies use a series of vibrating screens. These methods require large capital investments along with high operational and maintenance costs for the screens.

MN-IP Try and Buy
<b>Try</b>
<ul style="list-style-type: none"><li>• Trial fee is \$5,000 for a six month license</li></ul>
<b>Buy</b>
<ul style="list-style-type: none"><li>• \$30,000 conversion fee (TRY to BUY)</li><li>• No patent costs</li><li>• Royalty rate of 3% (2% for MN company)</li><li>• Royalty free for first \$1M in sales</li></ul>

## Mining Separation Technology uses Conveyor Belt

This mining separation technology is comprised of several key parts that allow for a much more cost effective process than current vibrating screens. The conveyor belt is fed from a holding tank where the feed mixture composed of whole objects and fines, such as iron ore pellets, pellet chips, and pellet dust, is placed. The feed mixture then works its way down to the endless conveyor belt which is set at an angle that is greater than the angle at which the object is at rest for the whole pellet products but less than the angle at which the fines remain at rest so as to have the whole pellet products flow down the moving belt while the fines remain at rest. Obstruction elements placed on the conveyor belt then catch the resting fines and propel them up the belt while the whole pellet products cascade down the conveyor belt. From there the fines are deposited into a holding container at the top of the conveyor to be reused and recycled in other processes. A monitoring device can also detect characteristics of fines being removed from the feeding mixture and provide an output that helps to adjust the angle and speed of the belt to optimize output. The desired whole pellet products are captured at the bottom of the conveyor belt and can be smelted down in the blast furnace.

## FEATURES AND BENEFITS OF PELLET FINE REMOVAL MINING TECHNOLOGY:

**Technology ID**

z03035

**Category**

Engineering & Physical  
Sciences/Design Specifications

**Learn more**



- Capital investment savings over the current vibrating screen processes
- Low maintenance and operational costs associated with conveyor belt method
- Positioning of belt according to angle of repose allows for max output of product
- Process results in a 98% purity level
- Captured fines can be sold and reused
- Dry process that lowers costs and can be used year round

**Researchers:** Rodney Bleifuss, PhD Senior Research Associate, Natural Resources Research Institute  
David Hendrickson, PhD, Richard Kiesel Lab Director, Coleraine Minerals Research Lab