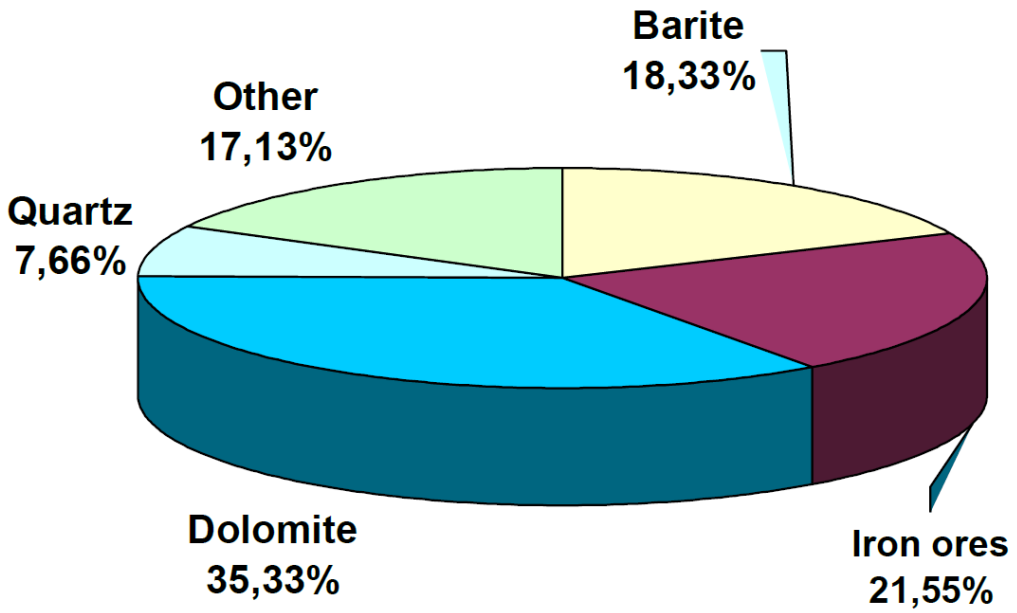
Magnetite Separation from BARITMIX-I

Know-how and Technology

Baritmix-I Mineral Composition

The primary target of the know-how is to produce high Magnetite and Hematite containing concrete additive products.

These products increase volume specific wieght of concrete without unsing any metallic particles like iron shrots, lead particles, other minderal that do nto integrate into the concrete structure and their distribution may get inhomogenerous during processing of concrete.



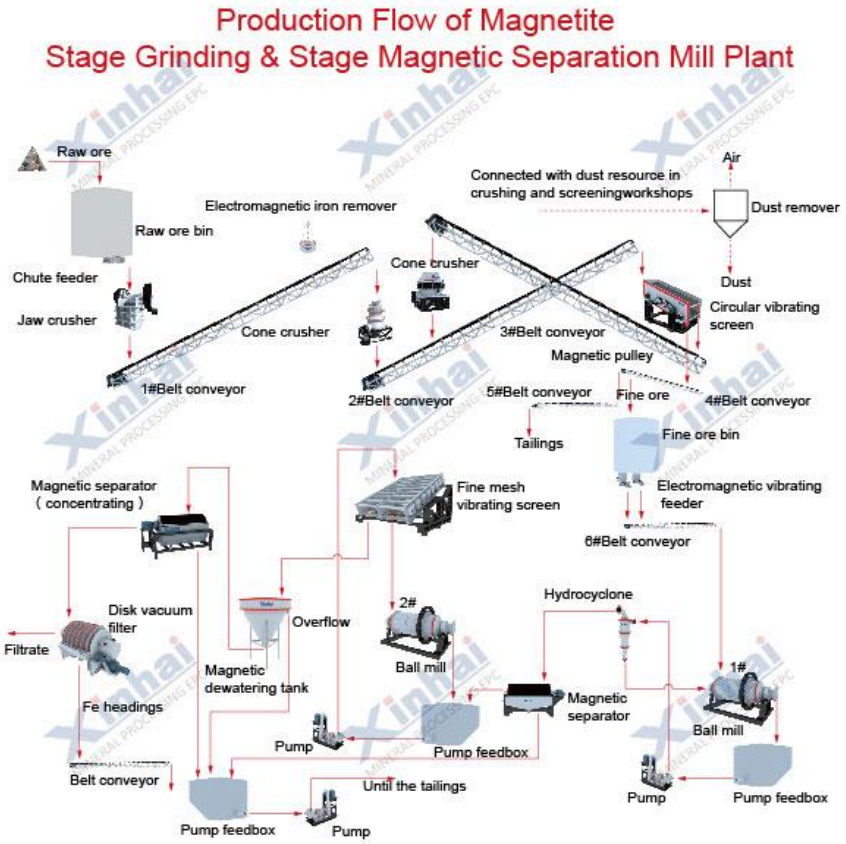
There are commercially available technologies to produce powdered magnetite

Our target specification for the product requires coarse fractions of magnetite or high magnetite containing particles.

Powder like products are just partially applicable and can be used as cement additives only.

Our target is to use both fractions to enable highest possible magnetite concentration in the concrete composition without any negative effects on concrete properties, like strength, rapture, cracking and increasing properties like density and radiation absorption (X-ray, Gammar-rays.

Commercially availabel technologies can not be applied 1:1



Recommended technology to beneficiate BARITMIX-I

The raw pile of **Baritmix-I** consists of grains of 0-12 mm size. Mineral composition is show in slide 2.

1. **BARITMIX-I** is transported and fed dry to fractionating screens – *Shaking Screens*.
2. Shaking Screens prpduce three fractions**: A: coars** 4 – 12 mm; **B: Mid fraction** 0,2 – 4 mm; **C: fines** 0 – 0,2 mm;
3. **A Coars Fraction** is fed to a *Crasher or Hammer Mill* then fed back to screen plant
4. **B Mid Fraction** is fed to *Dry Magnetic Separator*
5. **C Fine Fraction** is fed to a *Blow Separator* two further fractions are made: **powder** 0-63 micron and **fine grains** 63 – 200 micron,
6. Powder and fine grains are suspended in water in *Mixing Tanks* (1+1) and the slurry is fed to *Wet Magnetic Separators*
7. **The magnetic fractions** of both streams are fed to *Hydorcyclones* (1+1)
8. The concentrated slurry is sent *Settling Tanks* and *Dewatering* and *Drying*

Simplified alterantive technology

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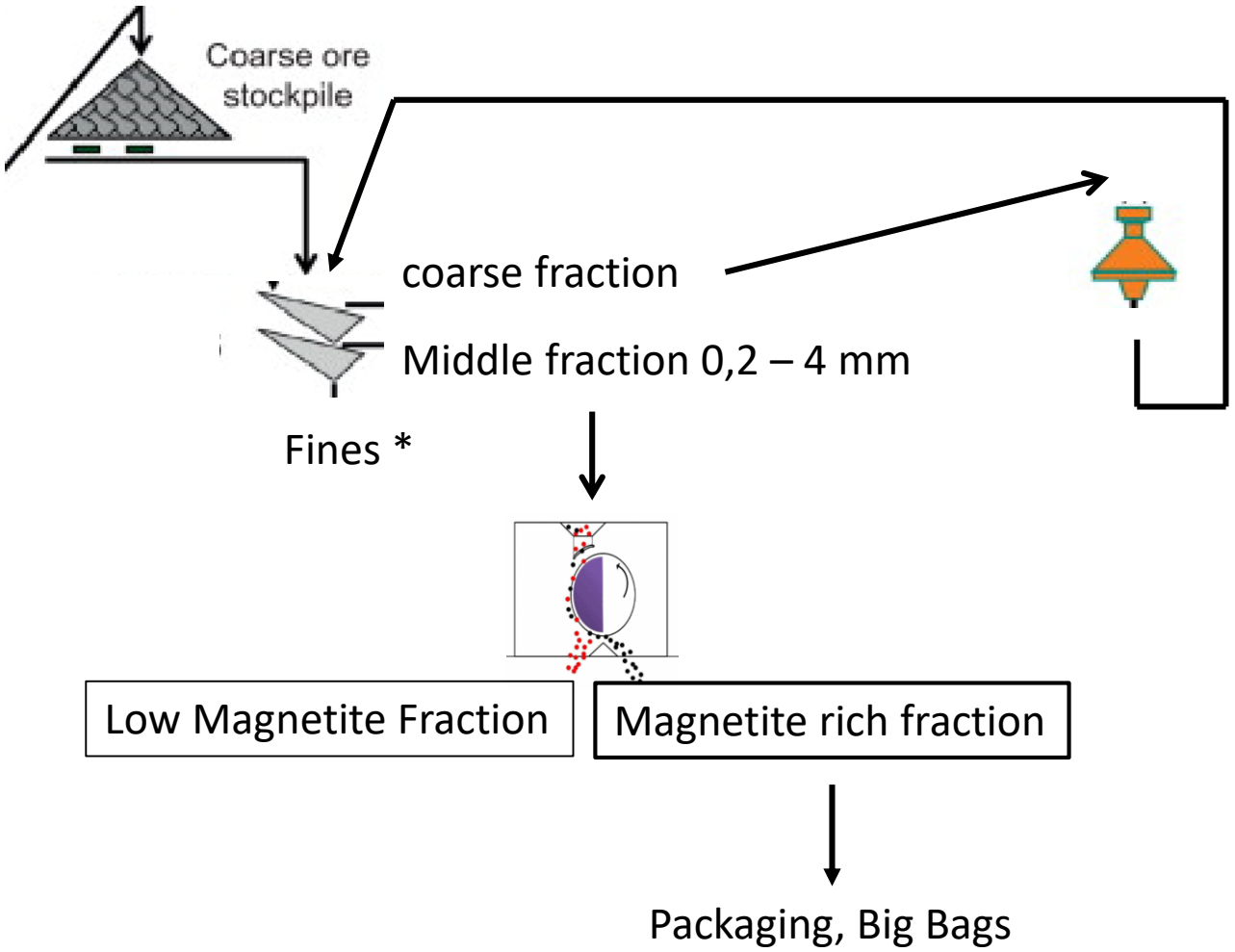
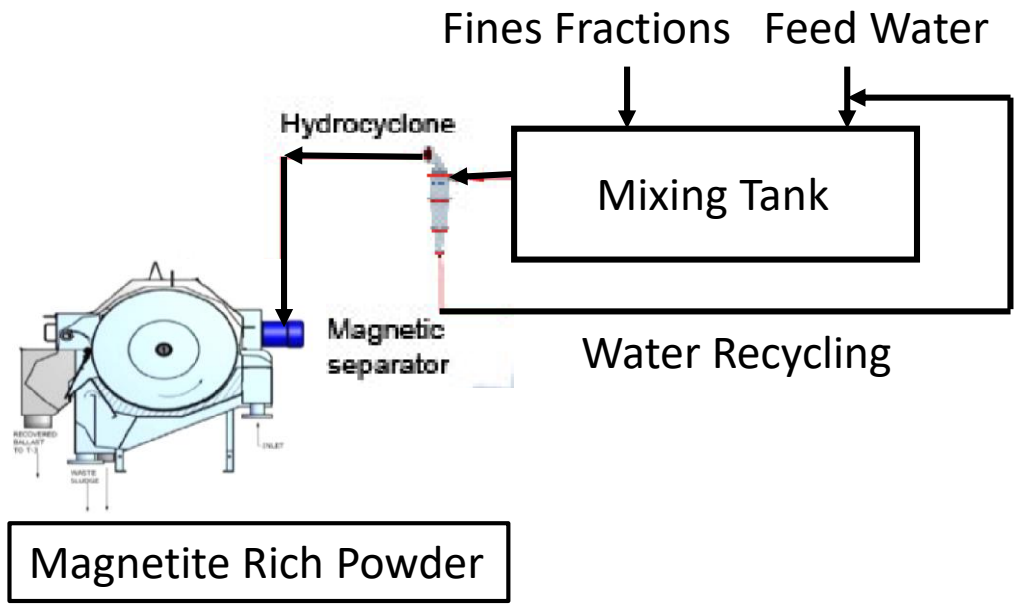
4. **B Mid Fraction** is fed to *Dry Magnetic Separator* to produce Magnetite rich product, then sent to packaging
5. **C Fine Fraction** is fed to a mixing tank to make water based **suspension** which is then fed to a
6. *Wet Magnetic Separator* to extract magnetic particles from thin suspension, which stream then fed to a
7. *Hydrocyclone* and then to a settling tank, the resulting sludge/slurry is then removed and fed to a *Dewatering Unit*
8. Dewatering take splace on a *fine cloth mech of 40 microns* and
9. the filter cake is then broken and dried in a heated channel befoe packaging in big bags.

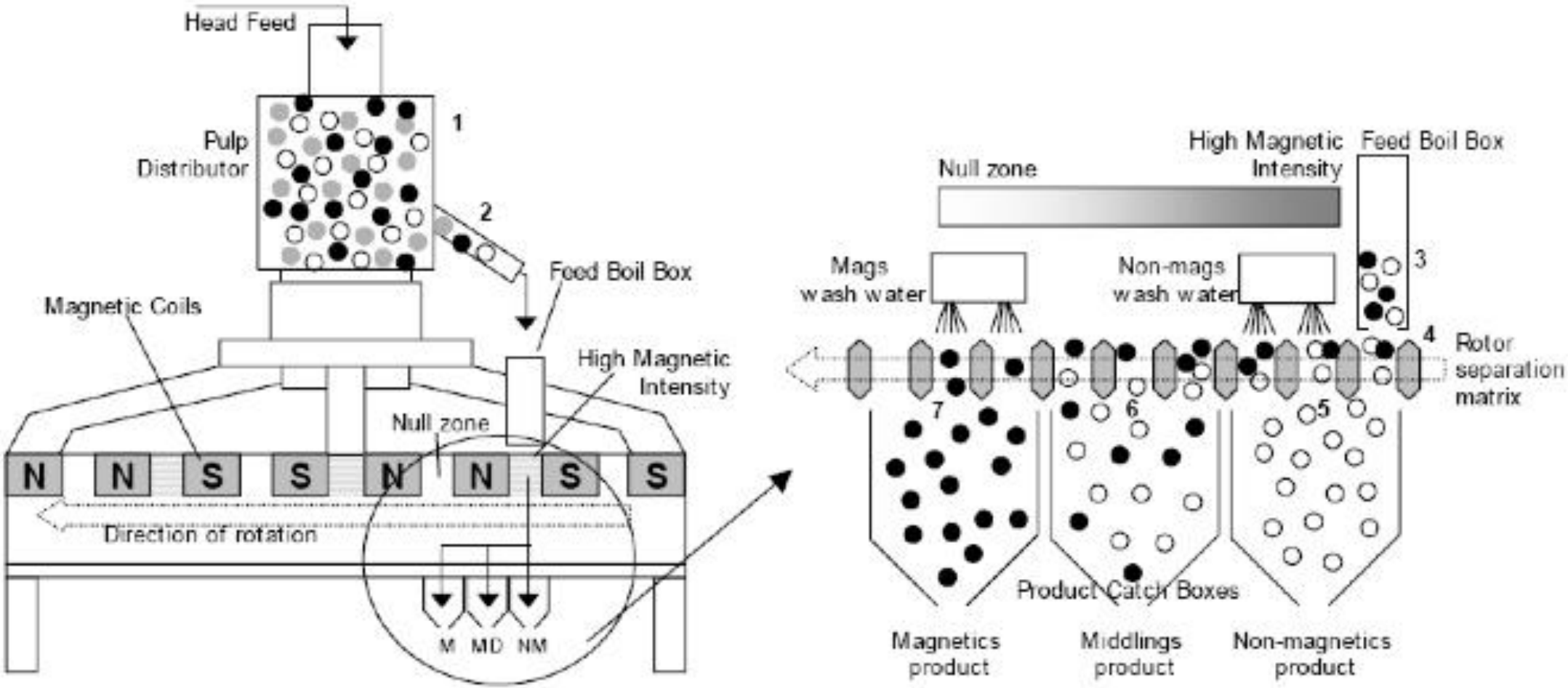
Process Flow Diagram



* Processing of Fines Fraction



Prcision Magnetic Separator used at Consolidated Rutile Limited Company



List of equipment

Dumper

Raw Ore Feeded

Vibrating Screen (3 fractions – coarse, middle fraction (0,2 - 4 mm), fines (below 200 microns))

Dust remover with local suction heads

Cone Mill or Hammer Mill

Dry Magnetic Separator (for fractions of 0,2 – 4 mm)

Slurry mixing tank with powder feed and water feed, water recycling form hydrocyclone

Hydrocyclone

Wet Magnetic Separator

Big Bag Packaging

Fully Equipped Product
Testing Laboratory is also needed