

Metallurgical recoveries - Paul Dunne



UG2 project



UG2 ore separation project

❖ Objectives

- ❖ Increased pgm recoveries
- ❖ Increased throughput
- ❖ Reduced working costs

❖ Costs - R100 million

❖ Safety

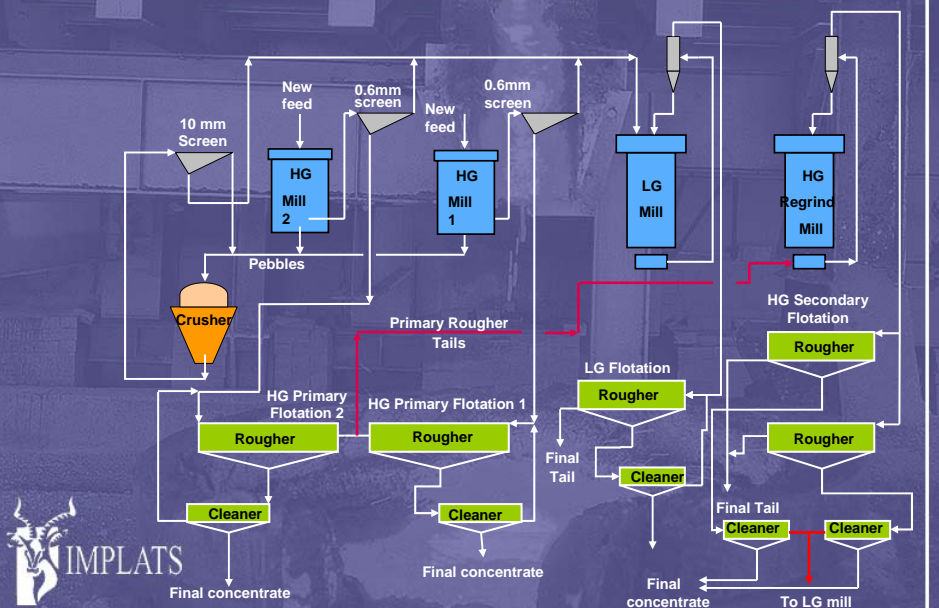
- ❖ 806 822 man hours worked
- ❖ 2 reportable accidents
- ❖ 1 lost time accident



IMPLATS

- ❖ Peaked at around 1 000 contractors on site

AG mill circuit



IMPLATS

Circuit changes

- ❖ Autogenous milling
- ❖ High grade / low grade separation
 - ❖ Pebble ports
 - ❖ Trommel screens
 - ❖ Crushers
 - ❖ Fine screening
- ❖ High grade / Low grade regrinding
- ❖ Low grade flotation



Commissioning problems

- ❖ Primary high grade rougher tails
- ❖ Chokes / spillage
- ❖ Classification screens
- ❖ Regrind mill ball loads
- ❖ Wear rates
- ❖ Crushers



Current issues

- ❖ Plant availability
- ❖ High Grade/low grade split
- ❖ Grind
- ❖ Flotation performance

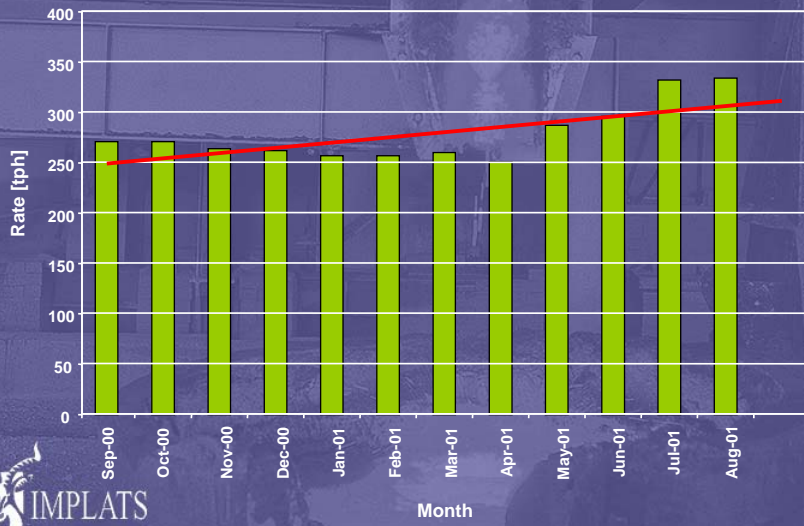


Current issues

- ❖ Recoveries at pre-expansion levels
- ❖ Throughput (tph) increased by 13%
- ❖ High grade/low grade split at 80:20



Milling rate





Milling rate

- ❖ Crusher plant
- ❖ Upgrading of cleaner-recleaner circuit
- ❖ Upgrading and automation of reagent addition
- ❖ New slag plant
- ❖ Best practices
 - ❖ Density control
 - ❖ Reagent optimisation
 - ❖ Classification optimisation
- ❖ Open-cast treatment



Smelter expansion project



Outcome of smelter expansion

Acid plant upgrade

- ❖ Total cost - R 30 million (budget R33 million)
- ❖ Commissioned November 2000 - on time
- ❖ Achieving designed conversion rate and running time

New Pierce Smith Converters

- ❖ Total cost - R 44 million (budget R46 million)
- ❖ Commissioned December 2000
- planned November 2000
- ❖ Achieving expected output



Outcome of smelter expansion

- ❖ New 38 MW furnace
- ❖ Total cost - R123 million (budget R132 million)
- ❖ Commissioned March 2001 - on time
- ❖ Operation much improved compared to No.5 furnace



Current smelter projects

- ❖ Furnace off-gas cleaning
- ❖ Installation of Sulfacid technology (Lurgi)
- ❖ 50% reduction in current furnace SO₂ emissions
- ❖ Modular installation
- ❖ Planned commissioning July 2002
- ❖ Total cost R55 million



Current smelter projects

New dryer

- ❖ Niro spray dryer
- ❖ For thickener and dry concentrate silo
- ❖ Capacity of 50 tons per hour dry concentrate
- ❖ Planned commissioning November 2002
- ❖ Total cost R88 million

