



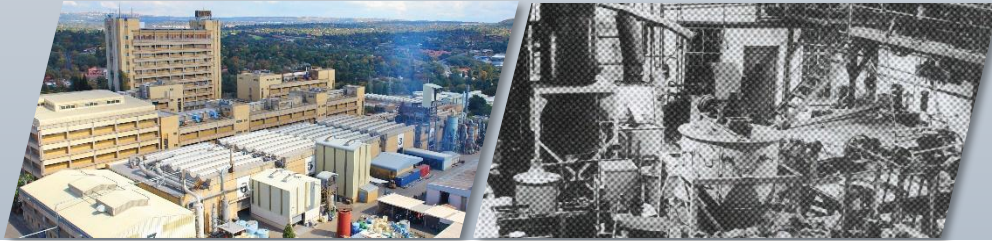
MINTEK Overview

JS Moema | MINTEK - ASPASA | 12 August 2025

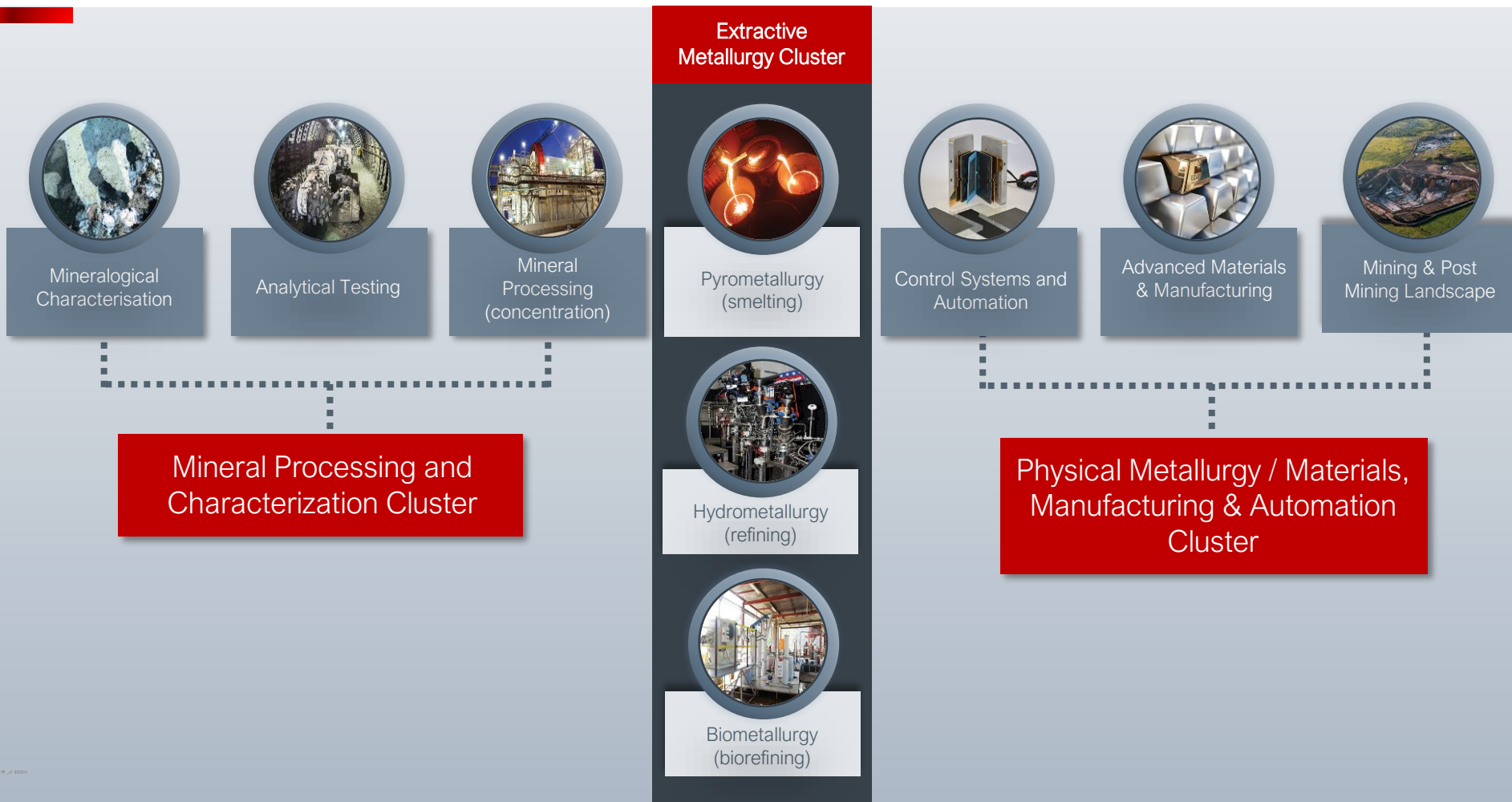
Mintek derives its mandate from the Mineral Technology Act No: 30 of 1989.

“To meet a national imperative to **promote mineral technology** and to **foster the establishment and expansion of industries** in the field of minerals and products **through research, development and technology transfer.**”

Mintek is a Schedule 3B Entity



- **South Africa's national mineral research organisation** operating under the Department of Mineral and Petroleum Resources (DMPR).
- One of the **world's leading technology organisations** specialising in mineral processing, extractive metallurgy and related areas.
- Established in 1934 by an Act of the South African Parliament as a **national mineral research Institute**.



Mintek's Global Operations



Gold



PGMs



Ferrous Metals



Equipment &
Technology



Base Metals



Industrial Minerals
& Diamonds



Process Control
Strategies



Uranium



Rare Earth
Elements



Economic &
Regional Studies

100%

A world map with a 3D effect, showing countries in white and oceans in light blue. Numerous countries are highlighted with a red overlay, indicating the presence of red mine sites, red elements, and red systems. The highlighted countries include: U.S., Canada, United States, Mexico, Brazil, Argentina, Chile, Peru, Russia, Kazakhstan, China, India, Philippines, Malaysia, Indonesia, Papua New Guinea, New Caledonia, Australia, and New Zealand. Other countries like France, Ireland, Poland, Turkey, Iran, Saudi Arabia, Egypt, Sudan, Mali, Niger, Chad, Libya, Tunisia, Algeria, Morocco, Mauritania, Mauritius, South Africa, and others are also visible but not highlighted.

**PYROMETALLURGY –
FERROCHROME, COBALT, NICKEL
AND BATTERY RECYCLING**

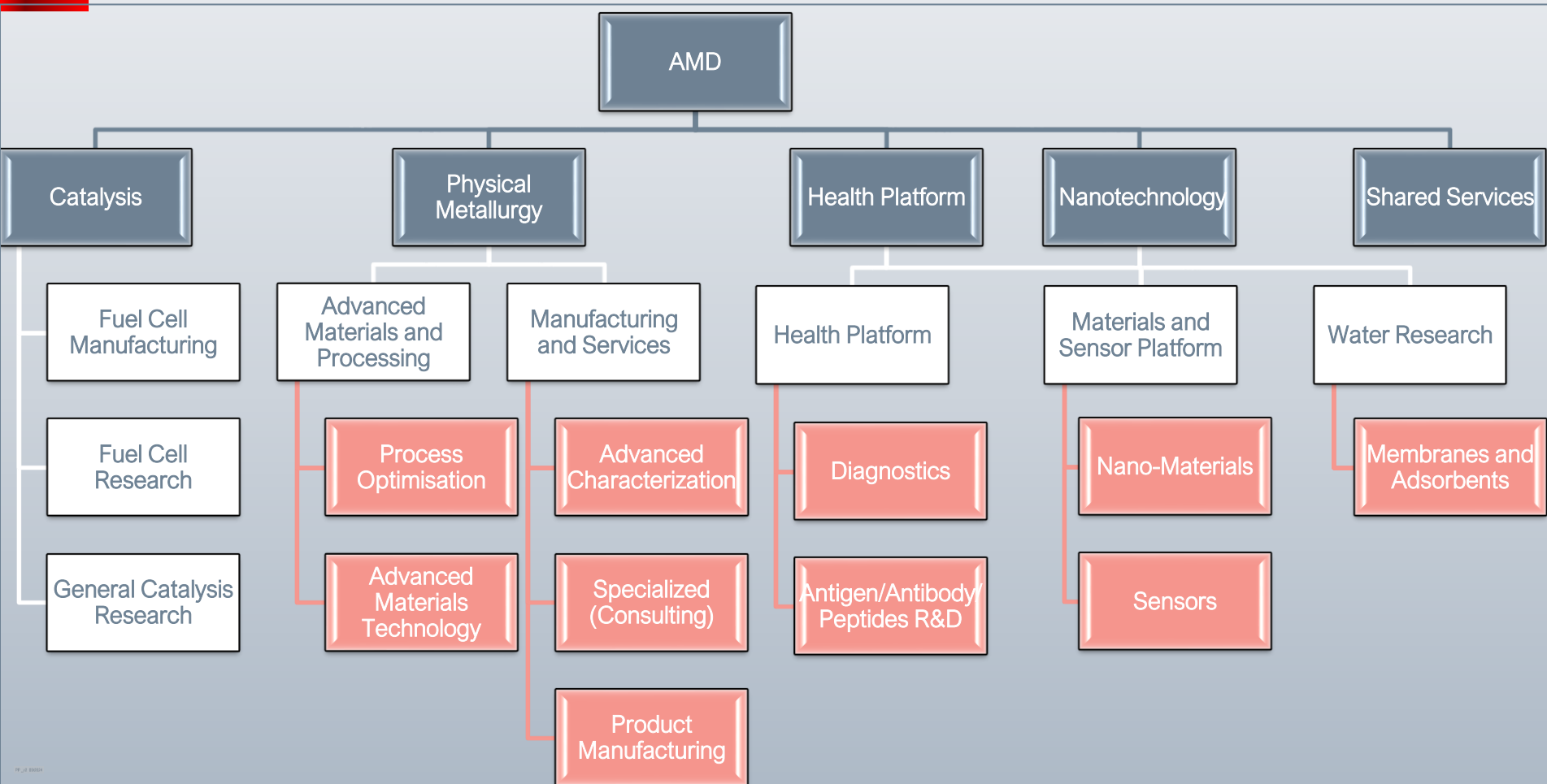
South Africa
Kazakhstan
Zambia
New Caledonia
Switzerland

Chile, Brazil, United States, France, Kazakhstan, Finland, Australia, Papua New Guinea, South Africa, Zimbabwe, Zambia, DR Congo, Cote d' Ivoire, Mali, New Zealand, Mexico, Turkey, Canada.

Advanced Materials Division



Advanced Materials Division





Metallurgical Services (MTC) and Grinding Media Quality Control Program for the Mining Industry



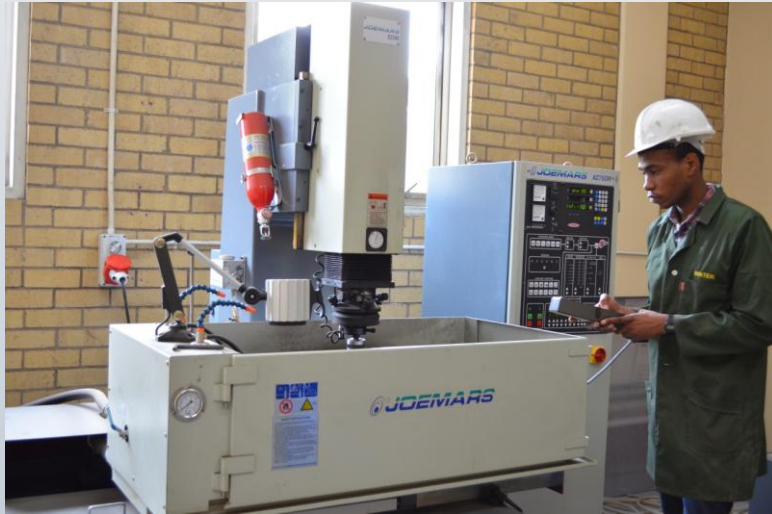
Quality Control Programs

- **Inspection of shipments** ✓
- **Manufacturer QC reports**
 - Batch numbers ✓
 - Chemistry ✓
 - Hardness (surface and profile) ✓
 - Weight ✓
- **Ball performance monitoring**
 - Mill charge inspection ✓
 - Ball scrap discharge inspection ✓
 - Continuous mill performance monitoring
 - Comparable mills
 - Historical data ✓
 - Service testing (MBT)
- **Independent verification**
 - Chemistry ✓
 - Hardness (profile), Microstructure
 - Impact testing ✓



Testing Facility - Sample Preparation

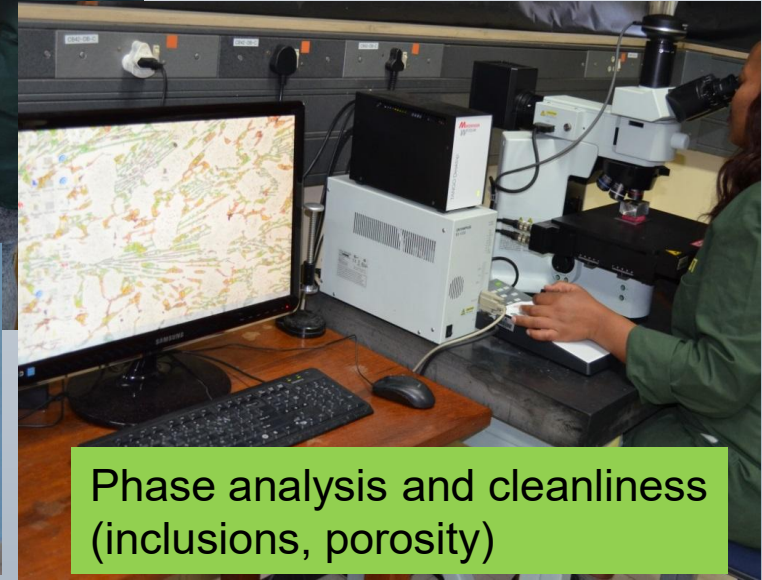
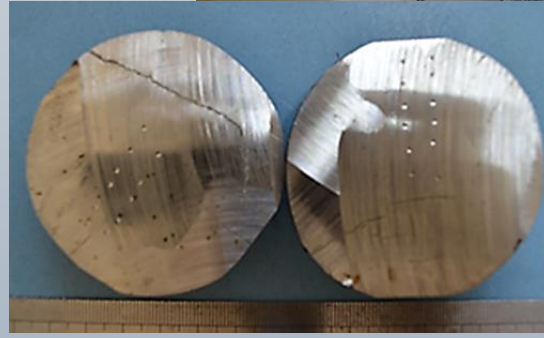
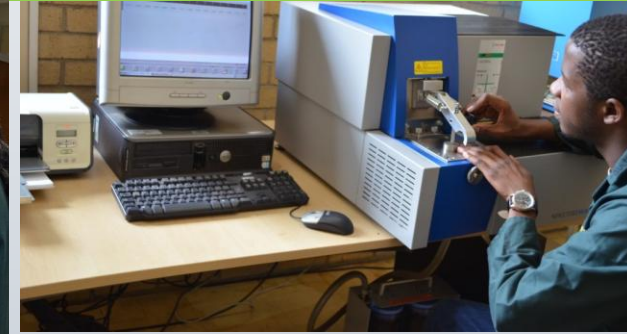
Electric Discharge Machine (EDM)



Cut-off Machine



Spark Emission Spectroscopy



Phase analysis and cleanliness
(inclusions, porosity)



Grinding Balls Drop Tester



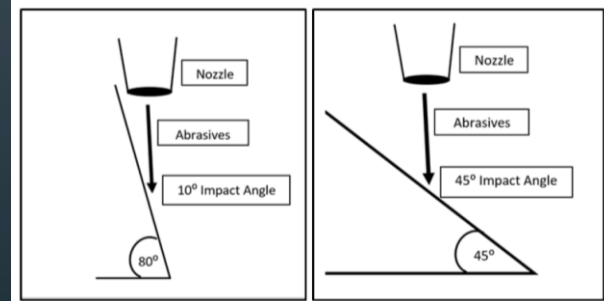
Gas Atomiser for Metal Powder



Button Arc Furnace for Alloy Development

Wet & Dry Erosion Abrasion Testing

13



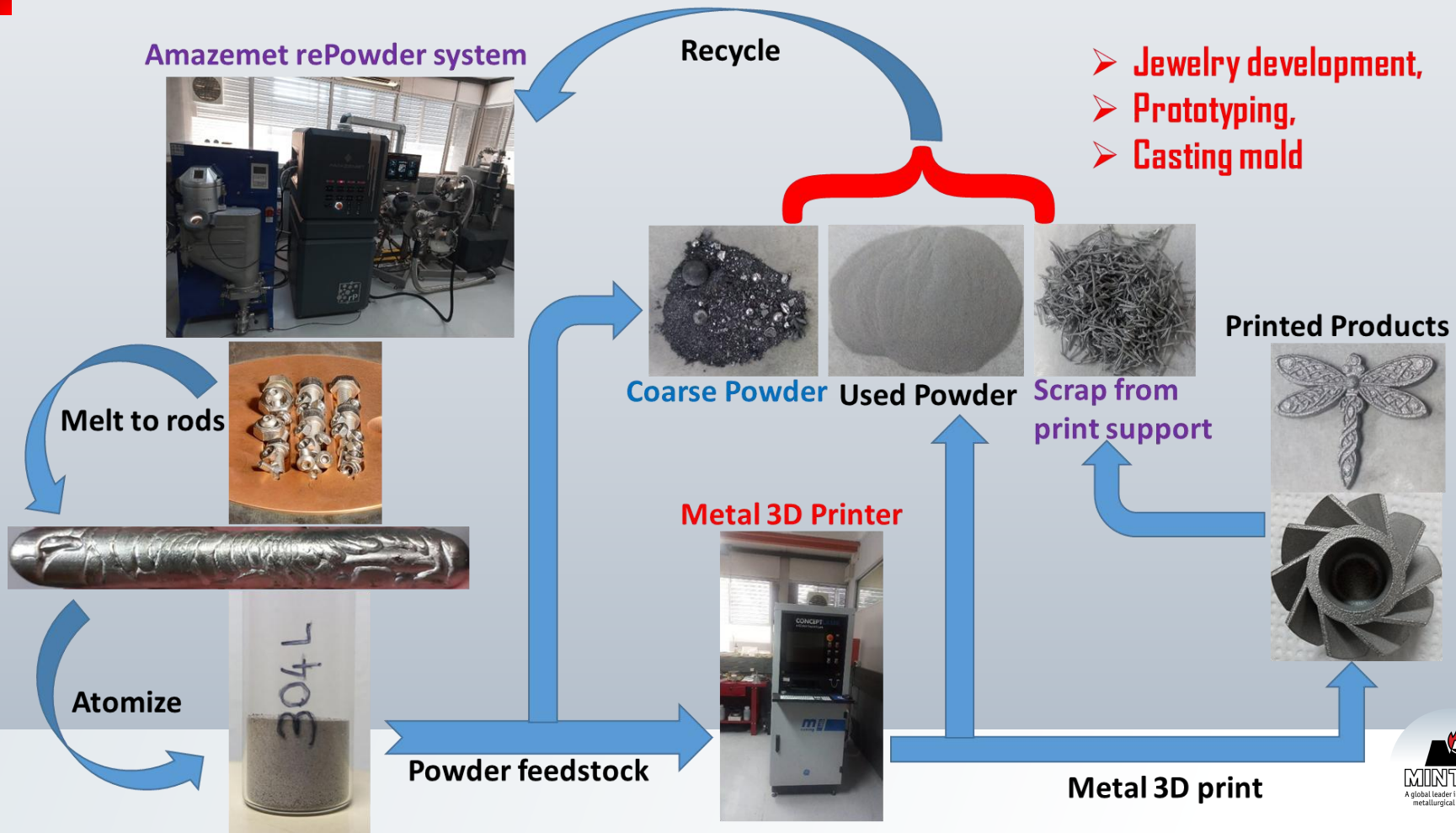
Mintek Ball Mill Liner Project



The purpose is to improve the toughness of the current HCWCI alloys used in the mining industry to produce mill liners by applying grain refinement casting techniques

Activities	Comment
Pattern Design and Production at a local foundry	Modelling using Magma software
Specification	Production of moulds needed for casting Purchase of reference liners
Melting and Casting of prototype liners per alloy	Heat treatment of the liners included
Quality Control Tests	Tests of liners using industry tests (i.e. not laboratory tests)
Marking for Industrial Tests and industrial testing	Installation of produced liners and reference liners. Monitoring of liners in service is also required





Concluding Remarks

Methods for comprehensive grinding media quality control:

- Chemical Analysis, Hardness Measurements
- Metallography
- Abrasion Wear Testing
- Impact Resistance: Drop Tester
- Marked Ball Test

Corrosion Technology:

- Electrochemical
- Field Coupon
- Material Selection
- Sliding and Erosion Wear

Consultation and Safety:

- Failure Investigations
- Technology Assistance Programme (TAP) - Foundry
- Powder Metallurgy

200 Malibongwe Drive
Randburg
South Africa

Tel: +27 11 709 4111

www.mintek.co.za



Private Bag X3015
Randburg
2125
South Africa

Thank You



Mintek



MintekSA



Mintek_RSA



Mintek_RSA