KUMBA IRON ORE

Research and Development

The purpose of Research and Development is to add value to Kumba Iron Ore and its customers by improving its competitive advantage through leading edge research and development, process engineering and management of technology. Research and Development (R&D), Projects and Technology is capable of delivering a high-level, fully integrated one-stop research and development and process engineering service in several areas. This is achieved by fully integrating Metallurgical Engineering into

Business Overview

Research and Development (R&D), Projects and Technology is capable of delivering a high-level, fully integrated one-stop research and development and process engineering service in the areas of:

- Raw materials technology,
- Physical beneficiation,
- Aqueous processing,
- Roasting & smelting,
- Advanced process modeling,
- Environmental technology
- Process design, evaluation and optimisation
- Support Services

This is achieved by fully integrating Metallurgical Engineering into the R&D core competencies resulting in unique solutions, impacting on Kumba Iron Ore' business. Our core competencies are:

- Raw material characterisation and evaluation of iron making processes
- Gravity, Dense medium separation (DMS), magnetic and electrostatic separation processes
- Ilmenite smelting, roasting and slag granulation processes
- Hydro metallurgical and flotation processes
- Advanced modeling, control and simulation of metallurgy related processes

Products and Services

Value-in-use Iron and Steel Technology

The VIU Technology section focuses on the pyro characterisation of raw materials and the evaluation and optimisation of iron making processes. Capabilities include:

- Characterisation of iron ore, sinter and pellets
- Various in-house developed tests for the Corex process
- Pelletising/micro pelletising of fine materials
- Waste material handling

- Mineralogy, petrography and XRF

Typical projects:

- Evaluation of the Sishen and Sishen South deposit
- Optimisation of sinter compositions via a contract with Mittal SA
- Evaluation of the Thabazimbi Phoenix ore body
- Development of an oxygen steelmaking route model

Research and Technology

The R&T section focuses on new process development concerning iron ores as well as the metallurgical auditing of operational mineral processing plants. Capabilities include:

- Sampling of ore beneficiation plants
- Comminution and classification
- Gravity, DMS, magnetic and electrostatic separation
- Dewatering
- Simulation of processes and flow sheet design

Typical projects:

- Tests and flow sheet development for Sishen Expansion Plant
- Beneficiation flow sheet development for various magnetite deposits

Process Engineering

The Process Engineering unit focuses on the supply of process engineering services to Kumba Iron Ore. Process engineering services are also rendered to initiatives covering the spectrum from fundamental Research and Development up to Bankable Feasibility Studies. Capabilities include:

- Process design
- Process option analysis and selection
- Process simulation
- Technology scanning
- Operations process engineering support
- Value engineering

Typical projects:

- Bankable feasibility studies and implementation
- Support to Business Development initiatives
- Operations support for throughput and efficiency enhancing projects.