



# Metallurgical Consulting.

Focussing on optimising the extraction of minerals.

VBKOM's metallurgical consulting services focus on optimising the extraction of minerals, identifying niche markets and supplying independent, fit-for-purpose solutions to maximise value for the client. This is achieved by strategic alliances with external technology partners, close co-operation with industry experts, applying and improving existing processes and methodologies, and staying abreast with new technology developments.

Our team has considerable plant experience and high-level competency in LIMN and Excel based simulation skills. We have experience in various commodities including iron ore, coal, chrome, heavy mineral deposits, industrial minerals (such as refractory minerals, clay deposits, limestone deposits and silica), manganese, rare earth deposits, platinum, gold and tungsten globally.

We deliver services through feasibility studies, operational support and audits. Our services include:

## Studies and Audits

- › Conceptual studies and plant designs
- › Preliminary economic assessments (PEA)
- › Pre-feasibility studies (PFS)
- › Bankable feasibility studies (BFS)
- › Due diligence studies
- › Process plant audits
- › Metal accounting audits

## Test Work Development and Management

- › Developing metallurgical test work and sampling programmes
- › Feasibility test work management (e.g. mineral characterisation)

## Process Engineering

- › Plant designs (concept to detail)
- › Process simulations
- › Trade-off studies (techno-economic assessments)
- › Financial modelling
- › Plant CAPEX & OPEX evaluations
- › Process optimisation studies
- › Operational support and training
- › Pilot plant testing
- › Plant commissioning and commissioning support

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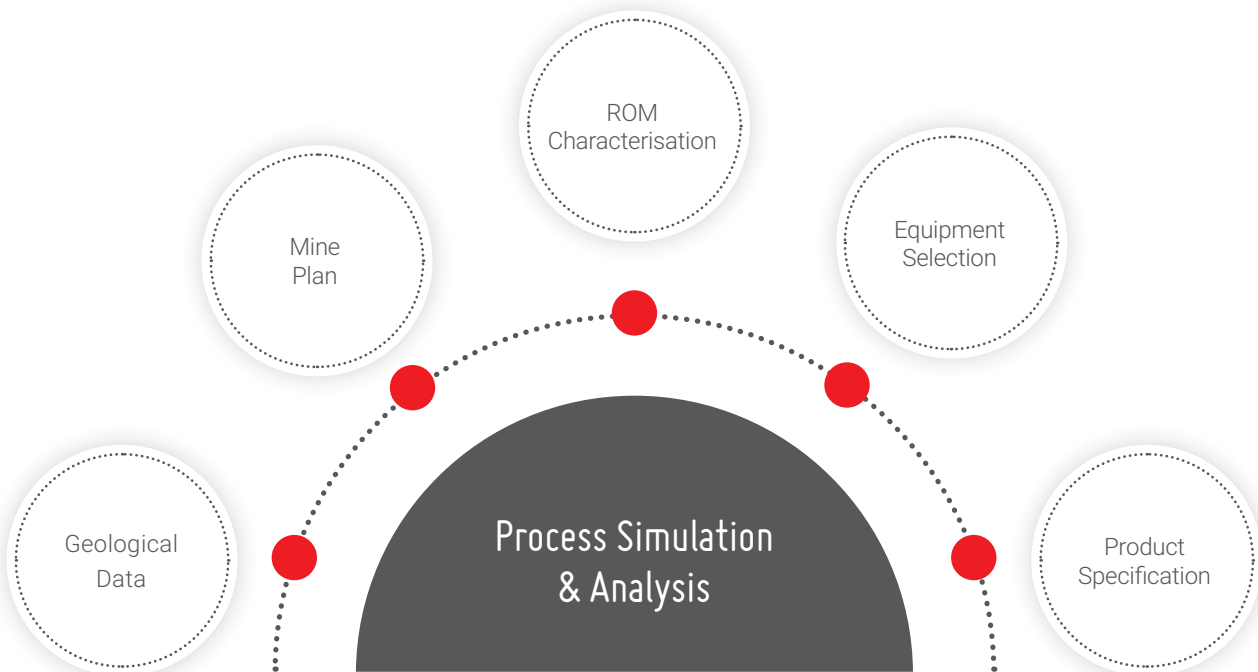


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# > Process Engineering Methodology.

The VBKOM process engineering methodology considers geological, mining, process and ore characterisation data to produce design outputs. Further inputs such as engineering design criteria, environmental and geotechnical study recommendations are considered in trade-off studies and financial modelling.



## Typical design outputs from metallurgical studies include:

- > PDCs
- > Sizing Envelopes
- > BFDs
- > Mass & Energy Balances
- > PFDs
- > Yields / Recoveries
- > Equipment lists/sizing
- > Plant capacity analysis
- > P&IDs
- > Control Philosophy
- > Plant OPEX
- > Plant CAPEX
- > Operating manuals

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