

VBKOM

CAPABILITY STATEMENT:
INDUSTRIAL AND SYSTEMS ENGINEERING

A mine is a system. Its throughput, cost, and risk come from how people, equipment, processes, infrastructure, and data work together. VBKOM's industrial engineers model that system, find where it is constrained, and show what each option is worth before you commit capital.

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A MINE IS A SYSTEM.
IT PERFORMS LIKE ONE.

Pit, haul road, crusher, plant, stockpile, rail siding, port. Each part can be well engineered on its own, and the operation can still underperform. Throughput is set by constraints and the interactions between parts, not by the best piece of equipment.

Industrial engineering looks at the whole flow. It finds where the bottleneck really sits and how variability and downtime ripple through the chain. Then it shows which change will move the number that matters.

EVERY DECISION, TESTED THREE WAYS

01

THROUGHPUT

How much will the system really deliver, once variability and downtime are included?

02

RISK

How confident can we be in that number, and what could move it?

03

VALUE

What is each option worth:
NPV, IRR and payback?

Assumptions are expensive. Models are cheap.

A study that assumes nameplate throughput, average cycle times, and perfect availability will overstate value. For a junior raising capital, or a mid-tier choosing between expansion options, that error carries straight into the valuation, the funding case, and investor confidence.

Systems engineering replaces those assumptions with a model of how the operation will actually behave. Options can then be tested on a screen before they are tested in the field.

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ONE DISCIPLINE.
THREE WAYS IT HELPS.

Industrial and systems engineering sits at the heart of VBKOM's Management Consulting solutions. The same models, data and judgement serve three questions mining leaders keep asking.

Optimise Processes and Systems

Where is the system losing throughput?

Model the operation, identify the real constraint, and test fixes before investing in them.

Systems engineering · Discrete-event simulation · Stochastic debottlenecking · Supply chain and warehousing · Algorithmic solvers · Data analysis · Operational readiness

https://vbkom.com/solutions/optimise-processes-and-systems

Support Investment Decisions

Which option creates the most value?

Turn throughput and cost into a defensible financial case for each option.

Financial modelling and options analysis · Trade-off studies · Feasibility study support

https://vbkom.com/solutions/support-investment-decisions

Articulate and Clarify Risk

How confident can we be in the number?

Put a range around every forecast, so decisions are made with eyes open.

Monte Carlo modelling · Qualitative and quantitative risk analysis · HAZOP facilitation

https://vbkom.com/solutions/articulate-and-clarify-risk

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OPTIMISE PROCESSES AND SYSTEMS.

We improve and integrate people, processes, technology, and infrastructure on capital projects and running operations.

THE FLOW

Where does the system really constrain?

We map the process, measure it in the field, and build a simulation of it, so options can be tested and compared before money is spent.

- Process mapping and constraint definition
- Time studies and GPS cycle-time tracking
- Discrete-event simulation with 3D visualisation (SIMIO)
- Stochastic debottlenecking
- Supply chain and warehousing studies
- Algorithmic solvers and platforms

THE DATA

Is your data telling you what you need to know?

We define what should be measured, where, and how. We build on the systems you already have and only add new ones when they are really needed. We start simple and grow the solution as your organisation is ready.

- Process and business rules, and data sources
- Low-cost cloud data capture where systems have gaps
- One consolidated reporting platform
- Automated Power BI dashboards on existing licences
- Excel tools that automate daily operator calculations

THE HANDOVER

Will it run as designed?

Systems thinking is what makes industrial engineers well-suited to operational readiness. They connect every stakeholder's requirements to the design and the plan, so a new facility performs from day one.

See our Operational Readiness capability statement

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SUPPORT INVESTMENT DECISIONS.

THE VALUE

Which option creates the most value?

Our industrial engineers, techno-economic specialists, and mining engineers build financial models on top of the operating model, not on assumptions. Every option is valued on the same defensible basis.

- Discounted cash flow modelling: NPV, IRR, EBITDA and payback
- Operational trade-off and options analysis
- Forecasting, cost estimation and capital contingency
- Sensitivity, scenario and decision-tree analysis
- Business valuation and technical audits
- Study phase and confidence-level compliance

THE CONFIDENCE

How sure can we be of the number?

A single forecast hides the risk behind it. We model uncertainty in throughput, cost, and schedule, so boards and investors see a range and the factors that drive it.

- Monte Carlo simulation (@Risk)
- Stochastic and probabilistic range analysis
- Expected value and option analysis
- Probabilistic schedule and branching simulation
- Qualitative and quantitative risk assessment

One model of the operation, carried through to **throughput, risk, and value**. Every option is compared on the same footing.

If the study rolls into implementation, we can manage the project and measure performance against what the study projected.

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WHY VBKOM:
ENGINEERS WHO KNOW MINES, NOT JUST MODELS.

A model is only as good as its understanding of the operation behind it. Our industrial engineers work alongside VBKOM's mining engineers, geologists, metallurgists and techno-economic specialists. The model reflects how the mine really works, and the answer connects to the decision in front of you.

WHAT SETS US APART

01

The whole value chain.

One integrated team that understands mining, processing, logistics and project requirements end to end.

02

Proven tools.

SIMIO, @Risk, Power BI, and field time-study equipment, sized to the decision and the time available.

03

Practical by default.

We work with the systems you already have and grow solutions as your organisation is ready.

04

Independent, on the owner's side.

No equipment to sell and no contractor to protect, only your interests.

05

A track record since 2008.

Independent solutions for mining clients, from studies through to operations.

TYPICAL PROJECTS

- New mine development studies
- Equipment and fleet trade-off studies
- Operational and business improvement support
- FIDIC and NEC employer's requirements
- Mine optimisation and expansion studies
- Due diligence evaluations
- Mine works programmes and mining right applications
- Operational readiness

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FROM COMPLEX SYSTEM TO CLEAR DECISION

VBKOM

VBKOM's industrial engineers bring the whole operation into one view: the flow, the constraint, the data, the risk and the value. We work inside the technical detail while keeping sight of the decision it needs to support.

The result is a decision you can defend to your board and your investors, and an operation that delivers what the study promised.

SEE THE WHOLE SYSTEM. THEN DECIDE.

Let's talk about the decision in front of you.

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