JKTech Specialist Consulting

Delivering economic and social value to the global resources industry through our team of highly skilled experts with world-wide operational experience.
JKTech Specialist Consulting offers a range of consulting services from feasibility and exploration studies right through to recovery methods which aim to optimise a plant’s working capacity, resulting in increased profits. Our team of expert consultants provides a strong technical partnership with our clients in which process improvements are realised.

GEOMETALLURGICAL

JKTech has developed a GeoMet Modelling Pathway that leads companies and sites through a series of manageable iterative steps to increase orebody knowledge and reduce risk.

Ultimately the pathway provides the potential to characterise operational performance at a similar scale and frequency to that of assays using laboratory scale tests. Such tests can be facilitated by JKTech or other providers with a number of options to suit the client and situation.

The goal of geometallurgy is the predictive quantification of processing performance variability of a deposit through the characterisation of fundamental rock properties and embodied within the block model. GeoMet Modelling will:

- Facilitate more effective process design, mine planning and optimisation
- Lead to improved forecasts
- Improve risk management and increase economic returns

MINING

JKTech offers practical solutions in mining using the cutting edge research outcomes developed by the Julius Krutttschnitt Mineral Research Centre (JKMRC) and the WH Bryan Mining and Geology Research Centre (BRC), who are recognised as the world leaders in the field of blasting, comminution and flotation research.

Mine-to-Mill® Process Optimisation

The Mine-to-Mill® concept, developed at the JK Centre, introduces an holistic approach to process optimisation by identifying and measuring the leverage that each process has on different downstream processes and then optimising the process chain to maximise the overall profitability, rather than optimising each sub process regardless of the downstream effect. Successful implementation of this methodology requires in depth knowledge of each key process in the mine to mill value chain and its interaction with the other downstream process. JKTech, with its world class mining and mineral processing team, uses this methodology to improve throughput and recovery from blasting through to flotation concentrates.

Dilution and Ore Loss Management

The JKMRC and the BRC have developed tools to measure and model blast induced movement to predict ore loss and dilution. JKTech consultants use these tools to minimise blast induced dilution and ore loss.
Open Cast Blast Optimisation
Open cast blast optimisation solutions also make use of the JKMRC/BRC tools to understand the effect of blasting on coal loss and coal fines, and then optimise blast design to increase overall profitability. This methodology has been successfully applied at several large open cast coal mines and resulted in significantly improved coal recoveries.

Blast Audits and Optimisation
Blast audits assess the quality of blast design and implementation and provide an insight into problems in blast fragmentation, diggability and damage. The audit results combined with JKTech knowledge and tools provide practical solutions to improve the blasting process.

PROCESSING

JKTech has highly trained comminution and flotation specialists with experience in numerous process plants around the world. Our consultants have available to them state-of-the-art equipment, backed by years of research which has enabled JKTech to develop unique methodologies in the areas of comminution and flotation. Application of these methods will allow your operation to achieve optimum output in terms of throughput, grade and recovery.

Comminution
A typical optimisation study involves conducting detailed surveys followed by mass balancing and model fitting of the survey data to create a simulation model of the comminution plant in JKSimMet. The model is then used to assess and compare options for optimising plant operation. This methodology has been proven to effectively assess plant performance, improve throughput, increase energy efficiency and meet product specifications in comminution and classification circuits around the world. A typical design study utilises a large database of machine specific parameters developed by JKTech to predict equipment size requirements, recirculating loads and other key operating parameters for the circuit.

Flotation
JKTech can benchmark and optimise your flotation circuit performance through metal flotation optimisation studies involve a survey campaign including sampling, flotation cell characteristics measurements and batch flotation tests. The combination of these procedures enables JKSimFloat to simulate changes in circuit configuration and operating conditions, ultimately determining the optimum performance of the flotation process stage. For different ore types and blends, the JK Floatability Index is used to determine the floatability parameters, which are then used in JKSimFloat for benchmarking and optimisation studies.

A typical design study uses a database of typical machine parameters developed by JKTech for a wide range of flotation cell types and sizes. In conjunction with the JK Floatability Index test, the optimum circuit configuration and operating parameters for the ore types in question can be predicted.

JKTech has provided recommendations to optimise grade and recovery, leading to up to US$25 Million additional revenue reported at some operations.

Processing Statistics
Minerals engineers are often required to do experiments and to analyse the results from those experiments. They may range from simple laboratory tests to major plant trials lasting several months and costing hundreds of thousands of dollars. In each case, data are collected to allow some decision(s) to be made. It is important to arrive at the right decision in the shortest possible time and at the lowest possible cost. This is often difficult to achieve because mineral processing data are usually imprecise and, especially in the case of plant data, subject to uncontrolled trends, cycles and variations, which make comparisons difficult.

JKTech specialists in mineral processing statistics will use the relevant statistical tools to assist you in making wise decisions in the face of uncertainty in the mineral processing environment. This includes statistical principles and methods needed to analyse laboratory experiments and plant trials to provide the correct result with the highest degree of confidence.
METALLURGICAL AND TECHNICAL SUPPORT

JKTech can provide metallurgical and technical support services to processing plants lacking on-site metallurgical guidance. The services available include:

- Assistance/mentoring
- Process troubleshooting
- Plant surveying
- Circuit modelling and simulation
- Liberation data analysis
- Laboratory metallurgical testwork
- Training courses

SOCIAL RESPONSIBILITY

JKTech’s Social Responsibility team delivers excellence in social performance consulting for the resources sector. With a core team of highly-experienced practitioners and consultants, and a network of Australian and international collaborators, Social Responsibility consultants offer innovative solutions to today’s social responsibility challenges. Our university collaborations position us uniquely within the field of social performance consultants, facilitating access to current research on sustainability thinking, enabling delivery of leading practice outcomes for our clients:

- Socio-economic Impact and Opportunity Assessments (SIA)
- Project planning and management
- Social performance monitoring and evaluation
- Cumulative impact analysis
- Stakeholder engagement and consultation
- Government relations and engagement
- Indigenous engagement

SUSTAINABILITY

Through SUSOP Pty Ltd, a subsidiary of JKTech, we offer a new management technique which assists in managing the implementation of sustainable development using a holistic, systematic and rigorous approach to translate sustainability principles into operating practice and design - without compromising financial outcomes. SUSOP® can be used by Project Proponents, Financiers, Engineers, Regulators and Community and other stakeholders to systematically:

- Generate new ideas to improve sustainability outcomes and business performance
- Identify and reduce project risks
- Address stakeholder concerns
- Satisfy government and corporate objectives

FURTHER INFORMATION

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