JKMRC
Technology Transfer

JKTech
TRAINING COURSES

Delivering world class solutions to the minerals industry

QUANTITATIVE MINERALOGY

JKMRC Technology Transfer

Course Objectives

- Introduce basic mineralogy principles
- Provide methods to better understand liberation data
- Emphasise link between mineral characteristics and mineral processing behaviour
- Workshop case studies to demonstrate techniques

Course Outline

An intimate knowledge of the mineral characteristics of a resource is essential throughout the mining cycle: during exploration, assessment, testing, design, operation and rehabilitation.

An adequate appreciation of the mineralogy and its effects on treatment processes is required at each stage to make effective decisions on development of the resource.

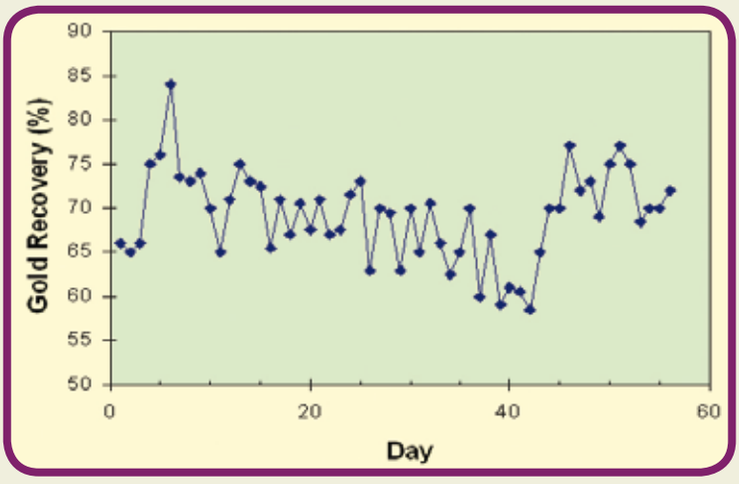
Course Topics

- Introduction
- Sampling and sample preparation
- Equipment and measurements
- Measured data from image analysis
- Ore characterisation
- Laboratory and plant testing
- Plant optimisation
- Examples from different industries

Course Attendees

This two day course is especially useful for staff working in mineral project development, resource evaluation, ore testing and design and mineral processing operations.

STATISTICS



Course Objectives

- Introduce simple statistical methods
- Understand how to make wise decisions from uncertain results

Course Outline

This three day course, allows engineers to design experiments and to analyse the results from those experiments.

Course Topics

- The nature of error
- Precision and accuracy
- Confidence limits
- Comparing samples
- The t-test and the F-test
- Sample size
- The chi-squared test and contingency tables
- The Analysis of Variance (ANOVA)
- Sampling schemes in chemical analysis
- Regression and comparison of two regression lines
- Design of experiments
- The randomised block design
- Factorial experiments
- Conducting plant trials

Course Attendees

Metallurgists, chemists and other professionals, technical staff and students concerned with the planning and analysis of laboratory experiments, assay data and plant trials in mineral processing, will find this course a valuable addition to their skills.

COMMINUTION

Course Objectives

- Analyse industrial plant data
- Review the JKMRC comminution and classification models
- Review ore characterisation using the JK Breakage Tests
- Learn and practise the concepts of mass balancing
- Learn and practise the concepts of model-fitting
- Simulate and optimise grinding (AG/SAG and ball mills) and classification circuits
- Simulate and optimise crushing and screening circuits

Course Outline

This five day course provides training for those who wish to model, simulate and optimise crushing and grinding circuits. It will cover each of the models and demonstrate the model fitting procedure.

Attendees are encouraged to bring some survey data with them for analysis with JKSimMet. This course will have a heavy emphasis on 'hands-on' work and computer requirements will be advised upon registration.

Course Topics

- Overview of comminution modelling at the JKMRC
- Hydrocyclone modelling
- Ball mill modelling
- AG/SAG mill modelling
- Crusher and screen modelling
- Mass balancing and model-fitting data
- Data sampling and collection techniques

Course Attendees

This course is suitable for metallurgists and engineers wishing to advance their knowledge of comminution circuits and performance optimisation tools.

FLOTATION

Course Objectives

- Introduce the principles and development of the AMIRA P9 flotation model
- Introduce various techniques for measuring important parameters in industrial cells
- Demonstrate the effect of changing cell operating conditions on cell performance
- Introduce the features of JKSimFloat

Course Outline

This is a three day workshop that focuses on providing attendees with an overview of the AMIRA P9 flotation concepts, understanding of cell characterisation equipment available, methods for measuring and optimising flotation cells and circuits.

It also presents ways of obtaining more information out of current sampling and characterisation methods.

There is a component of hands-on computer work with spreadsheets using Microsoft Excel as well as using JKSimFloat.

Course Topics

- Introduction to flotation optimisation
- Surveys and sampling
- Mechanics of flotation and cell hydrodynamics
- Froth recovery and entrainment
- Residence time
- Principles of floatability component estimation
- Simulation

Course Attendees

This course is designed for those who wish to increase their knowledge of the tools available to improve flotation circuit performance.

PRESENTERS

All courses are presented by specialists from JKTech, JKMRC, SMI or JKTech's worldwide representatives.

Each presenter has an in-depth knowledge of the subject. Each has theoretical understanding as well as having applied the technology through extensive field work.

REGISTRATION

Applicants for all JKTech training courses should register using the online form at www.jktech.com.au, at least one month prior to the course commencement date.

LOCATIONS

JKTech Training Courses are scheduled in various locations around the world each year.

Please visit the Training section of our website for the current schedule.

Each of these courses can also be tailored to a specific company and delivered in-house, either on-site or at another location convenient to you.

Please use the contact details below to register your interest, request an in-house course or to submit any queries you may have.

FURTHER INFOMATION

www.jktech.com.au.

Follow the Training links for more information on training courses. You can download the current training schedule, register for a scheduled course, or simply register your interest.

Dr Sarah Schwarz, Manager - Training Courses
Email: s.schwarz@jktech.com.au
Phone: +61 7 3365 5842
Fax: +61 7 3365 5900

JKTech's range of technologies is supported by the ongoing research activities of the world renowned JKMRC.

INTRO TO MINERAL PROCESSING

JKMRC Technology Transfer

Course Objectives

- Introduce the basic principles of mineral processing
- Provide practical examples and solutions to operating problems
- Introduce features of relevant software packages available

Course Outline

This is a series of short course modules designed for industry professionals who do not have formal mineral processing qualifications.

All modules begin by reviewing fundamental principles, conventions and terminology, and then address current technical and operating issues and circuit design considerations.

Course Topics

- Introduction to metallurgical processing
- Crushing, grinding and classification
- Physical separation, mineral sands
- Flotation
- Introduction to gold and copper hydrometallurgical processes

Course Attendees

This two day course is suitable for engineers, technicians, operators, support staff and others working in the mineral processing industry but who do not have formal mineral processing qualifications.

MASS BALANCING

Course Objectives

- Introduce the principles of mass balancing
- Construct and mass balance mineral processing flowsheets
- Understand the techniques of mass balancing plant data
- Present mass balancing results to gain a clear understanding of circuits

Course Outline

This one day course will provide a first level of training for those who wish to obtain mass balanced data from a plant survey. It will familiarise attendees with the full range of facilities available within JKTech mass balancing packages.

Attendees are encouraged to bring some survey data with them. This course will have a heavy emphasis on 'hands-on' work and computer requirements will be advised upon registration.

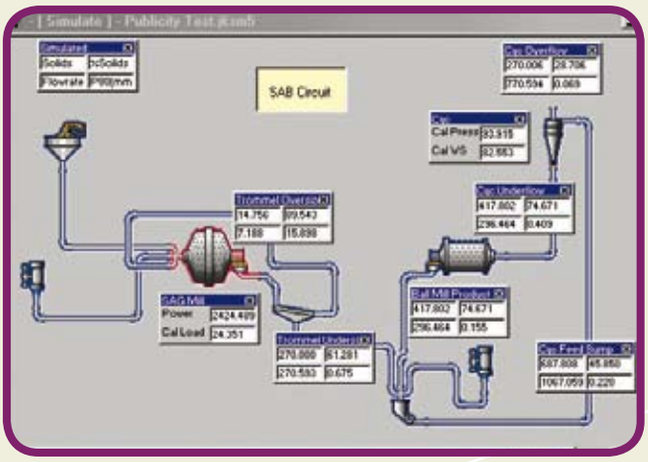
Course Topics

- Overview of mass balancing
- Features of mass balancing software
- Case studies
- Mass balance control
- Flowsheet definition
- Import and export of data to files and spreadsheets

Course Attendees

This course is suitable for metallurgists and engineers who require a brief knowledge of mass balancing principles and how to mass balance plant surveys.

INTRO TO JKSimMet



Course Objectives

- Introduce the benefits of data analysis and simulation for comminution and classification processing plants
- Learn and practise the concepts of mass balancing plant data using JKSimMet
- Learn and practise the concepts of model-fitting and simulation using JKSimMet

Course Outline

This one day course has been designed to introduce the concepts of data analysis and simulation for metallurgists and engineers.

The mathematical model of the hydrocyclone will be used throughout this course to demonstrate the concepts of mass balancing, model-fitting and optimisation using simulation models.

Course Topics

- Introduction to simulation and modelling
- Overview of JKSimMet including data presentation features
- Mass balancing theory and practice
- Model-fitting theory and practice
- Optimisation techniques using simulation

This course will have a heavy emphasis on 'hands-on' work and computer requirements will be advised upon registration.

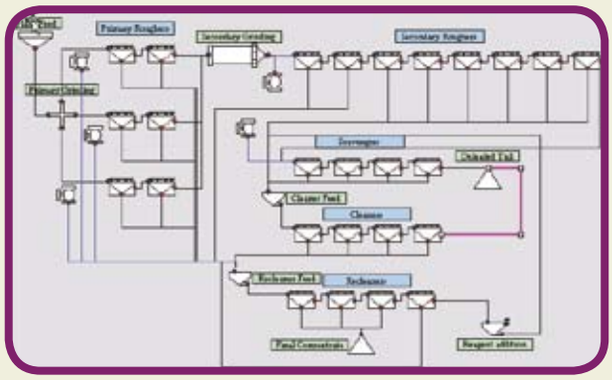
Course Attendees

This course is suitable for metallurgists and engineers who require an introduction to data analysis and simulation using JKSimMet.

INTRO TO JKSimFloat

Course Objectives

- Introduce the principles of the AMIRA P9 flotation model
- Introduce the features of JKSimFloat
- Construct and simulate flotation flowsheets
- Present simulation results using the reporting and graphics facilities



Course Outline

A one day workshop tailored for "practitioners" focuses on the practical aspects of the measurement and simulation tools available to realise optimum operation of the flotation circuit.

Following an introduction to flotation modelling and field measurements participants will be given a comprehensive description and demonstration of the JKSimFloat software with several hands-on tutorials and simulation case studies.

Course Topics

- Introduction to flotation optimisation
- Current flotation modelling
- Mechanics of flotation and cell hydrodynamics
- Froth recovery and entrainment
- Principles of floatability component estimation
- Simulation

This course will have a heavy emphasis on 'hands-on' work and computer requirements will be advised upon registration.

Course Attendees

This workshop is designed for those who wish to advance their knowledge of the tools available to improve flotation circuit performance.