



Evolutionary Modelling and Optimisation of Grinding Processes

DURATION

5 days

CONTACT HOURS

30

LEVEL

Intermediate

FEE PER DELEGATE

R15,000

Modelling a grinding circuit and using search algorithms to find operating points a person would not try.

Grinding circuits have many interacting variables and a cost surface with more than one minimum, which is exactly the problem evolutionary algorithms are good at. This week covers population models of breakage and classification, fitting them to plant data, and then the optimisation itself: defining an objective that reflects what the plant actually wants, encoding constraints honestly, and running genetic and related algorithms. The validation session is the important one, because a model that fits history and fails forward is worse than no model.

Available as classroom, live online, in house.

Who it is for

Process engineers with a quantitative background, modelling and simulation specialists, advanced process control engineers, and technical services staff.

What you will be able to do

- Build a population balance model of a grinding circuit.
- Fit model parameters to plant survey data.
- Define an objective function reflecting real plant economics.
- Apply evolutionary optimisation with constraints encoded.
- Validate a model against data it was not fitted to.

The outline

DAY 1

Modelling

Population balance and breakage functions · Classification models · Circuit assembly and solution

DAY 2

Fitting

Survey data requirements · Parameter estimation · Over fitting, and recognising it

DAY 3

The objective

Energy, throughput and quality as competing aims · Multi objective formulation · Constraints that are real rather than assumed

DAY 4

Optimisation

Genetic and evolutionary algorithms · Convergence, diversity and local minima · Interpreting a solution set

DAY 5

Validation

Holdout data and forward testing · Plant trials of a model recommendation · When to stop trusting the model

What you leave with

- A fitted circuit model.
- An optimisation run with results interpreted.
- A validation report, including where the model fails.

Published dates

DATES	WHERE	FEE
23 to 27 November 2026	Cape Town, South Africa	R15,000
30 November 2026 to 4 December 2026	Nairobi, Kenya	US\$1,500
7 to 11 December 2026	Dar es Salaam, Tanzania	US\$1,500
14 to 18 December 2026	Dubai, United Arab Emirates	US\$1,500

Fees are per delegate and cover all course materials. Registration fees are arranged by the delegate. Reg

Register or ask a question

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