JKVBOC Software

A dynamic 3D blast movement simulation tool designed to find the best operational practices for maximising the orebody value.

JK Value Based Ore Control (JKVBOC)

By evaluating the actual blast design, rock characteristics, and confinement conditions, this model simulates the displacement of blasted material and thus the spatial distribution of value identified in a geological block model throughout the muck-pile.

JKVBOC can be used to optimise ore loss and dilution, blast fragmentation, as well as digging and blending strategies by evaluating various pre-blast scenarios in order to benchmark a range of blast patterns, delay-time sequences, initiation points, and confinement conditions. These scenarios can be designed using JKSimBlast or any third-party tool.

The total simulation time ranges from 10 to 30 minutes, depending on the size of the blast.

JKVBOC allows the user to:

- Model blast movement in a realistic and precise manner

- Run multiple simulations daily to assess alternative blast designs for improving the control of ore loss and dilution

- Model blast fragmentation within a few clicks

- Update the geological block model based on the actual spatial distribution of the blasted material

- Develop digging and blending strategies based on value rather than on grade only
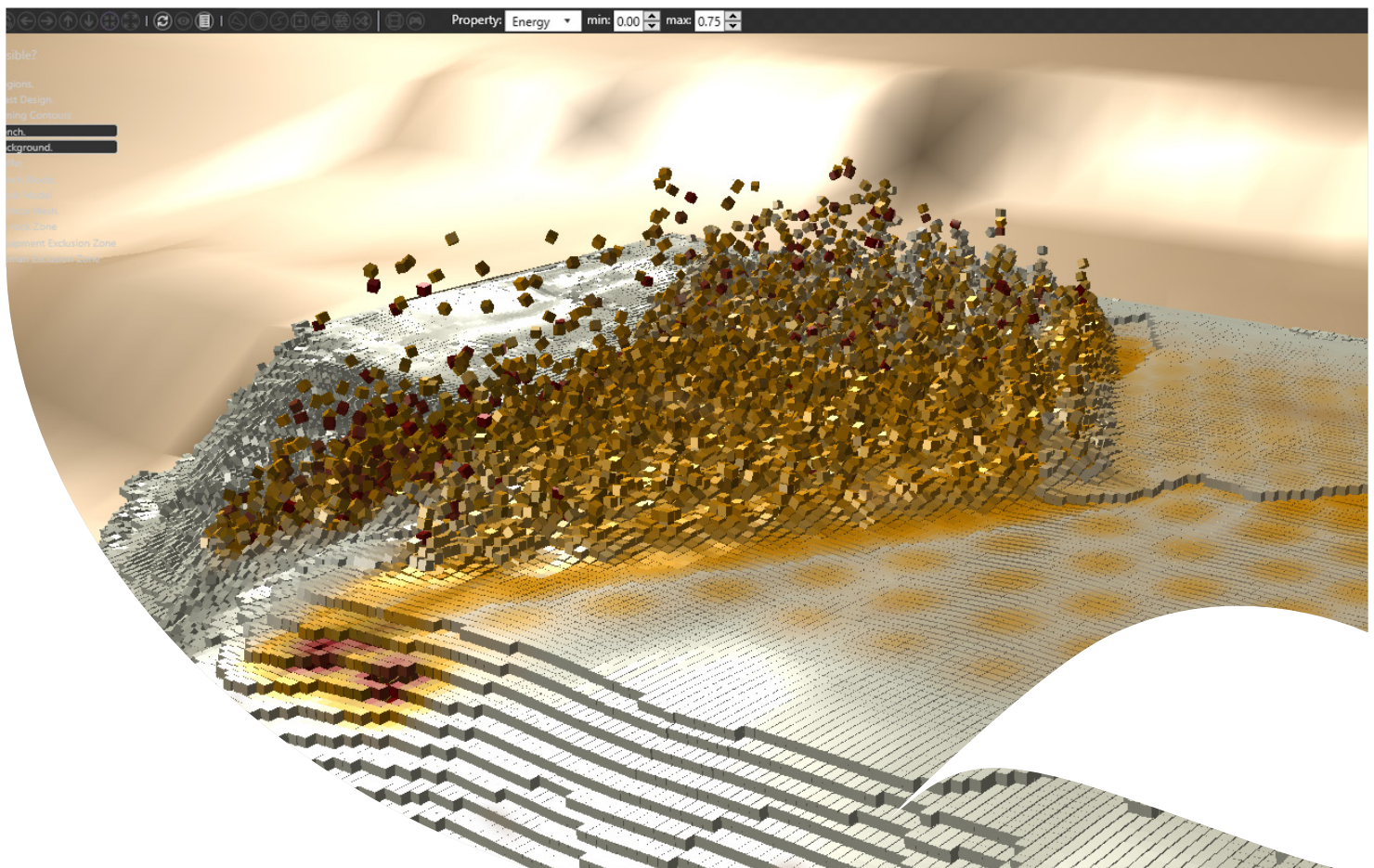
3D Blast movement simulation

JKVBOC represents the in-situ rock by discretising the volume into small blocks. The initial velocity of each block is determined by adding the energy contribution from all surrounding explosive decks defined by the blast pattern and explosive properties. A physics engine displaces the blast blocks to the final resting position, representing all collisions with the environment (confined faces) and between blocks, as well as gravity and frictional forces.
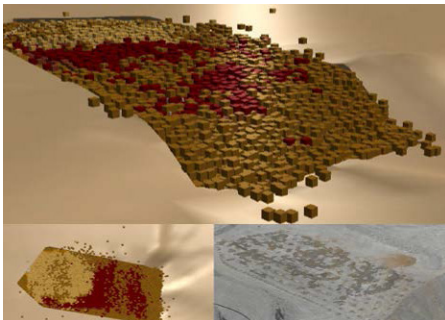
Fast prediction of particle size distribution

The model automatically extracts the blast geometry, geology, and explosive configuration information available to allow the user to predict particle size distribution within a few clicks. Furthermore, it provides a user-friendly tool for calibrating the fragmentation model based on measured data.
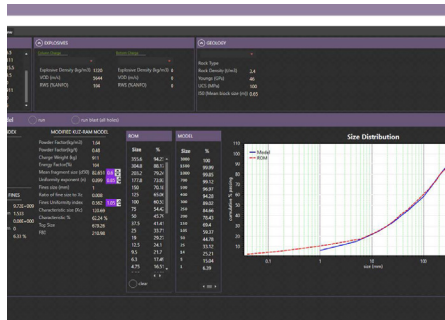
Grade-based polygons optimisation

JKVBOC will recommend where to mine based on the thresholds set by the user for any of the attributes found in a geological block model. Alternatively, new polygons can be drawn showing a summary of the content within that volume.


Ore loss and dilution calculation

Ore loss and dilution are automatically calculated both for the entire blast and for specific polygons by comparing the initial and final position of the blasted material and the attributes from the geological block model associated to it.
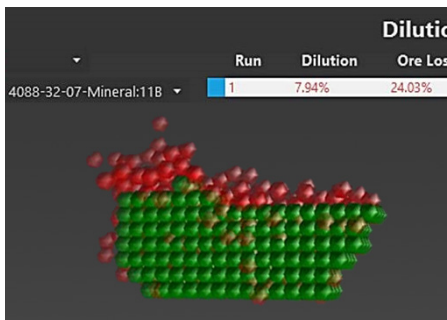
Geological block model import/export tool

Each block is assigned rock properties and any information available in the geological block model. After the blast simulation, JKVBOC allows the recreation and export of that block model ready to re-import into a third-party application.
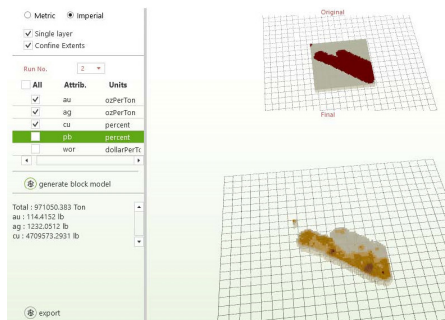
Actual site topography

JKVBOC uses the actual geometry of a blast to determine the free and confined faces. It is possible to import the entire site topography as well as just the area to be simulated.
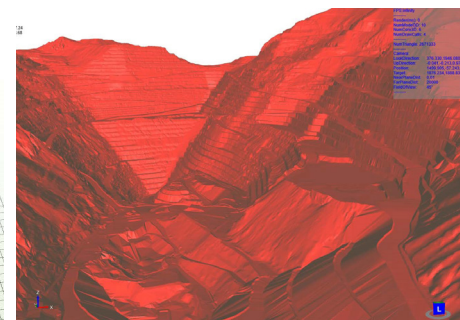
JKTech Pty Ltd

P: +61 7 3365 5842
E: jktech@jktech.com.au
W: jktech.com.au/products/software

THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA