Deswik.Spatial

Design & Solids Modeling

Open Cut Coal & Underground Coal

Comprehensive geospatial capabilities powered by CAD

Deswik®

Experience the Deswik advantage

We empower mining teams to work smarter and faster. Our integrated approach to mine planning incorporates design and scheduling features across our core platform to help our clients increase efficiency and optimize outcomes.

Deswik.Spatial

Design & Solids Modeling

Deswik.Planning

Gantt Chart Scheduling

Deswik.OPS

Operations Planning & Control

Deswik.GeoTools

Operational Geology

Deswik.MDM

Data Management & Governance

Deswik.BOLT

Bulk Commodities Supply Chain Optimizer

The industry's most comprehensive CAD solution

Industry-leading geospatial solution for precision and visualization

Deswik.Spatial is the all-in-one geospatial solution that empowers you to make informed and confident decisions to succeed in the rapidly changing mining industry. With its seamless data integration, world-class 3D modeling and geospatial analysis capabilities, Deswik.Spatial is the preferred CAD package to create detailed mine plans, improve site collaboration and productivity, and enable environmental stewardship.

From mapping, survey, and design through to environmental management, Deswik.Spatial unifies the tools mining professionals need across all sectors in one solution to achieve better results and maximize efficiency.

An intuitive and collaborative team experience

Flexible and intuitive, Deswik.Spatial simplifies, automates, and optimizes mine planning processes for multiple roles within your team.

With advanced tools available as standard functionality, mining professionals can work together seamlessly, gather insights and share data to make changes efficiently.

Who uses Deswik.Spatial?

- Long-Term Planning Engineers
- Short-Term Scheduling Engineers
- Strategic Planners
- Geologists
- Surveyors
- Mining Engineers
- Drill and Blast Engineers
- Geotechnical Engineers
- Ventilation Engineers
- Environmental Engineers

Complete your design and spatial tasks in one CAD package

Standard functionality in Deswik.Spatial:

- Design & Solids Modeling
- Coal Seam Aggregation
- Fast and Efficient Point Cloud Handling
- Automated Design Capabilties
- Dragline & Dozer Optimization
- Environmental Design

Expand Deswik.Spatial's functionality with other modules:

- Landform and Haulage

Discover Deswik.Spatial

Design & Solids Modeling

A powerful design platform with superior data handling

Fully-featured CAD engine

Handle large mining datasets with excellent graphics performance. Generate solids, slice and run Boolean commands. Automatic repair for invalid solids imported from other mining systems.

Open and customizable

Manipulate information using a powerful formula builder, instead of scripting. Integrate with most other mining and CAD packages.

Auditable and consistent processes

Add structure to the planning process and remove confusion for unfamiliar users with customizable, graphical workflows tied into the entire Deswik.CAD toolset.

Integrated data management

Advanced spreadsheet-style formulas for data calculations including 3D spatial lookup formulas and interrogation of solids for volume, area, and intersections. Interactive and rules-based filtering from attribute values.

Powerful reporting

Flexible data queries generated on demand including volumes, areas, attributes, properties, and data histograms. Familiar plotting functionality mirroring most other CAD systems.

Comprehensive mining design tools

Rules-based mine design engine for designs, allowing for scenario and alternative analysis. Solids and surface generation using a multitude of methods.

Survey

Fast and efficient point cloud handling

Direct integration with survey hardware

Import and export data directly with Leica, Trimble, and RIEGL native formats. Import and export point clouds in *.las/laz formats.

Compliance to plan tools

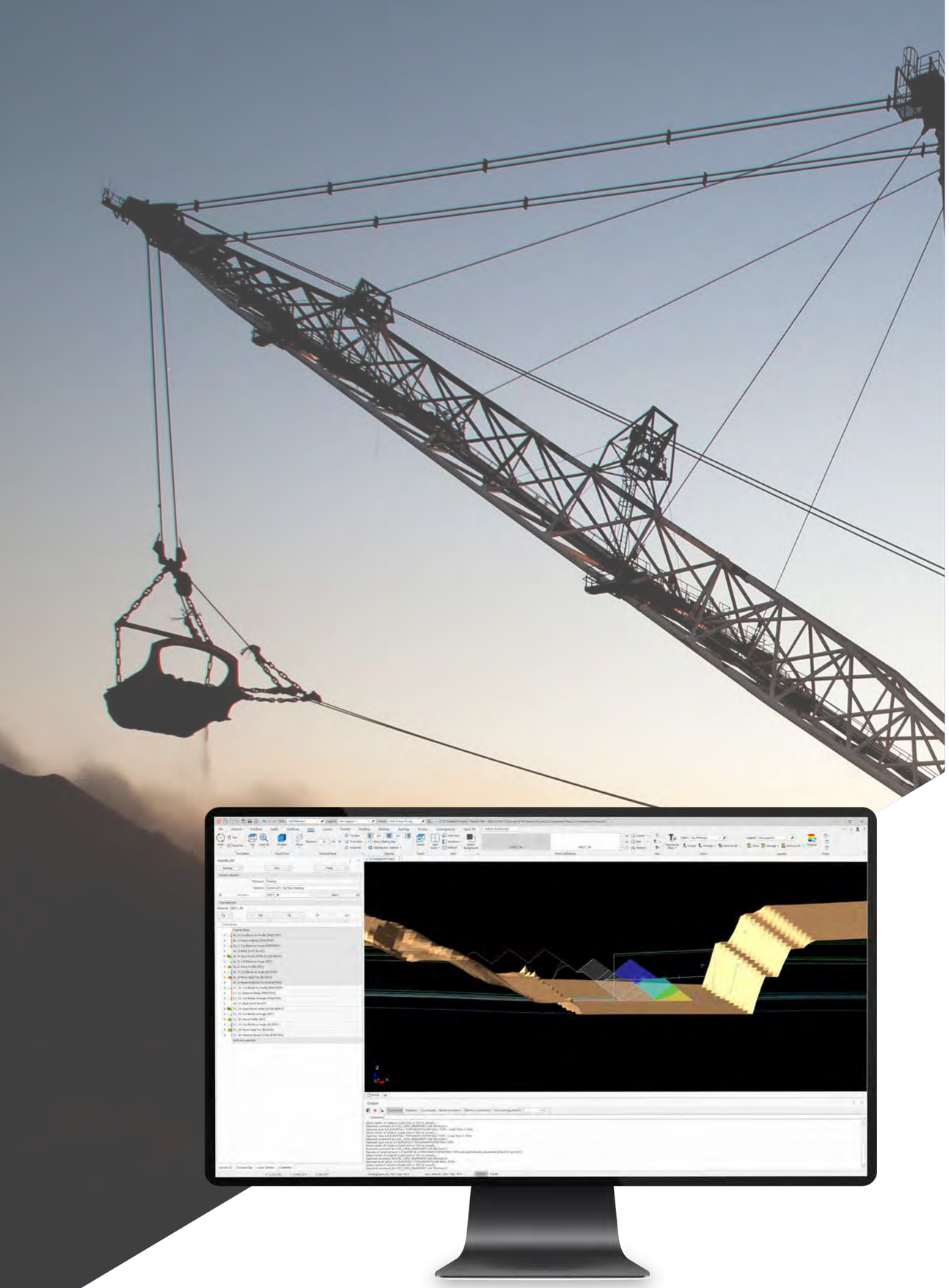
Check surveyed data against design to analyze compliance to design.

Point cloud handling

Generate a solid from scans including multiple drives and cross-sections. Automatically generate a survey outline on the floor of the drive from the scan data.

Road audit tool

Assess haulage and road compliance against design parameters.



Dragline & Dozer Optimization

Automated and integrated dragline section design tool

Operations

Common operations can be templated for quick usage and revision. User configurable profile designs for performing complex cut and fill operations.

Dynamic preview

Intelligent, rapid selection of multiple blocks using automated vertical dependencies.

Cut / Move operations: all operations including the profile operations will show a preview of the result after selecting a location.

Intelligent automation

Reference points generated from existing polylines or as a result of any operation. Distances can be measured with respect to any reference points, start of an operation, or in profiles with constraints.

Cut-fill operations with profile design constraints.

Copy steps from a completed section to other sections, or from a completed strip to next strip. Re-run steps after modifying an intermediate step or input data.

Data integrity and auditing

Data is stored on the design for manual validation. Parameters used for every operation are preserved for auditing purposes.

Reporting

Ability to export pass-by-pass results straight into Microsoft Excel for streamlined reporting. Ability to write attributes back onto solids for direct integration with Deswik Scheduler.

View reports as strip, section or pass summaries, or drill into detail of every single block operation.

Integration

Full integration with 3d-DigPlus allows seamless transfer of designs into the market leading mining simulation systems from Earth Technology.

Support for surface stacking or solids as inputs from CAD. Support to use spoil design outputs from the Spoil Design Tool.

Support to generate reference points directly from projection rules polylines.

Coal Seam Aggregation - Open Cut Coal

Simplify complex aggregation processes to create fit for purpose Run-of-Mine reserves

Practical functionality

Work with grids or solids to create mineable working sections at the block or deposit level. Auditable rules-based approach delivers the flexibility to tailor aggregation settings to any deposit.

Rules-based approach

Set rules for thickness, material type or quality and apply different loss and dilution factors (e.g. roof, floor, or edge). Ensure mined horizons satisfy constraints by incorporating prerequisite and post-requisite testing.

Investigate options

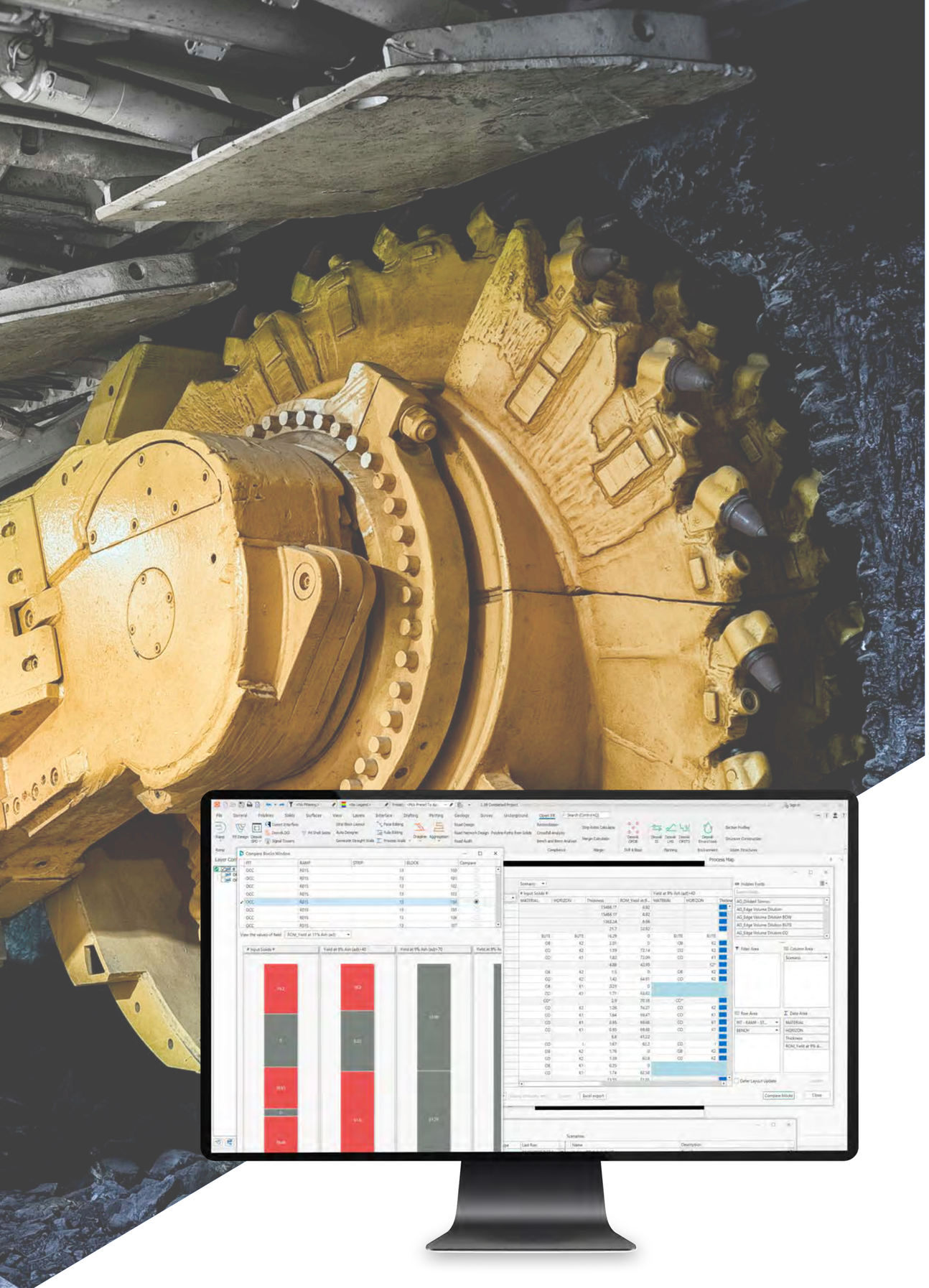
Manage and run multiple sets simultaneously for rapid scenario generation and comparison. Assess effect of equipment selection by defining multiple equipment types with different loss and dilution parameters.

Interactive results

Transparent pivot style reporting interface highlights factors influencing aggregated ROM tonnages between scenarios. Graphical side-by-side comparison shows the physical impact of different aggregation constraints.

Fit for purpose outputs

Generates final mined working section grids or solids with all calculated aggregation values. Auditable outputs are suitable for downstream planning processes such as margin ranking, and production or dump scheduling.



Coal Seam Aggregation - Underground Coal

Rapidly identify the economic limits of deposits

Auto development designer

Uses rules-based processing to rapidly lay out development and panels for underground mining operations. Automates standard polyline manipulation tools as well as formula-based attribute assignment.

As-built reconciliation

Detailed reconciliation between as-built and design solids from a 3D perspective for development or stopes. Report out dilution, overbreak and underbreak from hanging wall, footwall, sides, crowns, and toes.

Backfill planning and reconciliation

Generate staged backfill solids based on material characteristics and fill volumes from nominated fill points on a 3D stope void solid. Reconcile actual fill amounts against required fill and determine void locations.

Tunnels by variable sections

Tunnel creation tool that uses chainage-based rules to allow a tunnel to have variable profiles. Different rule sets available, primary & secondary cross-section rules, and excavation rules.

Underground tabular design toolbox

Developed for repetitive designs in tabular style deposits. Generates development layouts relative to defined geological models.

Automated Design Capabilities - Open Cut Coal

Easily generate design scenarios and analyze compliance to design

Advanced reserve projection

Incorporate access ramps down each projected highwall for more detailed reserves

Automated road design tool

Determine cut and fill requirements from road centerlines with solids creation and surface updating. Design to gradient, bench and berm limitations with cut and fill balancing for dropcuts.

Pit shell optimizer

Using reserve solids, grids, or block models, vary the revenue to calculate the pit shell delivering the maximum undiscounted cash flow.

Dragline spoil pile design

Automatically create multiple detailed dragline spoil designs and solids for use in dragline planning or Deswik.LHS. Options available at the click of a button to include low-wall berms and central low-wall ramps in designs.

Reconciliation

Generate as-mined, as-designed, and difference solids from initial, design and final surfaces. Detailed reporting of compliance to plan from a 3D perspective.

Margin calculator

Wizard-based calculation of Net Present Value and incremental, cumulative, and maximum cumulative margins from reserve solids. Import, export, and run multiple scenarios against defined costs and revenues.

Automated Design Capabilities - Underground Coal

Easily generate design scenarios and analyze compliance to design

Underground coal design toolbox

Automates centerline creation for longwall panels and gridded roadways such as mains, gateroads, and development panels. Generates the metadata required to process design lines into 3D reserve solids via the Deswik.IS.

Auto development designer

Uses rule-based processing to modify design lines for irregular and special development. Automates standard polyline manipulation tools as well as formula-based attribute assignment.

Process tunnel as-builts

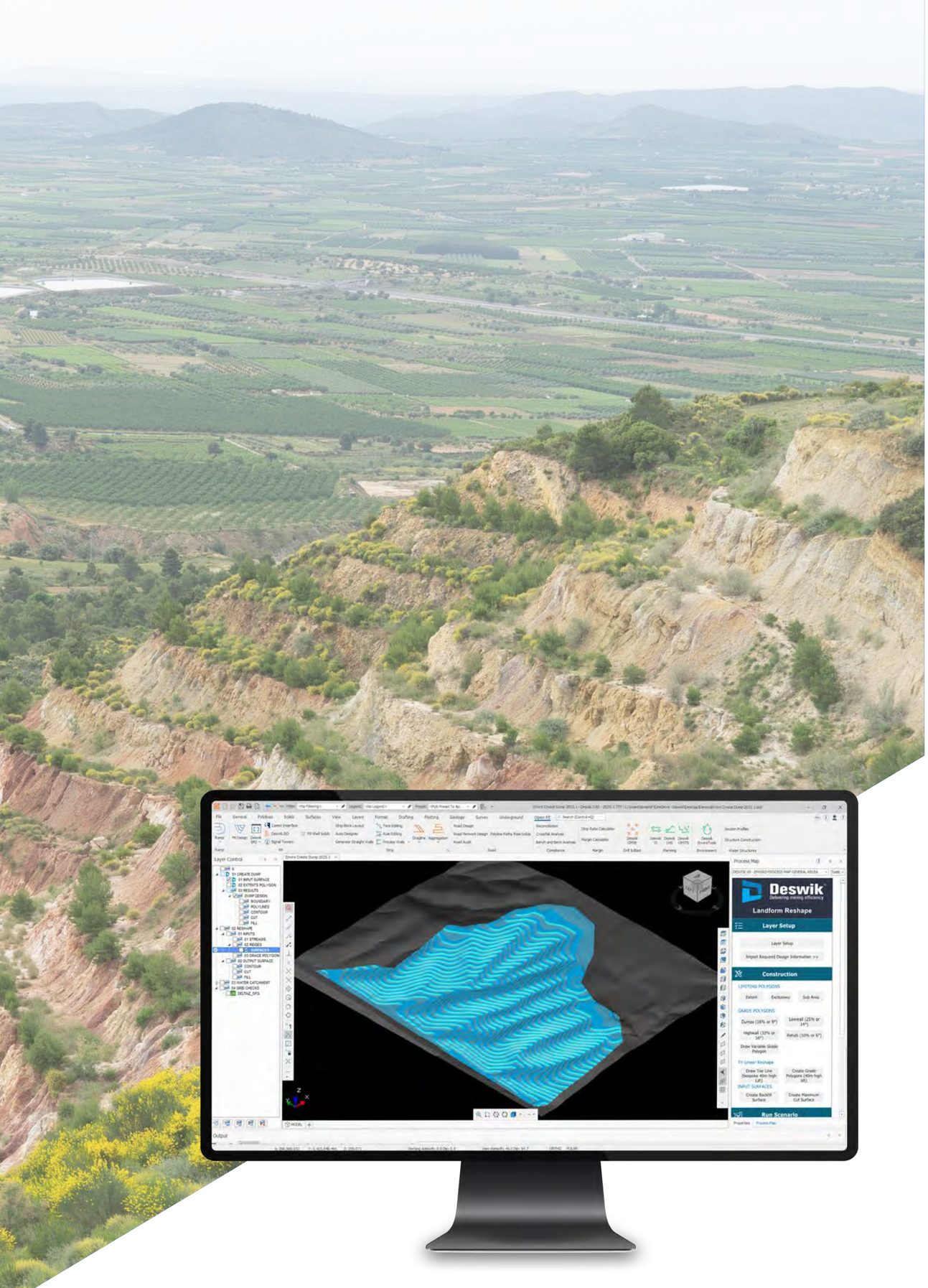
Generate as-built solids from any combination of floor, roof, or rib line survey pickups. Able to generate from a single rib pickup line using a nominated cut height and survey pickup height.

As-built reconciliation

Detailed reporting of reconciliation between as-built and design solids from a 3D perspective. Calculate overbreak and underbreak incrementally against design centerlines.

Margin calculator

Wizard-based calculation of Net Present Value and incremental, cumulative, and maximum cumulative margins from reserve solids. Import, export, and run multiple scenarios against defined costs and revenues.



Landform Engineering

Model your final landform reshape requirements

Reshape tools

Rapidly assess the reshape requirements and the associated material movement for final post-mining landforms. Use on either an as-built or predicted as-dumped surface to create a cut and fill-balanced final landform surface.

The Create Dump Surface tool will create a dump design surface, including prescribed dump lift crests and toes from the final landform surface.

Scenario analysis

Determine an optimized result and achieve maximum value for a project by running high-level scenarios in a short period to enable real-time, high-level decision making. Use scenarios to quickly replicate commands with minor variations to test sensitivity to input settings, balance sub-areas within a larger site and reduce processing time.

Dozer push modeling tool

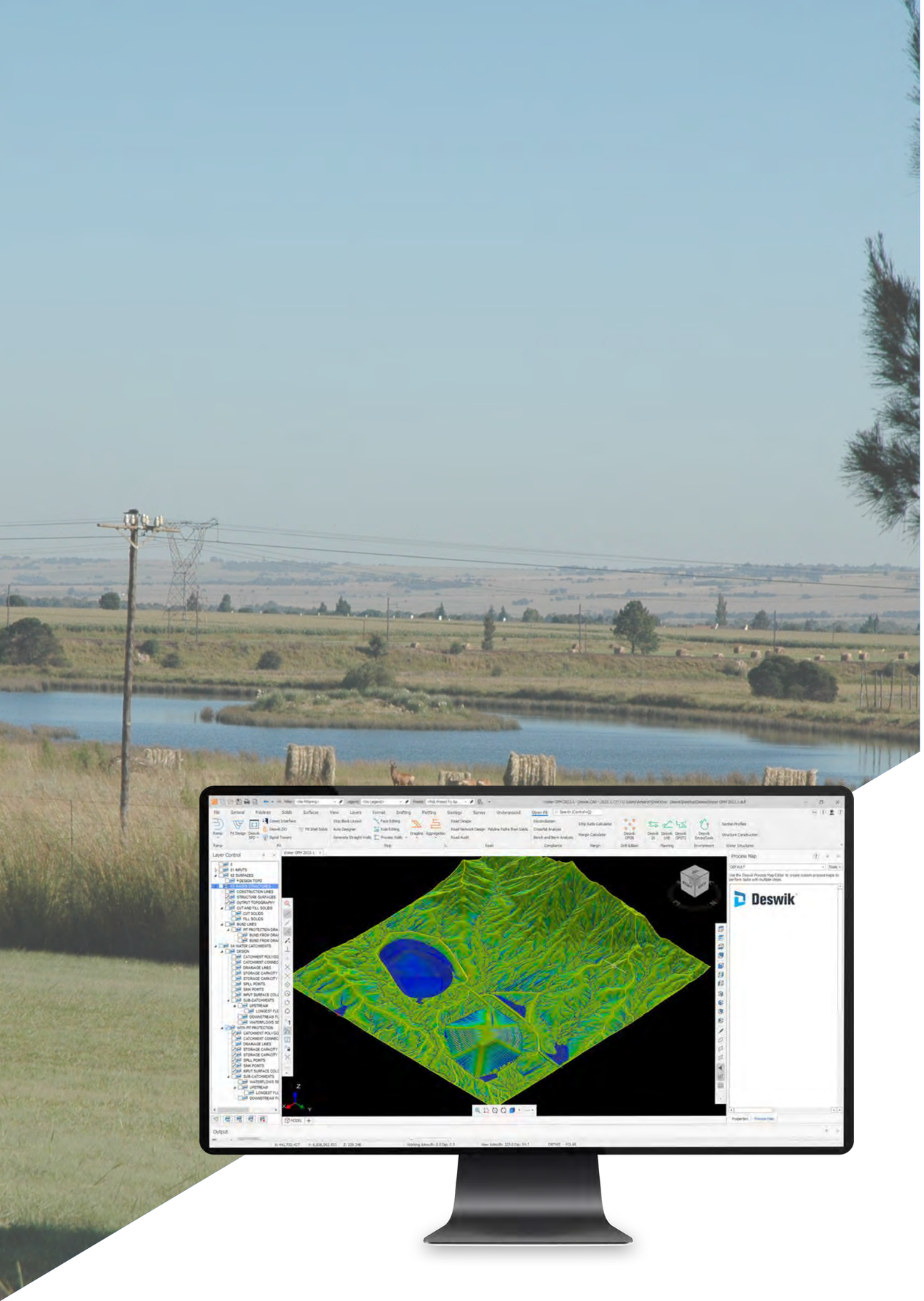
Allocates the material to move between the cut and fill blocks to a dozer or other equipment while minimizing the total push distance of the dozer material. Generates attributed polyline vectors between cut and fill blocks that can then be used as the basis for dozer push costing calculations.

Advanced workflows

Reduce the effort required to set up the inputs for the reshape tool and run the dozer push modeling over the resultant cut and fill solids. Use Process Maps to enable consistency, ease of training, and integrated costing to inform decision-making.

Closure costing modeling

The results generated from the landform engineering reshape and dozer push modeling tools can be used to build a site closure costing model. In conjunction with Deswik. LHS and Deswik.Planning, an integrated closure plan can be scheduled and animated for both reporting to regulators and stakeholder engagement.



Water Catchment Analysis

Rapid assessment water catchment analysis

Water catchment analysis

Rapid assessment water catchment analysis to understand where water is flowing or accumulating, and how the topography can be interactively altered to achieve the desired result through process maps. Use water catchment analysis underground to identify potential sump locations. This process can highlight potential water management issues before they occur.

Sediment basin sizing

Estimate the volume of basins, dams, or ponds required for containment of runoff from extreme rainfall events and ongoing accumulation of mobilized sediment (erosion) as the landform evolves.

Sediment basin volumes are modeled by summing the volume required to store runoff from an extreme rainfall event and the volume of sediment predicted over time by a landform evolution model (net of removal through desilting events).

Water structure toolkit

Interactively add high-level design structures to topographies to check their location and downstream effects. These structures (drains and bunds) are built using default, modified, or custom-generated profile sections, which are then applied to an input centerline. Design surfaces and cut and fill solids can be automatically generated and merged into an input topography.

Water flow query

Identify the upstream sources and downstream flows from points and regions of interest or sensitivity in the catchment area. Use with the Sediment Basin Sizing Tool to model rain events.

Storage volume analysis

Automatically slice selected water storage solids vertically at specified increments, and then calculate the surface area, water volume, and cumulative volume at each elevation. Optionally export results to a spreadsheet and automatically graph the curves for analysis.

About Deswik

Leveraging decades of professional software development experience and a proven history of building technical mining applications, Deswik provides industry-leading tools to ensure that mine plans are robust, transparent and achievable.

Our software is developed to take advantage of the latest high performance technologies and cutting-edge computing algorithms, all accessed through a flexible, intuitive interface.

By avoiding the legacy issues faced by other older packages, coupled with our outstanding customer support, we provide complete solutions to meet the demands of modern mining. Deswik is committed to delivering comprehensive tools and quality support for all mining sectors.