Underground Coal Solutions
Deswik has developed a fresh and innovative range of unique tools that span the value chain from receipt of a geological model through to reporting for costing. Our software incorporates design and scheduling features across the core platform and associated modules, including:

- **Comprehensive core functionality for underground coal operations at both long and short-term planning horizons:**
  - 3D mining reserve solids with integrated Gantt scheduling
  - Complex grid manipulation
  - Polygon zone interrogation
  - Detailed process management via Deswik workflows.

- **Deswik.AdvUGC, with advanced underground coal tools such as:**
  - Underground design toolbox for gridded roadway panels and longwalls
  - Easy reconciliation tools for compliance auditing
  - Advanced scheduling functions including backwards pass resource leveling, objective targeting and resource path importing.

- **Deswik.Agg to aggregate complex seam and ply grids or solids into working sections, including Longwall Top Coal Caving (LTCC) horizons.**

- **Deswik.Blend to optimize complex blending and material flow from pit to product.**

Our integrated planning tools give our software the proven capability and reputation of taking a project from the design stage to a schedule faster than ever before.
A complete solution

Providing the best framework for underground coal mine planning

- Design, reserve and schedule short, medium and long term.
- Accurately model and schedule in 3D LTCC, variable cut horizons, stone drivage, and all interactions with surface mining and infrastructure.
- Undertake economic analysis including cash margin ranking.
- Create a master site schedule and use critical path analysis tools on both production and outbye projects with Deswik.Sched.

3D Design environment
- Powerful automated design tools for rapid centreline layouts.
- Best-in-class solids creation for true 3D representation of development and longwall reserves.

Geological data from any source
- Interrogate complex seam quality models, including multiple ply and seams, with ease.
- Work interchangeably with grid models, block models, implicit models and hybrids. Import grids and models from all major geological packages.

Integrated scheduling
- Remove or minimize planning horizon interfaces by using a common platform for short, medium or long term scheduling.
- Convert design data directly into schedule tasks and easily update with design changes or survey updates.
- Gantt chart based scheduling is easy to work with and is more readily understood by all stakeholders.

Superior reporting
- Simple and powerful reporting from both schedule and 3D environment improves communications and stakeholder buy-in.
- Save time communicating your plans with fast, professional plotting tools including full CAD-style annotation and presentation.

Defined constraints
- Transfer surface constraints to the seam using polyline projections.
- Create longwall subsidence zones and project them onto the topography.
- Visually assess the true impact of seam faulting and dip in a 3D environment.

Zone interrogation
- Create influence polygons around known seam structures and account for abutment zones with increasing support requirements.
- Generate effective hazard mapping with transferable effects on schedules.

Resource-based rates
- Build machine production rates with easy-to-understand formula builders with de-rating factors for, structure and faulting, gas and water, seam dip and thickness.
- Use proximity de-rating for congruent resources, such as super-panelling.

Scheduling constraints
- Create hammock tasks to stretch between moveable boundary tasks.
- Apply time variant fields to reduce scheduling rates over specific periods.
Deswik.AdvUGC

Advanced functionality tailored to the specialized demands of underground coal operations

Underground coal design toolbox
- Automates centreline 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.

Process CMS
- Import CMS polylines or triangles and stitch them together to create a closed solid.
- Rapidly generate shells around CMS point cloud data.

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

Advanced resource leveling
- Access to features such as backwards pass leveling, multi-field or sink rate targeting and time usage models.
- Short term manual scheduling via interactive resource paths or import resource paths from other packages.

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 as required.

Calculate Stereonets
- Import strike azimuth and dip data to generate geotechnical Stereonets directly in the Deswik.CAD design space.
- Supports Schmidt, Wulff, Rose and observation diagrams.
Deswik.Agg

Simplifying complex aggregation processes to create fit for purpose Run-of-Mine (ROM) reserves

- Work with grids or solids to create mineable working sections at the block or deposit level.
- Auditable, rule-based approach delivers the flexibility to tailor aggregation settings to any deposit.
- Set rules for thickness, material type or quality and apply different loss and dilution factors (roof, floor or edge).
- Ensure mined horizons satisfy constraints by incorporating pre and post requisite testing.
- Manage and run multiple rule sets simultaneously for rapid scenario generation and comparison.
- Assess effect of equipment selection by defining multiple equipment types with different loss and dilution parameters.
- 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.
- 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.

Deswik.Blend

Optimize your product value with material flow modeling

- Material flow modeling and targeting that closes the planning gap between pit production and blended product.
- Blend production outputs from any mining complex, including both surface and underground feeds and multiple plants.
- Outputs are balanced across defined periods against the competing priorities of product quantity targets, product specifications and maximizing the value mix for multi-product scenarios.
- Integrated seamlessly within Deswik.Sched eliminating any manual transfer of data.

“A new dimension in underground coal mine planning”
Our industry-leading consulting solutions include:

- Mine Planning, Design and Scheduling
- Equipment Selection and Optimization
- Geological Services
- Technical Due Diligence, Peer Reviews and Audits
- Software Implementation
- Scoping, Pre-Feasibility and Feasibility
- Process Mapping and Improvement
- Mergers and Acquisitions Support

An Integrated Platform

Dynamically link your mine designs and schedules

Deswik.CAD
Design & Solids Modeling

Deswik.IS
Interactive Scheduler

Deswik.Sched
Gantt Chart Scheduling

Deswik.AdVUGC
Advanced Underground Coal

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