



MineCycle™ Designer

Dynamic Design for Optimal Mine Performance

MineCycle Designer is the only mine design application that enables a single dynamic environment for design, evaluation, and scheduling to dramatically shorten planning cycles and support the systematic evaluation of alternative scenarios. Through design optioneering and flexible enterprise-wide access to design data, the software empowers owner-operators to produce higher-quality designs, make faster decisions, and develop economically optimal mine plans.

Industry-driven Development to Ensure Robust Capability

Bentley designed and developed MineCycle Designer with formal cooperation and direct input from industry leaders including Anglo American Platinum Limited, AngloGold Ashanti Limited, Lonmin Plc, and Royal Bafokeng Platinum. The industry-driven approach ensures inclusion of the features, capability, and workflows needed for efficient mine design.

Consolidated Design, Scheduling, and Evaluation for On-the-fly Mine Plan Optimization

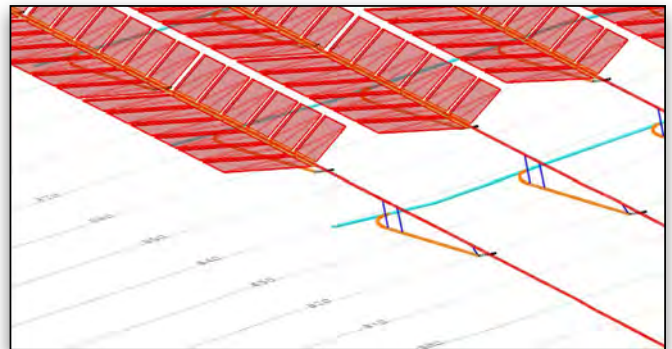
MineCycle Designer functions seamlessly with scheduling and resource evaluation capability supplied by Cyst Technologies, a leading mining industry solutions provider. The combined capabilities provide a single dynamic planning environment that delivers rapid feedback on design decisions by avoiding time-consuming planning cycles that typically span multiple applications and team members. The consolidated planning environment enables the timely optimization of design, crew management, and budget to respond quickly to events and increase profits.

Rule-based Layout for Design Optioneering

The software provides intelligent design automation leveraging configurable rules that govern object creation and maintain relationships between design elements and geology. The automation accelerates the design process, providing the opportunity within the production timeline for substantial design refinement by considering many alternative scenarios to produce higher-quality designs with more optimal ore tonnage, strip ratios, and extraction distance.

Open Architecture for Information Mobility

MineCycle Designer uses native formats to publish design data to enterprise-level Oracle and SQL databases. The open architecture enables unmatched flexibility and freedom to share design data across the enterprise and integrate with other operational systems by eliminating the difficulty, time, and expense of working with complex, non-native formats. The resulting information mobility enables novel reporting and analysis for more agile and informed responses to market fluctuations and unexpected events.



Automatic rule-based design of draped slope panels and ledges on reef enables substantial time savings during layout.

Configurable Mining Design Standards to Ensure Compliant and Consistent Designs

MineCycle Designer includes tools to define and apply business rules and mining design standards such as symbology, design rules, and workplace naming conventions. Integration with ProjectWise, Bentley's information management and collaboration software, enables organization-wide standards enforcement through the application of global templates for projects. These capabilities reduce errors and promote consistency to enable efficient interpretation of designs across the organization.

Automatic Unique Workplace Naming for Consistency and Time Savings

The software provides an administration tool to define workplace naming conventions based on company standards. MineCycle Designer uses these conventions to generate a unique workplace name automatically upon creation of a mine object. This saves significant time by eliminating tedious manual assignments and promotes higher-quality designs by avoiding duplicate names.

Rapid Survey and Geology Updates for a Continuous Mine Planning Cycle

MineCycle Designer includes rule-based tools to adjust multiple design objects based on new survey data. Additional rules enable automatic design updates based on updates to a referenced geology data file. Integration with Bentley MineCycle Survey allows as-planned and as-mined 3D models to be quickly compared for calculation and visualization of under-blast, over-blast, and other variances. Together these capabilities enable an accelerated and more continuous mine planning cycle that increases the ability to maximize profits and respond quickly to unexpected events.

System Requirements

Refer to the 'Requirements' section of the MineCycle Designer ReadMe file:

[www.bentley.com/
MineCycle_Designer-Spec](http://www.bentley.com/MineCycle_Designer-Spec)

Find out about Bentley at: www.bentley.com

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MineCycle™ Designer At-A-Glance

Industry-driven Development

- Syndicated development with inputs from:
 - » Anglo American Platinum Limited
 - » AngloGold Ashanti Limited
 - » Lonmin Plc
 - » Royal Bafokeng Platinum
 - Built on Bentley's OpenRoads civil technologies
 - Native MicroStation capabilities
 - Multi-user editing workflow
 - Referenced file workflow to support frequent updates
- » Transfer crosscuts
 - » Box holes
 - » Vertical and decline shafts
 - » Ledges
- Intelligent relationships between:
 - » Mine objects
 - » Mine objects and reef
 - » Mine objects and geotechnical features
 - » Projection of mine object and reef (e.g. travelling way)
 - » Draping of mine object and reef (e.g. raise and stope)
 - Parametric design
 - Best fit placement from reef
 - Automatic placement of stope panels
 - Automatic gully creation
 - Mining feature edit tool
 - On-the-fly long section view creation

Consolidated Design, Scheduling, and Evaluation

- Embedded scheduling and resource evaluation capability from Cyst Technology
- Dockable scheduling window
- Rule-based scheduling
- Automatic loading of mine objects and features into the scheduler
- Automatic schedule and evaluation updates when 3D design is modified
- Evaluation via accurate 3D intersection with the resource model
- Automatic evaluation update when resource model is updated
- Extensive configurable reports (e.g. tonnage or squared meter per time period)

Rule-based Design

- Support for conventional narrow tabular mining methods (initial release)
- Design tools for standard and specific excavations
 - » Point-to-point
 - » Curves
 - » Complex by point of interest
 - » Crosscuts

Open Architecture for Information Mobility

- Native Oracle or SQL database publishing
- CSV format support
- Long-term planning publishing
- Short-term planning publishing
- Design navigation tree for mine elements
- i-model publishing for flexible sharing of design data

Configurable Mining Design Standards

- Fully editable design rules
- Standard symbology definitions
- Standard templates for mining features
- Configurable naming conventions for consistency across the organization
- Standards management via Project Explorer feature
- Live compliance notifications

during design

- Mining Message Center feature to manage and review all compliance notifications
- Organization-wide standards enforcement via ProjectWise integration

Automatic Unique Workplace Naming

- Automatic unique workplace naming for every mine object
- Fully configurable workplace naming system by project
- Consistent workplace naming across shaft structures
- Intelligent database publishing to avoid duplicate names and overwritten data
- Annotation of workplace names on design
- Rename workplace tool
- Resync workplace name function

Rapid Survey and Geology Updates

- Rule-based tools to adjust multiple design objects based on new survey data
- Automatic adjustments to design objects when reef is updated
- Geology data file referencing for automatic updates
- Integration with MineCycle Survey for 3D comparison of as-planned versus as-mined