



SHOTPLUS™ TUNNEL

BLAST DESIGN SOFTWARE FOR CIVIL AND MINING TUNNELS

SHOTPlus™ Tunnel has been developed to support Orica's civil and mining customers. SHOTPlus™ Tunnel enables efficient blast design, analysis, and optimisation for civil and mining tunnels, shafts, and rises.



Reduce the overall cost of drill and blast operations



Improve productivity



Improve safety



Facilitate regulatory compliance

PRECISION DESIGN

- Full 3D design and viewing environment.
- Design or import tunnel profiles.
- Bespoke burn cut design tool including void ratio calculation, to optimise burn cut designs.
- Generate drill designs, with flexible design outcomes for a range of applications.
- Blast optimisation tools provide burden relief, angle of initiation, and breakout angle based on the initiation design.
- Import and export design and as-drilled drilling information.

EFFICIENCY

- User defined loading rules based on multiple hole parameters.
- Quickly generate cost summaries and product quantity calculations.
- Import and export timing sequences for i-kon™ III Loggers or eDev™ II Scanners.
- Automatic adjustment of electronic detonator firing times to comply with user defined firing windows.
- Calculate face area, blast volume, drilling indicators, and powder factors.

FLEXIBILITY

- Customisable terminology for regional applications.
- Project overview tool for convenient visualisation and management of tunnel projects.
- Template functionality enables easy import and export of burn cut designs, drilling designs, and loading designs.
- Import 3D point survey data for overbreak and underbreak analysis.
- Customisable report functionality enables efficient communication of design information.

WHO SHOULD USE SHOTPLUS™ TUNNEL:

- Drill and blast engineers
- Drill and blast operators
- Project engineers
- Planning engineers
- Operations managers
- Consultant engineers

BLAST DESIGN

SHOTPlus™ Tunnel enables users to design hole layouts, angles, diameters, and bearings in relation to the desired tunnel profile, tunnel floor, or a user defined baseline in a full 3D environment. Holes can be assigned multiple different user-defined Hole Types depending on their location or purpose.

BURN CUT DESIGN

The SHOTPlus™ Tunnel Cut Template tool enables users to design burn cuts simply and effectively. Burn cut designs can be optimised using the dimension and void calculation tools. SHOTPlus™ Tunnel's template functionality allows each individual burn cut design to be saved separately for application in a later design, a separate project, or to be shared to other SHOTPlus™ Tunnel users.

SMART DRILL INTEGRATION

SHOTPlus™ Tunnel has been designed to integrate with software platforms used by major smart-drill manufacturers, enabling the import and export of designs between SHOTPlus™ Tunnel and drilling jumbos. This functionality enables users to import and export drilling information and compare the as-drilled hole location, orientation, and length against design.

INITIATION DESIGN

Initiation designs can be completed for hole-by-hole pyrotechnic delay applications. Alternatively, user defined discrete delays can be applied for advanced initiation designs using Orica's i-kon™ III or eDev™ II systems. Designs can be visualised in 3D to enable users to optimise the initiation sequence based upon hole location, orientation, and proximity.

ELECTRONIC BLASTING SYSTEM TOOLS

Users can export timing sequences for use with Orica's i-kon™ III or eDev™ II systems. eDev™ II delay tables are designed in SHOTPlus™ Tunnel and exported to scanners, to enable simple and efficient allocation of delays by number at the face. i-kon™ III designs can also be exported directly to i-kon™ III Loggers to activate SHOTPlus™ logging mode and enable automatic delay application. SHOTPlus™ Tunnel also supports the import of Blast Reports from Orica's Electronic Blasting System blast boxes, enabling users to review and store individual blast reports at a blast-by-blast level.

LOADING RULES

Users can develop multiple loading rules that can be applied based on hole type (e.g. easer holes, perimeter holes, or lifter holes), hole diameter, hole angle, or hole length. Loading rules can be used to define the bulk explosive, primer type and location, or the uncharged collar that is applied to each hole.

PROJECT MANAGEMENT

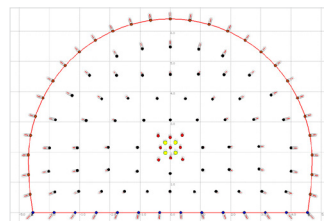
SHOTPlus™ Tunnel's 'Project Manager' tool enables users to organise, visualise, and store multiple tunnel profiles, burn cut designs, and blast designs in one SHOTPlus™ Tunnel file; simplifying the file management process for operations or projects where there is variation in the design requirements.

SURVEY ANALYSIS

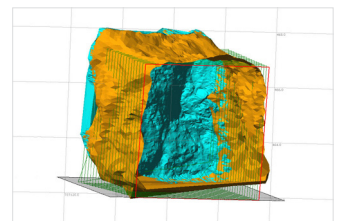
SHOTPlus™ Tunnel supports the import of multiple 3D point file types, enabling users to import tunnel survey scans. This functionality enables comparison between blast designs, post-blast results, and post-shotcrete tunnel profiles. The 'Tunnel Scan' tool also features analysis of overbreak, underbreak, and volume differentials. Using these analytical tools it is possible to quickly ascertain the causes of poor perimeter or advance performance, assess shotcrete thickness, and optimise subsequent blasts.

COST ANALYSIS

SHOTPlus™ Tunnel enables quick and easy estimates of total bulk and initiating explosive volumes in a single development or tunnel blast, or for multiple blasts over the duration of a project. This can be used to quantify the cost outcome of changing drill designs or explosive selection.



Civil tunnel design



Survey data visualisation

To learn more about SHOTPlus™, please contact your local Orica representative, or visit [ora.com/SHOTPlus](https://www.ora.com/SHOTPlus)

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