

## JRC 3D Reconstructor / ILRIS SURVEY TUNNEL MINING



ADD THE NEW TOOLS GEXCEL R<sup>3</sup> !

FULLY OPTIMIZED FOR **Optech DATA**

A user friendly software solution for OPTECH ILRIS users in the field of infrastructures and land surveys, tunnel, mining, support to geological analysis and monitoring.

### WORKFLOW

- Step 1. IXF dedicated import - with alignment information from IMAAlign™
- Step 2. Surfaces and DTM creation
- Step 3. Cross section (also along tunnel axes), isolines, CAD connection (for drawing mines break lines)
- Step 4. Time inspection, area and "cut and fill" volume
- Step 5. Easy export to CAD

### USERS

Surveyors in the field of mining and tunnelling | Civil Engineers | Engineering and Geotechnical Companies | Geologists

### APPLICATION FIELDS

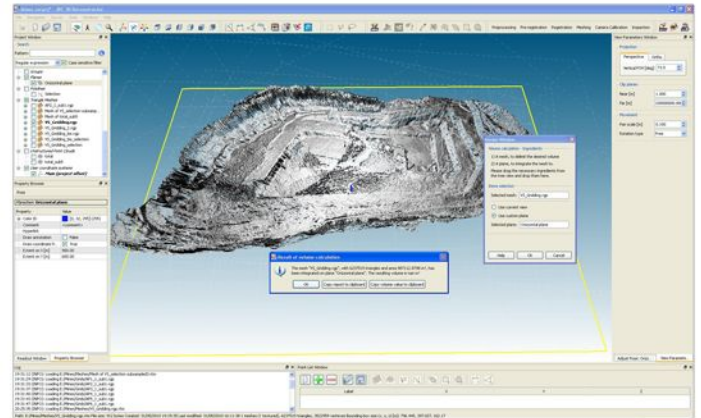
Mining | Tunnelling | Geological inspections | Glaciological surveys | Avalanche and Landslide surveys

### OBJECTS

Mines | Rock falls | Big infrastructures (dams, bridges) | Tunnels | Landscape (glaciers, rock falls)

### RESULTS

Cross sections | Isolines | Digital Terrain Models | Mines break lines as CAD drawings | Deformation and displacement maps | Areas and volumes calculation

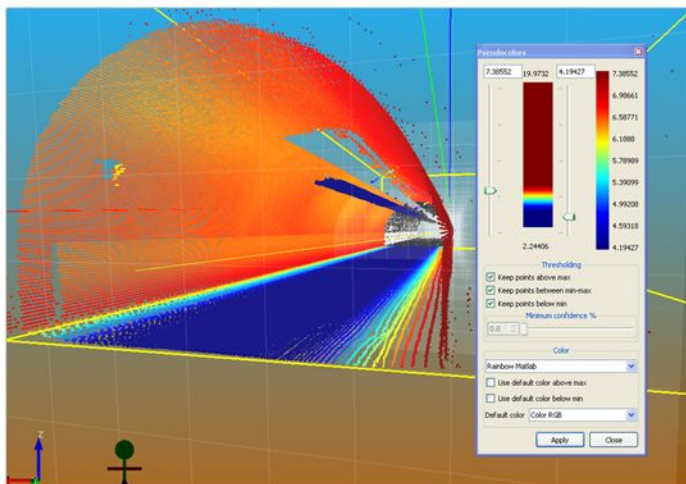


Mine volume calculation

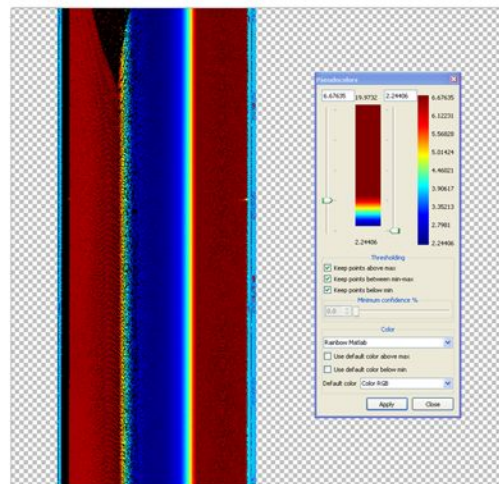
### MARKETING NOTES

LANGUAGES English - Italian

DEMO VERSION 30 days evaluation - all functions available - saving locked FREE VIEWER To open complete JRC 3D Reconstructor projects and make basic measurements. It is available in the Download page on [www.gexcel.it](http://www.gexcel.it)



Tunnelling internal surface analysis - 3D view



Tunnelling internal surface analysis - 2D view

### REFERENCES

JRC 3D RECONSTRUCTOR / ILRIS STM is tested for glacier monitoring in Alps, Himalayan area and African mountaineering regions.

It is also used for the *as-built* analysis of the *Porta Nuova Garibaldi* skyscrapers project in Milan (<http://www.porta-nuova.com/en/home/>)

To find some applications results, go to [www.gexcel.it](http://www.gexcel.it)

### CONTACTS



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## TECHNICAL FEATURES

### EXCLUSIVE TOOLS

**Virtual scan:** an extremely useful tool to merge, in a single scan, data from different positions or sensors. It allows to obtain new scans from a particular view that cannot be surveyed (or that is missed) during the survey activity. It works by setting a new scan position into the software and integrating overlapping points or meshes.

**Cut and Fill volume:** volume calculation with the possibility to evaluate "cut and fill" between data surveyed in different times.

### IMPORT - EXPORT AND NAVIGATION

**Import data:** dedicated import of ILRIS (\*.ixf), generic point clouds (ASCII format for laser scans or topographical measurements), digital terrain models import function (binary, ASCII), and 3D models (VRML, 3DS).

**Export 3D, 2D data:** 3D data export (ASCII, PTC, VRML, 3DS, DXF). 2D data export (JPG, PNG, BMP), polylines and cross sections in DXF.

**Navigation tools:** scalable rendering to navigate point clouds of any size; 3D viewing of point clouds mapped with normal, intensity or RGB information, 3D viewing of mesh as wireframe, shaded or mapped RGB information. Perspective, orthographical and "bubble" view. Navigation with antirolling and in walk mode.

**UCS tool:** to work with user-defined coordinate systems to facilitate plane definition, cross section and orthophoto extraction.

### DATA PROCESSING

**User-friendly interface** with predefined workflow for Mining field of application: you can choose the field of application and set the proper toolbars to process from raw data to final results.

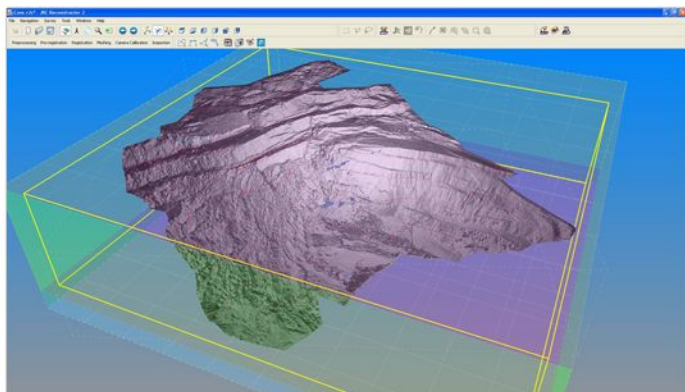
**Point cloud editing:** tool for point clouds editing both in 3D and in 2D.

**Pre-processing and Filtering:** intelligent noise reduction, automatic line extraction for creation of CAD models, extraction of local surface normal, points segmentation based on reflectance, range, inclination map.

**Meshing:** 3D surface creation starting from point clouds - multi resolution, uniform and Delaunay.

**Topographic mesh:** a user-friendly tool for digital terrain models creation with de-spiking and noise removal. Ideal for mining, stock pile, excavation.

**Mesh editor:** to fill mesh gaps, remove spikes, reduce mesh size and extract mesh borders as polylines.



Pit mine Digital Terrain Model

### MEASURING AND DATA ANALYSIS

**Plane and Cross sections interface:** user friendly interface for plane creation by fitting points or points selection, and directions constrains (verticality, horizontality, parallelism with building façades).

**Measure and Cross sections:** points position, distances, angles, cross sections based on the mesh or on the raw 3D point cloud.

**Area tool:** calculation from mesh or point cloud, according to a manual selection or polylines.

**Volume calculation** with preview and printable reports.

**Cut&Fill volume:** calculated within user defined regular benches and with printable reports.

**Link tool:** to link 3D data to any external document or web page.

**Orthophoto generation:** orthographic, cylindrical and spherical images from the mesh or the points clouds.

**Video creation:** interactive trajectory creation and flight-through video creation and export.

**CAD connection:** for drawing in CAD by selection of 3D points from a 3D model (based on PointCloud plug-in).

**Inspection tool:** for automatic change detection, it provides coloured and numerical displacement maps with positive/negative values along a custom axis

**Open pit mines tools:** advanced data filtering, topographic mesh for DTM creation, Crest&Toe, surfaces, Cut&Fill volumes within backs of quarry and with printable reports, change detection, isolines for CAD.

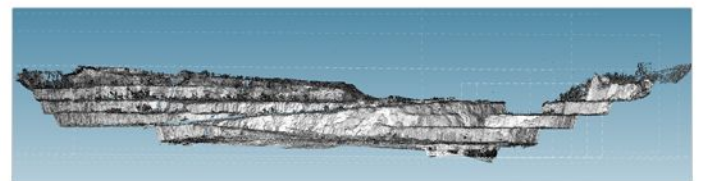
**Tunnelling tool:** set of tools for cross section along tunnel axes and cylindrical re-projection of tunnel face.

### SYSTEM REQUIREMENTS

**Operative System:** Windows XP SP2 | Windows Vista and Windows 7 | 64 bit and 32 bit version

**Graphics cards:** NVIDIA GeForce FX or later

**Recommended:** Multi-core processor | At least 4GB RAM | NVIDIA GeForce 500 with at least 512MB



Pit mine plans

