

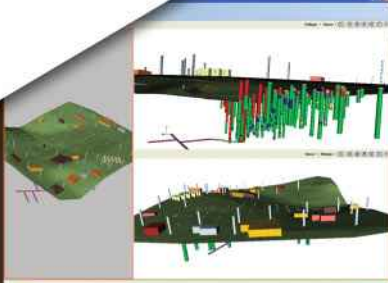
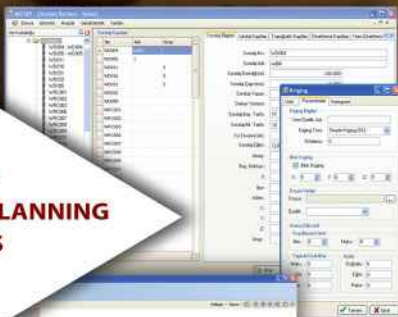
- \* *Training support*
- \* *Technical support*
- \* *Easy use*
- \* *3D stereo visualization*
- \* *Modelling ore bodies and planning mines with one software*
- \* *Multilingual support*



# NETPRO/Mine™

*Integrated Solution in Ore Body Modelling and Mine Planning*

- **Data Input and Drill Hole Logging**
- **Digital Terrain Modelling (DTM)**
- **3D Modelling and Visualization**
- **Geological Solid Modelling**
- **Volumetric Operations**
- **Block Modelling**
- **Resource and Reserve Estimation**
- **Mine Design and Production Planning**
- **Allowance and Contractor Works**
- **Reporting**
- **Stereo Visualisation**
- **GIS Integration**



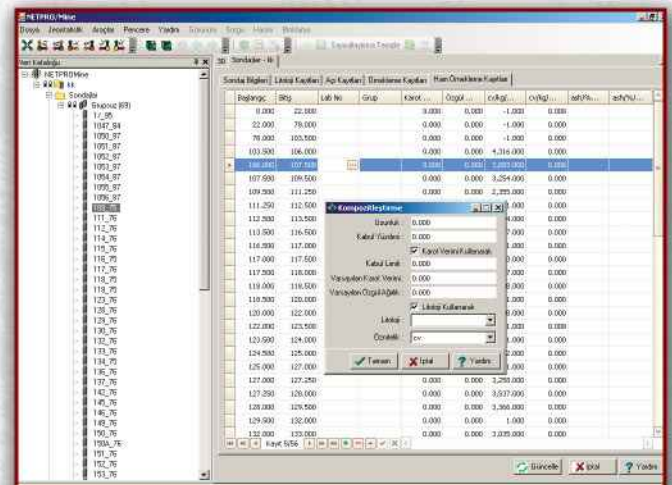
**NETCAD®**  
**ENGINEERING and PLANNING**  
**SOLUTIONS**

# NETPRO/Mine™

NETPRO/Mine™ is a Netcad® module in which all the stages of ore body modelling and mine planning can be performed. It provides tools for data input, 3D visualization and digitizing, construction of digital terrain model (DTM), geological solid modelling, block modelling, classical and geostatistical resource and reserve estimation, mine design and planning.

## Data Input and Drill Hole Logging

- Easy and fast data input and access
- Spatial and vectoral data types stored in a GIS data base
- Advanced attribute and spatial queries (e.g. data filtering such as calorific value between 1500 and 2000kCal/kg, moisture content less than 15%, and ash content greater than 50%)
- Grouping or categorizing drill hole and log information into different groups as defined by user
- Compositing based on lithology and/or sample recovery
- Able to read and write data in various formats
- A wide range of user defined symbol, lithology and texture libraries

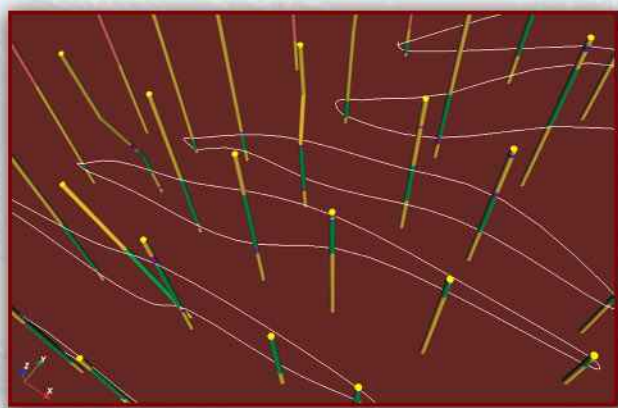
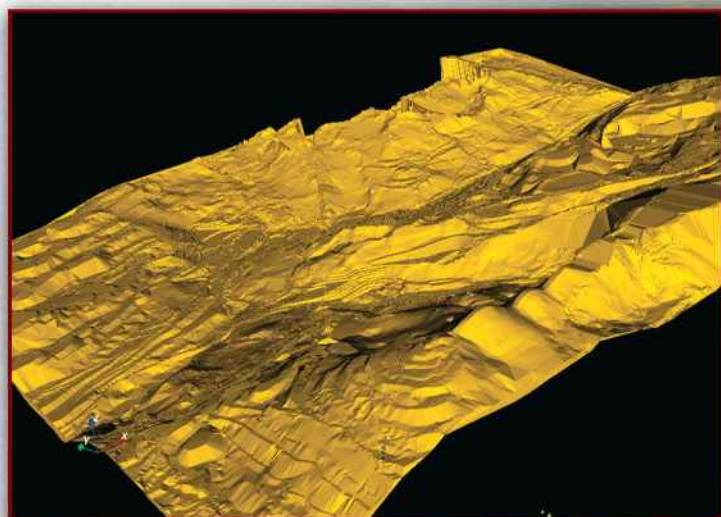


## Digital Terrain Modelling (DTM)

- Ability to construct digital terrain models by different data types and triangulation
- Ability to perform adding, rotating, clipping and copying triangles
- Drawing contour lines for terrain and writing elevations
- Constructing topographic, thematic, relief, elevation, inclination and orientation maps, making visibility analyses
- Drawing cross-sections
- Road design

## → 3D Modelling and Visualization

- Integrated, multilayered CAD design and modelling with Netcad®
- Ability to visualize 2D and 3D
- Quick projection of modified data into the display image
- Use of different color, texture, lighting and toning
- 3D animation
- Ability to drape raster data such as an aerial photograph or a Google Earth™ image over a model

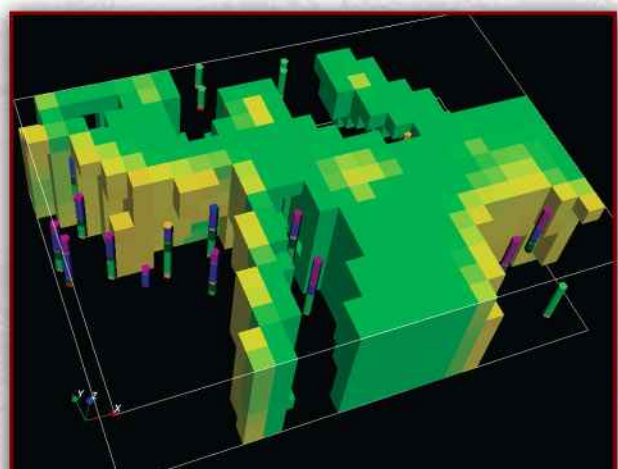
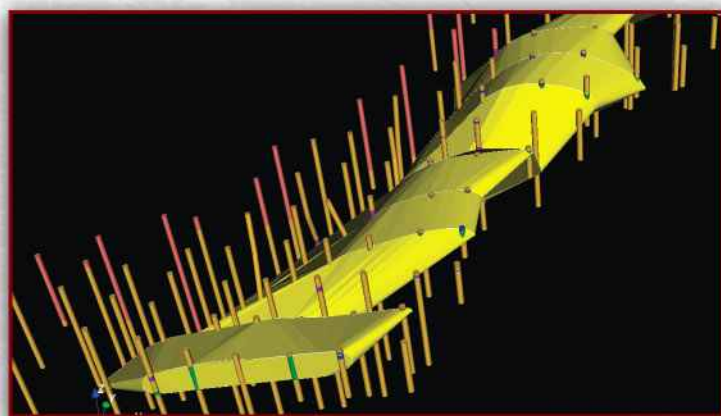


## → Geological Solid Modelling

- Ability to draw cross-sections in any direction
- Not only straight line, but also broken line cross-sections
- Construction of solid model from cross-sections
- Ability to insert faults and folds into solid model
- Adding faults over an ore body area
- Visualization of faults in plan view and 3D environment
- Determination of contour lines, consideration of faults in cross-sections and profiles

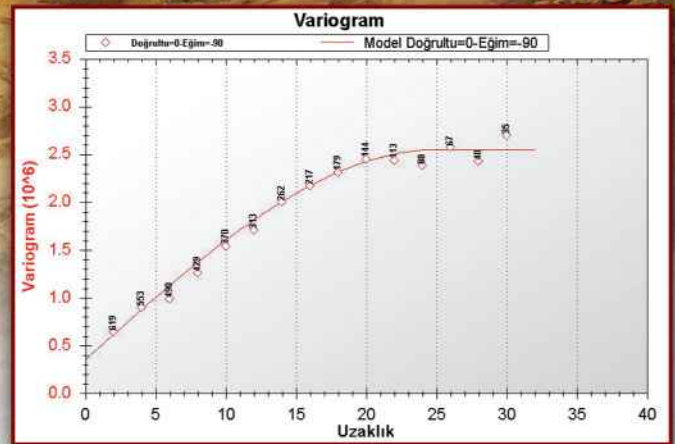
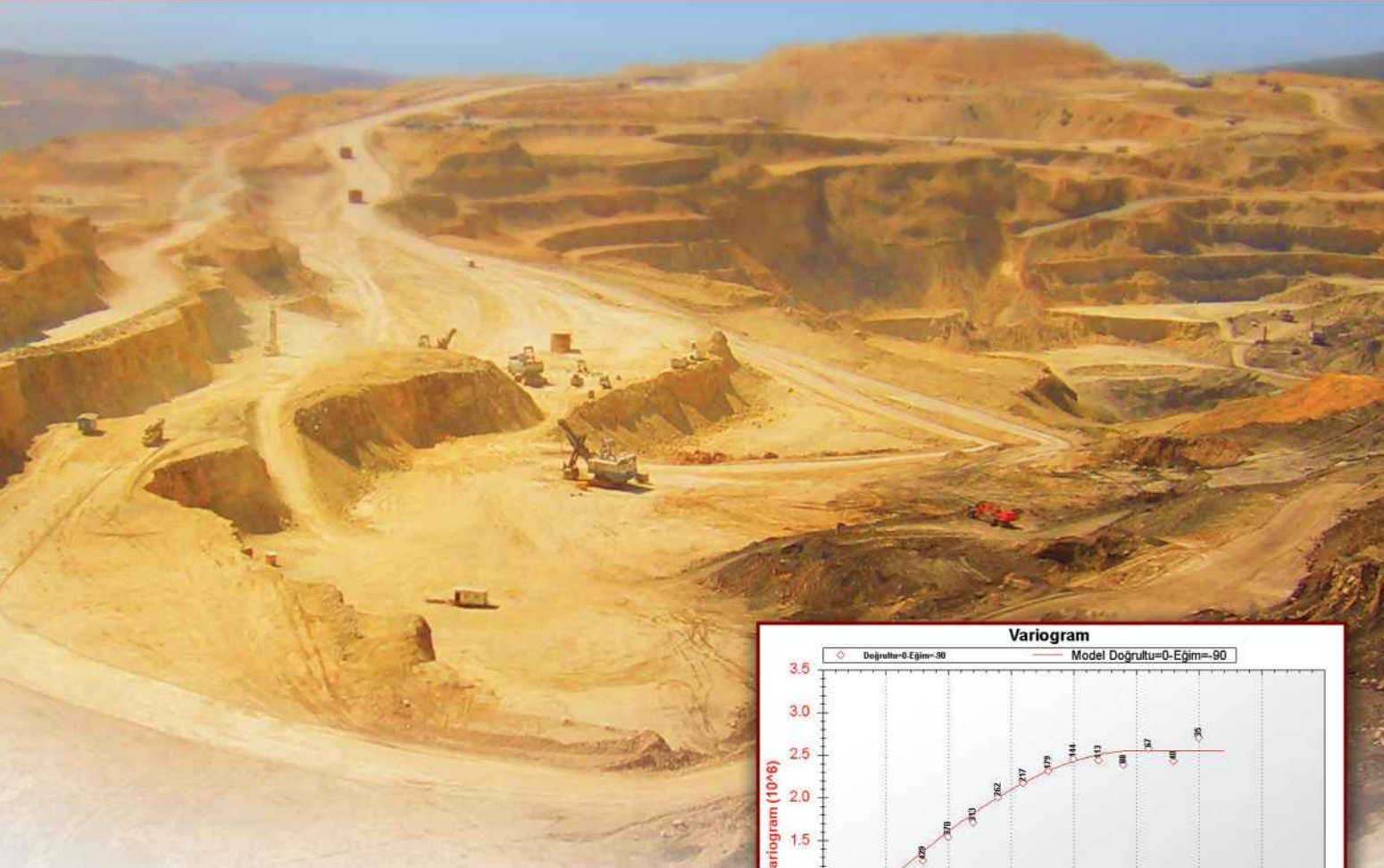
## → Volumetric Operations

- Advanced volumetric calculations
- Ability to clip, copy and determine elevation
- Constructing a new solid from intersection or union of two volumes
- Generating DTM inside or outside of a volume
- Ability to construct volumes above or below DTM



## → Block Modelling

- Blocking inside solid model
- Variable block size
- Easy access to every type of information inside blocks
- Ability to define the blocks in various shape and color based on attribute values
- Ability to produce contour lines for any attribute on block sections
- Free hand drawing of ore body boundary on cross sections

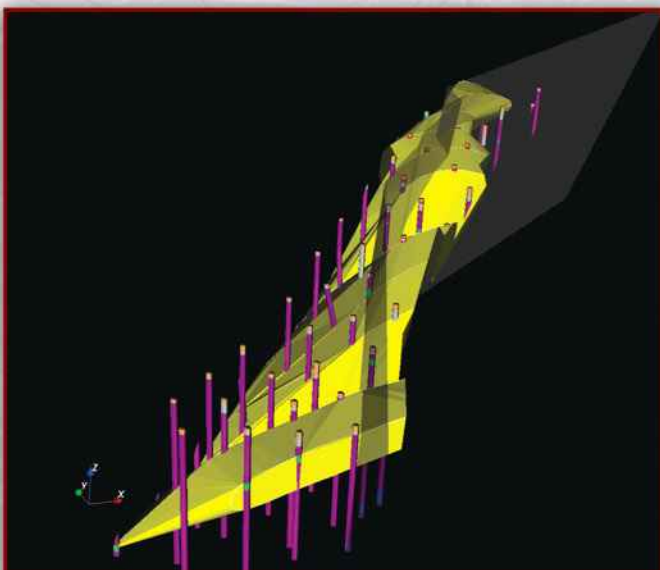


## ➔ Resource and Reserve Estimation

- Use of various spatial continuity measures such as variogram, indicator variogram, covariance and correlogram
- Estimation of block values for any attribute by classical and geostatistical methods
- Use of various methods such as kriging, cokriging and indicator kriging in geostatistical estimation
- Producing resource/reserve reports from block model for any attribute

## ➔ Mine Design and Production Planning

- 3D modelling of all underground openings and surface infrastructures
- Using rock mass characteristics (RQD, RMR) in designs
- **Ventilation Design**
  - Calculation of air flow rates in each branch of mine network based on road resistance values and fan characteristics defined by the user; update of values after locating regulators.
- **Bench Design**
  - Constructing benches based on pit design parameters and adding connection roads
  - Excavation planning
- **Blasting Design**
  - 3D definition of the area to be blasted for both open-pit and underground mines
  - Automatic assignment of suitable parameters such as hole diameter and length depending on drilling machinery utilized
- **Dump Site Design**
  - User defined road design
  - Calculation of dump site volume



## → Allowance and Contractor Works

- Tracking and reporting activities that are basis for payment
- Reporting allowances automatically
- Forming correspondence templates

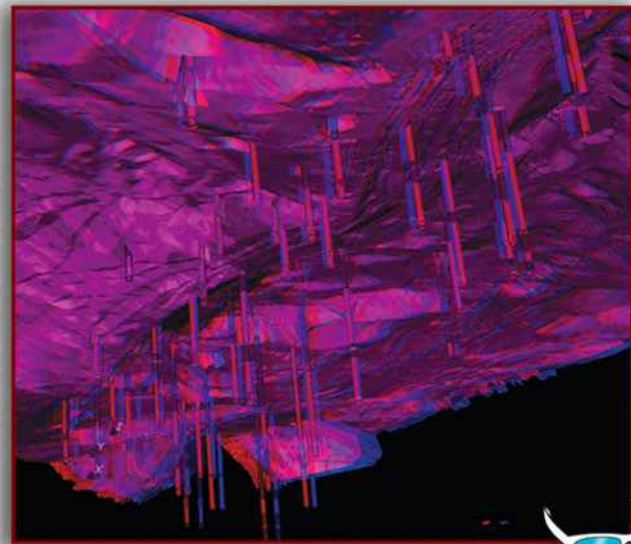
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2	1047.84	546992.130	433130.000	534.590	177.000
3	1050.87	548822.400	433193.000	470.960	110.000
4	1051.87	548278.900	433309.000	478.450	157.000
5	1052.87	546965.000	433370.000	469.860	157.000
6	1053.87	548971.300	433163.000	403.670	112.000
7	1054.87	548754.900	433178.000	441.750	139.000
8	1055.87	549578.400	433168.000	411.390	148.000
9	1056.87	548957.700	433180.000	430.660	186.000
10	109.75	549420.500	433065.000	448.200	262.500
11	111.76	548977.700	433031.000	458.040	262.500
12	112.76	550164.600	433058.000	449.990	330.000
13	114.76	550847.700	433056.000	461.890	365.000

## → Reporting

- Formation of manageable user defined reports in various file formats
- Monitoring production, consumptions, stock, spare part, efficiency and workmanship related data separately and adhoc listing of comparative results between items in table and graphical forms
- Querying operation related parameters for a specified period
- Practical and fast output

## → Stereo Visualisation

- Stereo visualisation (Anaglyph, red/blue, crystal eyes,...)
- 3D projector support
- 3D mouse support
- Ability to present raster and vector data in stereo mode
- Fast switch between 2D, 3D and stereo

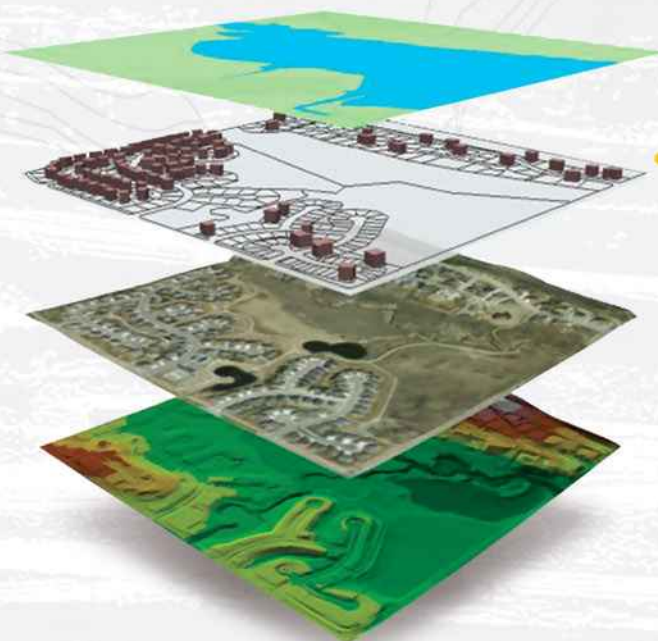


Look at with 3D stereo glasses.



## → GIS Integration

- Advanced CAD and GIS operations
- Ability to communicate with all Netcad® modules
- Database independent (Oracle®, MS Access®, MS SQL Server®, DB2, MySQL®, Postgres, OLE DB, ODBC)
- Rich raster, vector and grid format support
- Thematic mapping
- Spatial analysis and selection
- Overlay analysis



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ENGINEERING and PLANNING  
SOLUTIONS

# NETPRO/Mine™

*Integrated Solution in Ore Body Modelling and  
Mine Planning*

HACETTEPE  
UNIVERSITY



GENERAL DIRECTORATE  
OF TURKISH COAL  
ENTERPRISES



#### Head Office

Cyberplaza B Blok No:409 Cyberpark  
06800 Bilkent - Ankara / TURKEY  
Phone: + 90.312.2650510 (pbx)  
Fax: + 90.312.2650520

#### Istanbul Regional Office

Çınar Mahallesi, Yeşiltepe Sokak, No:43  
Maltepe - İstanbul / TURKEY  
Phone: + 90.216.4176210 (pbx)  
Fax: + 90.216.4176211

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