



# Ventsim™

## Ventsim Visual™ 3D Software

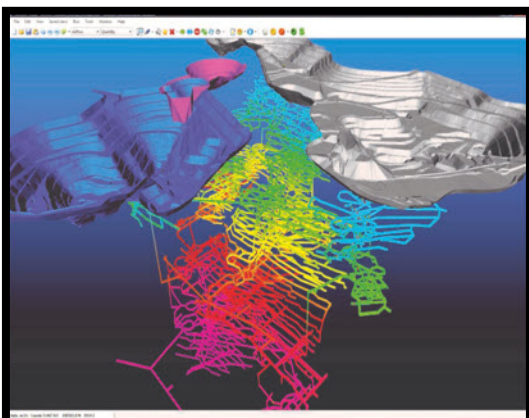
### Improve your ventilation - reduce your costs!

Ventsim™ is a mature product suite that was originally introduced to mining operations in 1993 to help visually design, improve and optimise underground ventilation systems. It is now licensed to over 500 mine sites, consultants, universities, governments and research agencies around the world.

The new Ventsim Visual™ ventilation software was released in 2009 and offers a totally new graphically rich and dynamic ventilation environment with many more features. Ventsim Visual™ is available in two versions.

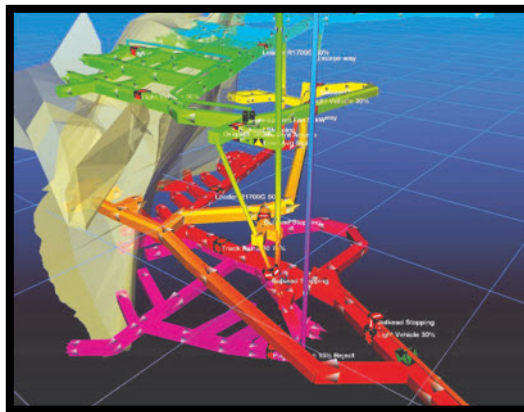
1. Ventsim Visual Standard
2. Ventsim Visual Advanced

Ventsim Visual Standard™ is a low cost version based on incompressible flow simulation routines. The software has dynamic animated 3D graphics showing real airway dimensions and shapes with animated airflows. Colours of airways can define over 30 different data types including airflow, velocities, various pressures, and costs. In addition, the Standard version comes with contaminant spread routines to help predict the flow of gases, dust, fumes and smoke.



Ventsim Visual with surface open pits joining to u/g.

Ventsim Visual Advanced™ is based on an advanced compressible flow modelling, including automatic density and fan curve adjustment, automatic natural ventilation simulation and prediction of temperatures and humidity due to rock strata, auto compression, diesel equipment and electric motors.



Ventsim Visual airways with orebody solids

The Advanced version has functions to predict Diesel Particulate (DPM) levels throughout a mine due to diesel equipment and also has an economic airway size estimator that helps quickly pick the most efficient airway size based on power costs, mining costs and mine life. Ventsim Visual Advanced™ can also help predict areas of a mine subject to recirculation of air.

All packages have functions to quickly import data from other mine planning CAD packages and build new networks. Ventsim Visual™ also has functions to import VNET- PC files and can also import 3D graphics shapes such as surface terrain, underground stopes and voids, and survey development outlines and shapes to help build and visualise ventilation systems.

**Ventsim - Simplifying Mine Ventilation**

### Ventsim Software Features

#### Ventsim Visual Standard™

- Full 3D modeling, with smooth rotation, zoom and pan.
- Real-time animation of airflow and fans
- Dynamic coloring of airways and data
- Airflow simulation and fan modeling
- Contaminant spread, sourcing and emergency simulation
- Financial functions to analyze airflow and fan costs.
- Variable speed fans which can be reversed or turned off.

#### Ventsim Visual Advanced™

- All the Standard features
- Thermodynamic heat and moisture modeling
  - Strata heat and moisture
  - Refrigeration
  - Diesel heat and emissions
  - Electrical heat sources
  - Oxidization
- Compressible airflows and different mine air densities and fan operating environments.
- Blasting fumes dispersion and clearance time simulator.
- Financial analysis wizards
- Recirculation predictor
- Diesel particulate

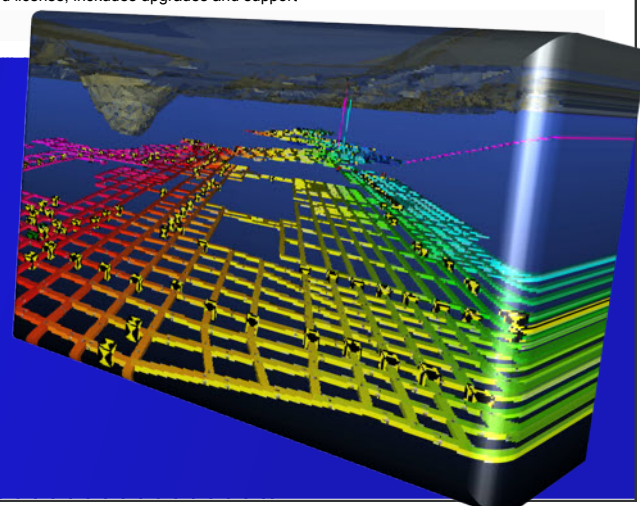
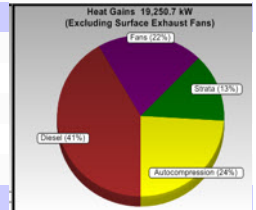
**Ventsim Visual Software can be purchased as a permanent license or limited time rental.**



# Ventsim™

## VENTSIM VERSION FEATURE AND PRICING CHART

Graphics	Ventsim Visual Standard	Ventsim Visual Advanced	Description
Graphics	3D Solid or Wireframe	3D Solid or Wireframe	Correctly sized graphics show true dimensions and shapes of airway
Non active display Option	Semi Transparent	Semi Transparent	Simplify display by making some airways transparent - levels can be varied
Hardware Acceleration	YES	YES	Fast, smooth 3D display of any complexity on most modern PCs and laptops
Animated Airflows & Fans	YES	YES	Airflows move in real time through network, operating fans spin
Units	SI Metric/Imperial	SI Metric/Imperial	Imperial / Metric can be mixed if required
DXF Import	YES	YES	Import centrelines from CAD package for rapid building of Ventsim networks
DXF Import Solids	YES	YES	Import solids including terrain surfaces, orebodies, development etc
Undo function	YES	YES	
<b>Simulation</b>			
Maximum Network Airways	30000	30000	
Simulation Method	MultiPass HC	MultiPass HC Mass Flow	Hardy Cross - Multipass simulation improves accuracy and robustness
Airway reversing	automatic	automatic	Airways with no exits or entries are automatically reversed to allow simulation to continue
Compressible Flows	NO	YES	compressible airflows effects at depth are modelled
Coloured Data Display	YES	YES	Display any data by colour with adjustable legend and sliders
Ventsim Air Data Types	36	60	Number of calculated data type that can be shown on screen, colour legend or spreadsheet
Switchable Fans (on/off)	YES	YES	fans can be switched on or off and left in network - fan can be made self closing or open
Variable Speed Fans	YES	YES	Different fan speeds can be easily modified in network
Reversible Fans	YES	YES	fans can be reversed with reduced performance (for emergency simulation)
<b>Thermodynamic</b>			
Heating and Cooling	NO	YES	includes heat or refrigeration options in network analysis
Rock Thermal Input	NO	YES	predicts heat and moisture emanated from rock strata
Diesel Equipment	NO	YES	predicts heat and humidity generated by diesel equipment
Natural ventilation	manual	automatic	Uses thermodynamics to simulate natural ventilation effects
<b>Contaminant</b>			
Distribution Prediction	YES	YES	Distributes smoke or other contaminants through network
Sourcing Assistant	YES	YES	Shows spread and possible source location of smoke or other contaminants
Sourcing Concentration	YES	YES	Shows upstream path and concentrations of contaminated (or fresh) airflow
Dynamic Blasting	NO	YES	Blasting fume animated dynamic spreadtime and clearance time dispersion
Diesel Particulate Simulation	NO	YES	Utilises diesel engine sources to estimate DPM levels throughout the mine.
<b>Other Features</b>			
Recirculation Detector	NO	YES	Searchs network for paths that recirculate a portion of air
Economic Airway Size Predictor	NO	YES	Automatically graphs airflow and costs through a range of different airway sizes and types
Auto Simulate	YES	YES	Automatically updates and simulates networks while being built or modified
File System	*.SIM *.VSM *.TXT	*.SIM *.VSM *.TXT	Ventsim Visual versions can load V3.9 SIM files and convert to Visual VSM files
Import Data	Text, DXF, VNETPC	Text, DXF, VNETPC	Ventsim can build networks from CAD or Mine Planning DXF files, or directly import VNETPC
<b>Pricing (Jan 2010)</b>			
License Type	USD 2495	USD 3995	Full license price includes the first 3 months of maintenance and upgrades
License Type	Per PC or Individual	Per PC or Individual	Visual licenses contain 'virtual keys' restricting use to one PC at a time
Optional annual maintenance **	USD 499	USD 799	12 Months Includes unlimited upgrades, tech support, quartely newsletter
Rental Option (per 3 months)	USD 399	USD 599	Time limited license, includes upgrades and support
Additional Site Licenses	25% discount	25% discount	



## Ventsim™ Ventilation Simulation Software

Available from Chasm Consulting (Pty) Ltd

Authorised distributor of Ventsim® products

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