

Ground Grid Systems

Safety Flexibility Protection

The next generation Ground Grid Systems module enables engineers to quickly and accurately design and analyze ground protection. Advanced 3-D technology integrates with one-line diagrams, enabling engineers to visualize their ground systems and seamlessly utilize short circuit results. Flexible design methodologies allow for quick auto-designed layouts or very detailed schemes. Color-coded graphical plots provide impressive results.

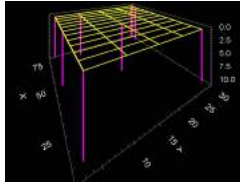
Three-Dimensional Design View

Key Features

- IEEE 80 & 665 Methods
- Finite Element Method
- Rods & Conductors in any 3-D Direction
- Rod & Conductor Optimization

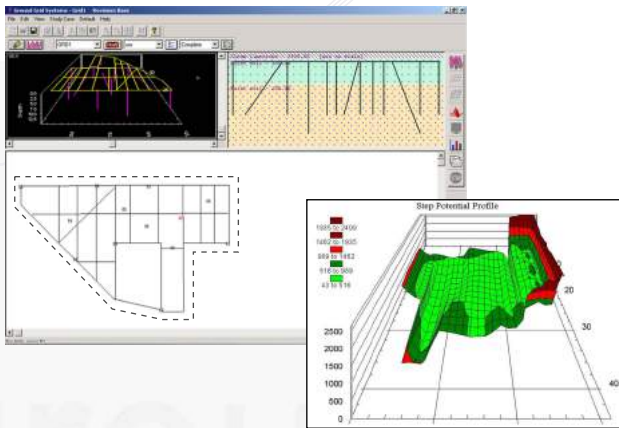
Flexible Operation

- Automatically use short circuit results
- Optimize number of conductors with fixed rods
- Optimize number of conductors & rods based on cost
- Check the allowable current for grid conductors



Capabilities

- Two-layer soil configuration plus surface material
- Table of potentials at the earth surface
- External boundary extensions
- Handle irregular configurations of any shape
- Variable weight & temperature options
- Compare allowable currents against fault currents
- User-expandable conductor library
- Ground grid configurations showing conductor & rod plots

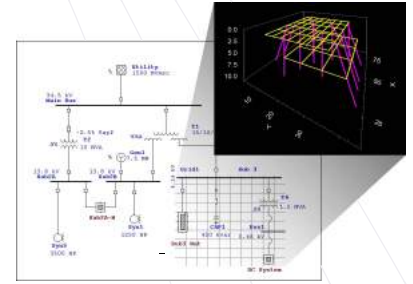


Standards & Methods

- IEEE 80-1986
- IEEE 80-2000
- IEEE 665-1995
- Finite Element

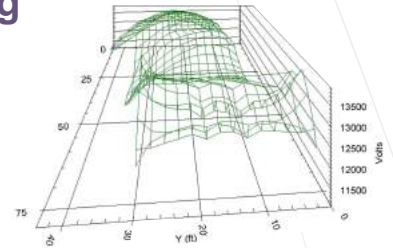
Calculate

- Reflection factor (K)
- Decrement factor (Df)
- Ground potential rise (GPR)
- Ground system resistance (Rg)
- Surface layer derating factor (Cs)
- Compare potentials to tolerable limits
- Step, touch, & absolute potentials inside & outside grid



Plotting/Reporting

- 3-D touch potential plots
- 3-D step potential plots
- 3-D absolute voltage plots
- Color coded contour plots
- Graphical display of overlimit voltages
- Conductor segments oriented in any 3-D direction
- Output results in Microsoft Access databases format
- Use Crystal Reports® for full color, customizable reports
- Export output reports to your favorite word processor



Plot Options

- Rotation animation
- Rotation increment (-15 to 15 degrees)
- Rotation detail - wire frame/plotting style/full detail
- Viewing style - color/monochrome
- Shading style - white/color
- Font size - small/medium/large
- Numeric precision - 0, 1, 2, 3 decimals
- Grid lines - no grid, X and/or Y axes
- Plotting method - wire frame/surface/surface with frame/surface with contouring/pixels
- Show bounding box - while rotating always/never
- 2-D contour • Off • Lines on top/bottom • Color on top/bottom

Instantly See Color Coded 3-D Plots

- Unlimited Rods & Conductors
- Multiple Interconnected Systems
- Links with One-Line Diagrams
- Customizable Font Types, Sizes, Styles, & Colors
- Customizable Display of Ratings & Results
- Automatic Error Checking
- Graphical Display of Overpotential Areas
- Dynamically Adjust Display of Results

Calculated Ground System Results											
Item	Value	Unit	Item	Value	Unit	Item	Value	Unit	Item	Value	Unit
Total Fault Current	2.00E+04	A	Reflection Factor (K)	0.92							
Maximum Voltage/Conductor	2.00E+04	V	Surface Layer Derating Factor (Cs)	0.42							
			Decrement Factor (Df)	0.92							
			Ground System Resistance (Rg)	0.0001	ohm						
			Ground Potential Rise (GPR)	1.80E+04	V						
			Surface Layer Resistance (Rs)	0.0001	ohm						
			Touch Potential	1.80E+04	V						
			Step Potential	1.80E+04	V						
			Touch Potential (with Cs)	7.56E+03	V						
			Step Potential (with Cs)	7.56E+03	V						



10 CFR 50 Appendix B • 10 CFR 21 • ANSI/ASME N45.2-1977 • ASME NQA-1
ISO 9001 • ANSI/IEEE Std 730.1-1989 • CAN/CSA-Q396.1.2-89

