

## Ground Grid Analysis & Design

**G-GRID** software is a substation grounding grid design and analysis program from the staple of MiPower™ developers who are pioneers in providing solutions in power system engineering worldwide. **G-GRID** has been specially developed for Utility & industry to arrive at an economic & safe design of new grounding grids as also for checking adequacy of existing grids for possible re-inforcement.

Efficient & well-proven analysis algorithms, User-friendly data entry and graphical 2-D plotting make **G-GRID** software an efficient tool that helps in analyzing earth potentials and enables engineers to choose a technically sound and economical design of grounding grid from a variety of options.

### Highlights

#### Key Features

- ANSI/IEEE 80-1986/2000 Methods
- IEC TS 60479 Compliant
- IS 3043-1986 Compliant
- 2-D Potential profile plotting
- Economic Design of EHV Grounding Grids

#### Capabilities

- Uniform and Non-uniform (Two Layer) Soil Models
- Two-layer soil model derived from Field Measurements
- Optimizes Gravel Layer Thickness in OD Yards
- User-expandable Ground conductor library
- Models Corrosion Allowance
- 'What If' Analysis

#### Applications

- Design of HV & EHV AIS & GIS Grounding Systems
- Checking Adequacy of Existing/Designed Grounding Systems
- Soil Model from field Measurement of Soil Resistivity

#### Calculations

- Short Circuit Current ( $I_f$ )
- Decrement factor ( $D_f$ )
- Ground potential rise (GPR)
- Ground system resistance ( $R_g$ )
- Surface layer de-rating factor ( $C_s$ )
- Tolerable Shock Currents based on IEEE or IEC Standards
- Depth of Burial
- Step, touch & transferred potentials.
- Bill of Quantity, Costing

### SOIL CHARACTERISTICS

The 'Soil Characteristics' dialog box includes the following fields and options:

- Number of measurements:** 6
- Table:**

Sl No.	Electrode Spacing(m)	Earth Tester Reading
3	3	5.2
4	4	1.84
5	5	1.23
6	6	0.77
- Soil Model:**
  - Two Layer Soil Model
  - Uniform Soil Model
- Upper Layer Soil Resistivity:** 150.692 Ohm-m
- Lower Layer Soil Resistivity:** 7.24482 Ohm-m
- Depth of Upper Layer Soil:** 2.36736 m
- Soil Resistivity:** 0 Ohm-m
- Crushed Rock Resistivity:** 1000 Ohm-m
- Crushed Rock Thickness:** 0.1 m

### CONDUCTOR DATA

The 'Enter Conductor Data' dialog box includes the following fields:

- Conductor Name:** Standard\_Annealed\_Soft\_Copper(100%)
- % Conductivity:** 100.0
- Thermal Coefficient of resistivity@ 20 deg C:** 0.00393
- K ( 1/ Thermal Coefficient of resistivity@ 0 deg C ):** 234
- Resistivity of Ground Conductor @ 20 deg C:** 1.724
- TCAP Factor Effective Value:** 3.422

### NETWORK DATA

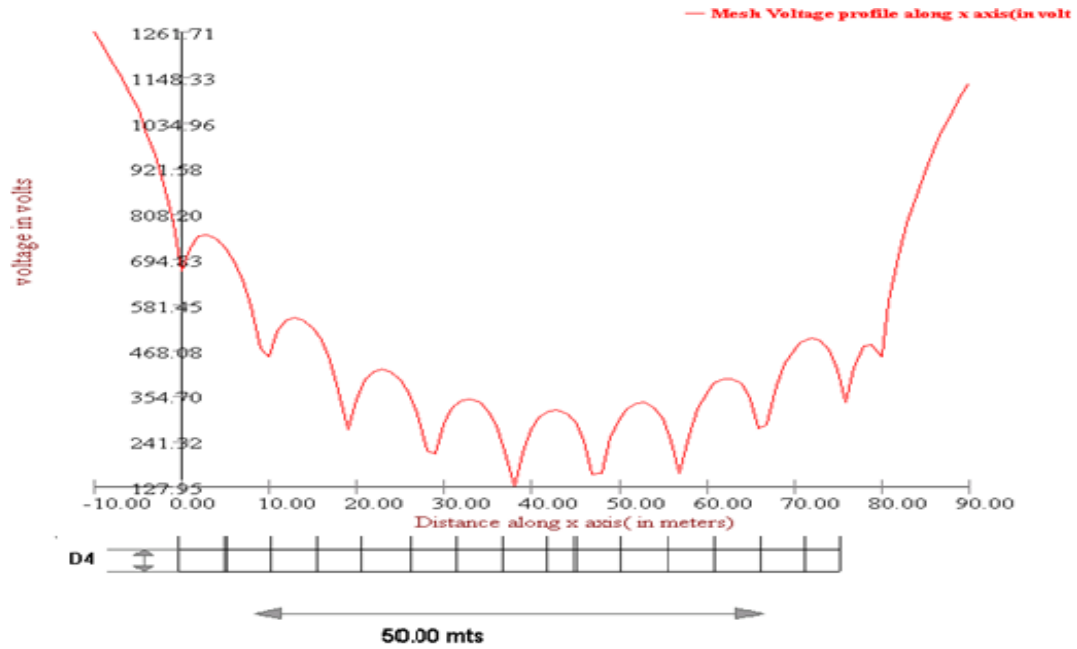
The 'Network Data for Ground Current Calculation' dialog box includes the following fields:

- Mode:**  User Defined,  Compute
- Single Line To Ground Fz:** (Selected)
- Fault Current:** 0 Amp
- L/R:** 0
- Voltage Level:** 115 kV
- Frequency:** 50 Hz
- F<sub>Static</sub> Sequence Resistance:** 4 Ohm
- Positive Sequence Reactance:** 10 Ohm
- Negative Sequence Resistance:** 4 Ohm
- Negative Sequence Reactance:** 10 Ohm
- Zero Sequence Resistance:** 10 Ohm
- Zero Sequence Reactance:** 40 Ohm
- Current Division Factor:** 0.6
- Future Growth Factor:** 1.2
- Shock Duration:** 0.5 s

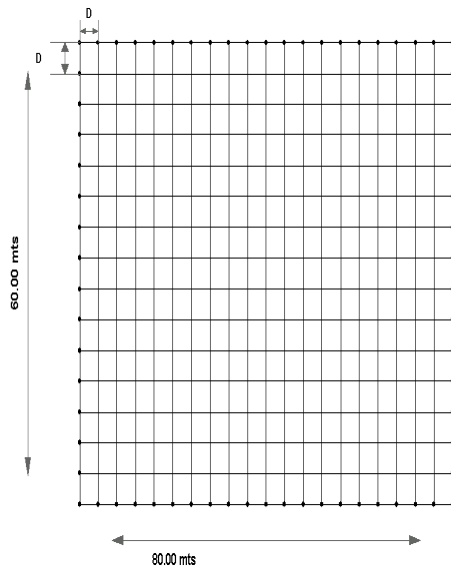


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### POTENTIAL PROFILE



### RECTANGULAR GRID



### L-SHAPE GRID

