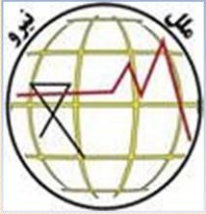


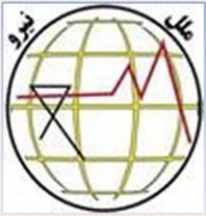
# NER/NGR





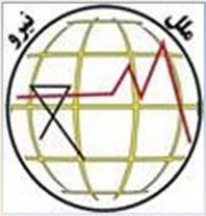
## *What is NER/NGR?*

*Neutral Earthing Resistors (NERs) are one of the **commonest** types of earthing systems in **medium-voltage** AC distribution networks. Also called Neutral Grounding Resistors.*



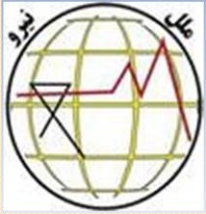
## *What is its role?*

*NER/NGR limits the current that would flow through the neutral point of a transformer or generator in the event of an earth fault.*



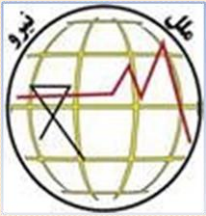
*What is the main reason of using  
NGR in a power system?*

*Earthing resistors limit fault currents to a  
value that does not cause any further  
damage to **switchgear, generators** or  
**transformers**.*



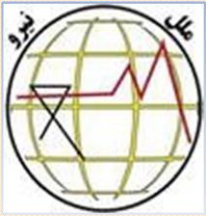
# *How does NER/NGR protect power system?*

*Earthing of the **neutral** limits the **ground fault current** to a high level (typically 50 amps or more) in order to operate protective fault clearing relays and current transformers.*



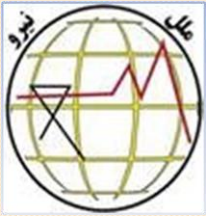
## *Calculation of neutral earthing resistor*

- *Three parameters are needed to specify the earthing resistors:*
  - a)  $U$ : Rated voltage line to line voltage or system voltage (KV)*
  - b)  $I_f$ : Rated fault current (A)*
  - c)  $T_s$ : Duration of the fault (s)*



# *Calculation of neutral earthing resistor*

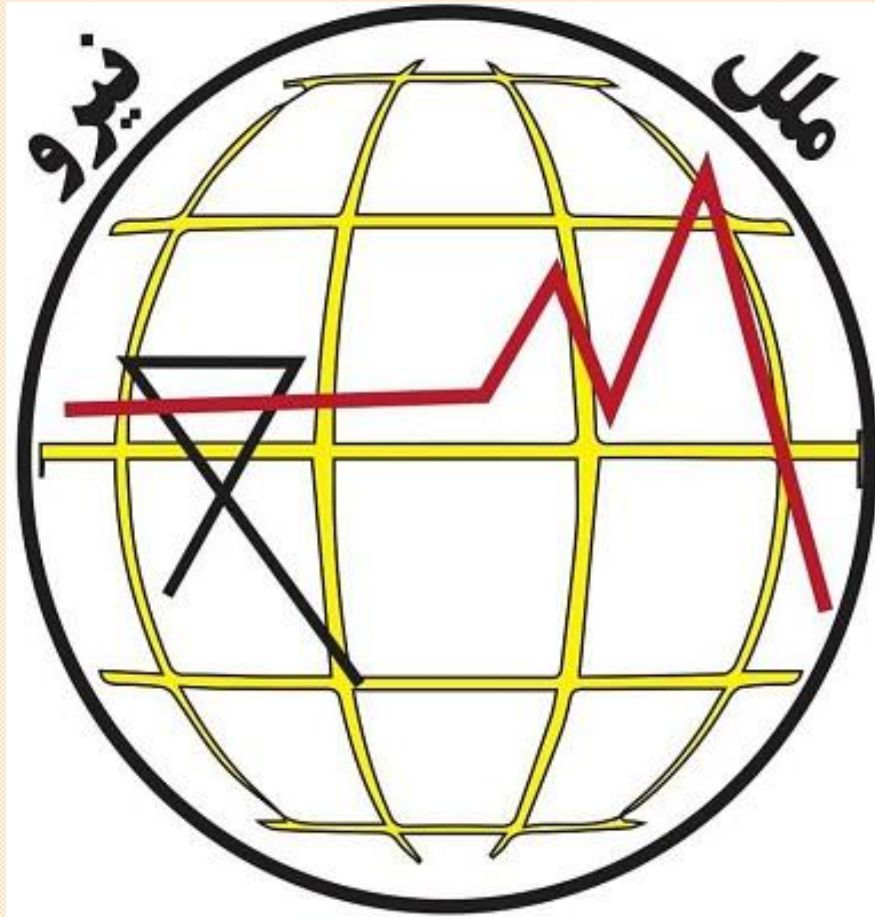
$$\text{Resistance Value} = \frac{U}{I_f \sqrt{3}}$$



## *Calculation of neutral earthing resistor*

- When the flow of an electric current through a resistor is relatively short, dissipation is negligible and the heating temperature of that resistor depends on its capacity to store the electric energy (i.e its heat value itself) in proportion to the mass and specific heat of the material used.*





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