GROUNDING SYSTEM MEASUREMENTS (STEP AND TOUCH POTENTIALS).

"Every electric power installation must include a grounding protection system designed in such a way that, at any normally accessible point of the interior or exterior of the installation, where people could pass or remain, they were exposed to the calculated step and touch potentials as maximum (during a fault at the electrical system or at the network joined to it), by means of the following formulas.

The maximum acceptable touch potential applied (V) depends on fault time and it is calculated by the next formula:

$Vca = K/t^n$

Where: K=72 and n=1 if fault time is lower than 0.9 s.
K=78.5 ad n=0.18 if t fault time is superior to 0.9 s and lower than 3 s.
t = fault time."

The previous quote (a bit unfortunate) corresponds literally to Complementary Technical Instruction MIE-RAT 13, included in High Voltage Standard.

This instruction treats exclusively Grounding Systems.

A Grounding System has two fundamental functions:

a) Providing a neutral return line for currents if a grounding fault occurs.

b) In case of grounding fault, guaranteeing that metallic structures and the accesible environment aren´t exposed to dangerous voltages.

The above-mentioned installations must be verified before start-up and periodically in order to assure that they fulfill correctly its functions.

Step and touch potentials measurement is mandated by regulation and as a reliable way of checking all the involved standard mandates.

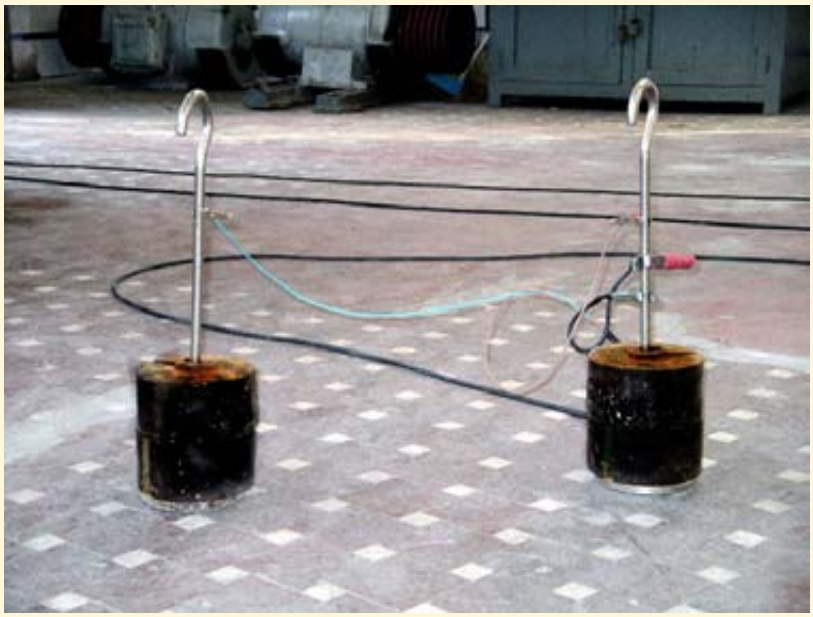
This trial consists in simulating a grounding fault under controlled conditions.

To do that, a normalized value of current is injected between the analyzed grounding grid and a contra-electrode located at a proper distance.

In this situation, the resultant potentials are measured in a number of points representing both interior and exterior of the electrical installation.

The values obtained from the testing current referred, by extrapolation, to the resulted values at fault current.

The comparison of the above mentioned values with the admissible ones (according to the regulation) will allow to verify the fulfillment of aforementioned requirements.



The testing method, the characteristics of the “probes” of measurement and of the instrumentation, as well as the minimal values of current to inject, are established in the technical instruction mentioned in an extended way.