

Polarization Cell for cathodic protection (discharge current 5 kA AC max)



General

The main characteristic of the polarization cell is to not oppose to AC flowing and to stop the DC. In cathodic protection field, polarization cells are used to protect insulating joints on pipes, to discharge the voltages induced in pipelines by atmospheric discharges toward grounding systems and against eventual AC interferences induced by railways on protected structures. The electric conduction fires at a voltage higher than 1.2 V and to obtain higher tensions, more than one cell has to be connected in series while to obtain higher currents has to be connected in parallel.

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Technical details

The Polarization Cell consists of an acid resistant plastic container filled with a solution of potassium hydroxide (electrolyte). Two metallic parallel-connected plates are immersed in the electrolyte and tapped to the terminals located on the insulating cover (Figure B), to which cables from the plant (insulating joints, ground net, etc.) have to be connected. Figure C shows the direct current curve in function of the voltage applied at the terminals: it is to note, on the graph, that the electric conduction fires at voltage higher than 1.2 V. The polarization cell is supplied completed with all accessories, cubicle excluded.

Total volume dimensions are (Figure A):

L = 210 mm; H = 245 mm; P = 100 mm



Polarization Cell activation

The cell activation must be performed on the installation site. The transportation of previously prepared solution is strongly discouraged!

Wear rubber gloves, apron and protective goggles. Keep within reach a basin, a basket of water, a pack of boric acid to wash the eyes and acetic acid to neutralize the action caused from any contact with the electrolyte. Work in a ventilated room, in the absence of open flames and electric arcs caused by electrical equipment contacts. Do not smoke.

WARNINGS

During the preparation of the electrolyte is recommended to use extreme caution and to employ the following measures:

Electrolyte preparation

- 1) Remove the Polarization Cell cover and pour the potassium hydroxide drops/flakes in the transparent container.
- 2) Carefully pour, without splashing 1.5 liter of distilled water up to the mark between minimum and maximum level.
- 3) Mix the liquid slowly with the issued rod. When the potassium hydroxide is completely dissolved in the distilled water, the solution becomes transparent.
- 4) Add the supplied sealant oil to obtain a few millimeters film above the solution.
- 5) Replace the cover immersing the plates in the solution and connect the electric terminals.

INSTALLATION ADVICE

- The installation must be performed by qualified cathodic protection operators trained in the use of chemicals.
- The polarization cell must be installed by following proper safety precautions about gas ventilation.
- Perfect for outdoor installation in cubicles.
- Improper installation may produce hazardous gases for operators.
- The polarization cell is safe for the declared nominal current capacity.
- The current flowing through the polarization cell consumes distilled water and potassium hydroxide according to the intervention time and the operating temperature; the electrolyte level should be periodically checked.



Potassium hydroxide - CAS 1310-58-3 / EC 215-181-3

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