Impressed Current Cathodic Protection Method

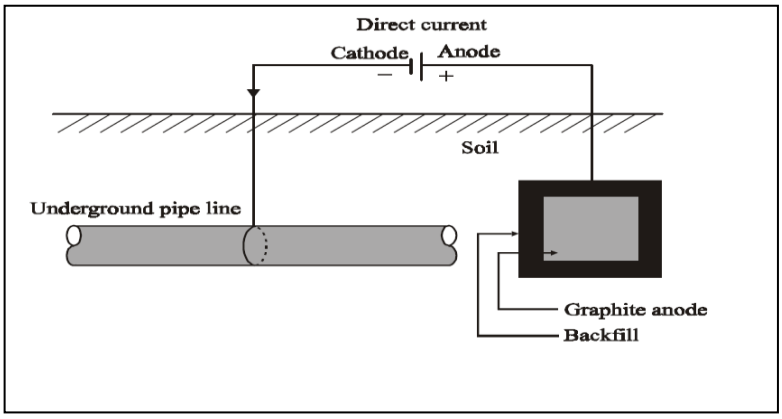
- An impressed current is applied in the opposite direction of the corrosion current to nullify it, and the corroding metal is converted from anode to cathode.
- This can be done by connecting negative terminal of the battery to the metallic structure, to be protected, and positive terminal of the battery is connected to an inert anode.

Inert anodes used for this purpose are graphite, platinised titanium.

The anode is buried in a "back fill" (containing mixture of gypsum, coke, breeze, sodium sulphate). The "back fill" provides good electrical contact to anode

Applications of Impressed Current Protection

Structures like tanks, pipelines, transmission line towers, underground water pipe lines, oil pipe lines, ships, etc., can be protected by this method



Comparison of Sacrificial anode method and impressed current cathodic current method

S.No	Sacrificial anode method	Impressed current method
1	External power supply is not required	External power supply is required
2	The cost of investment is low.	The cost of investment is high.
3	This requires periodical replacement of sacrificial anode	Replacement is not required as anodes are stable
4	Soil and microbiological corrosion effects are not considered	Soil and microbiological corrosion effects are taken into account.
5	This is the most economical method especially when short term protection is required	This is well suited for large structures and long term operations.
6	This is a suitable method when the current requirement and the resistivity of the electrolytes are relatively low.	This is a suitable method when the current requirement and the resistivity of the electrolytes are relatively high.