Protection against corrosion using cathodic protection (Sacrificial anode method)

Definition of cathodic protection (Sacrificial anode method):

- It’s used to protect the structure (metal needed to be protected) by connecting it with another more active metal to form galvanic cell and the more active metal acts as anode and the structure acts as cathode in the galvanic cell as shown in the figure.

Protection against corrosion using cathodic protection Experiment:

1) Weight two sheets of steel (dry and clean from oxide).

Protection against corrosion using cathodic protection Experiment:

- Immerse one sheet of steel in 200 ml solution of ammonium chloride

Protection against corrosion using cathodic protection Experiment:

- In the same time couple the other sheet with (dry and clean form oxide) zinc sheet of the same dimension then immerse them in 200 ml solution containing saturated ammonium chloride solution for 45 minutes.

Protection against corrosion using cathodic protection Experiment:

- Wash each sheet using distilled water then dry with filter paper.

Protection against corrosion using cathodic protection experiment calculation

- Reweight the two sheets of steel.

Protection against corrosion using cathodic protection experiment calculations:

- Rc= Wt. loss / (A * t)
- R= √ (g/cm2.min)
- Rp= √ (g/cm2.min)
- Dp= ((R-Rp) / R)*100
- Where:
- Rc: rate of corrosion.
- R: rate of corrosion of unprotected sheet.
- Rp: rate of corrosion of protected sheet.
- Dp: Degree of protection.