

Corrosion and Cathodic Protection

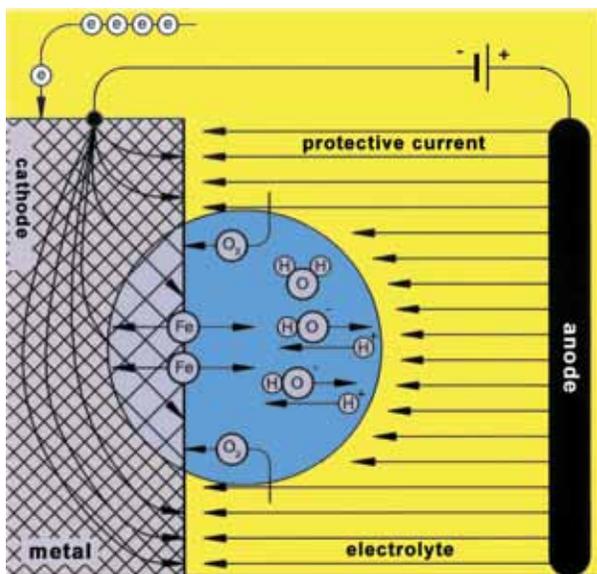
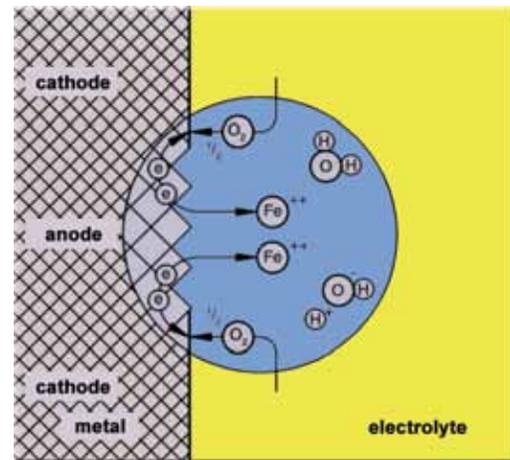
Corrosion

Corrosion is the destruction of a metallic material caused by chemical or electro-chemical reaction with its environment.

In all electrolytes, for example, in earth/ground, rivers or salt water, metal atoms go into solution as electrically charged ions. This corrosion reaction process produces a more or less rapid loss of the metal surfaces. The simultaneous movement of charged ions in the electrolyte and electrons in the metal causes a flow of current in the metal-electrolyte circuit.

The annual cost of loss caused by corrosion increases every year with the growing industrialisation of our society.

The efforts to counteract the destruction of technical or industrial installations valuable to our economy, for instance by the application of protective coatings, are increasing at the same rate. However, coating alone cannot provide complete corrosion protection since it is not possible to avoid minor defects such as pores or cracks in the coating.



The diagram shows how the protective current supplies electrons to the object being treated.

Cathodic Protection

Cathodic protection is a proven and reliable method and is effective even where there are undetected coating holidays. The protective current supplies electrons to the structure which is protected. These electrons cover the electron requirements for the reduction of oxygen which comes into contact with the metal surface. Without cathodic protection, these electrons would provide the decomposition of the metal. Thus, the potential of the metal surface is sufficiently reduced to prevent the disassociation of positive ions from the metal, where formerly an anodic reaction took place. The oxygen is reduced by cathodic reaction. The entire surface of the structure protected is thus transformed into a safe cathode, i.e. the metal is cathodically protected.