

5. SURFACE PROTECTION

5.1 Corrosion

About 4% of the gross national product of a western industrial nation is destroyed by corrosion.

About 25% of this could be avoided by applying existing knowledge.

Corrosion is the reaction of a metallic material with its environment that causes a measurable change to the material and may lead to an impairment of the function of a component or of a complete system. This reaction is usually of an electrochemical nature, but in some cases it may also be of a chemical or metal-physical nature.

We can also observe corrosion in our daily lives:

- Rust on vehicles, railings and fences
- Creeping destruction of road structures, bridges, buildings
- Leaks in water pipelines and heating pipes made of steel

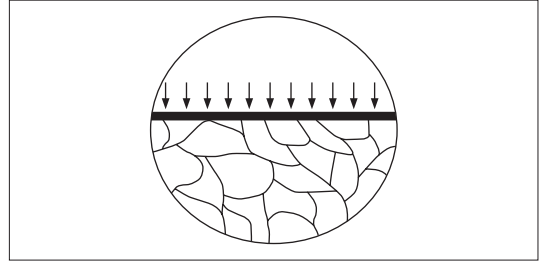
Corrosion is unavoidable – but the damage caused by corrosion can be avoided through the correct planning of suitable corrosion protection measures.

The corrosion system of a screw assembly should, under operating conditions, be at least as corrosion-resistant as the parts that are to be connected.

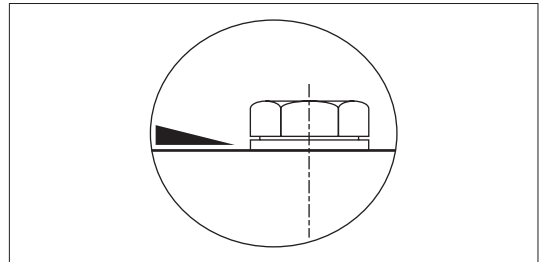
The design engineer's job is to decide on the necessary corrosion protection measures. Here, the wear reserve of a corrosion protection system and the ambient conditions have to be taken into account.

The ways in which corrosion manifests itself can vary greatly. (See DIN 50900 for corrosion types).

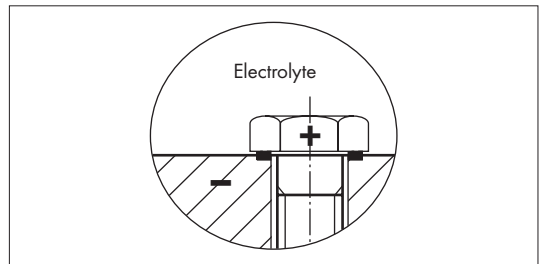
5.2 Corrosion types



Surface corrosion e.g. rust



Crevice corrosion



Contact corrosion