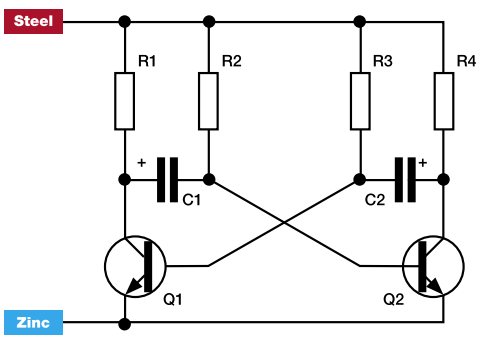
Corrodium anodes. Prevention of corrosion in seawater systems.

Corrodium bv is expert at preventing corrosion in stainless steel seawater systems. Localized corrosion is forestalled by cathodic protection of stainless steel structures such as pipes, pumps and heat exchangers. Galvanic corrosion is eliminated by the use of Corrodium sacrificial anodes.

The anodes are controlled by electronic components such as germanium transistors. Apart from ensuring the ideal protection potential, this generates an electrochemical pulse, which saves on anode consumption and avoids hydrogen embrittlement (an effect of over-protection). No batteries are required: the anode is self-powered. As opposed to anodes with a serial resistor, Corrodium's anodes can be switched to zero resistance, ensuring full current capacity as soon as required.

Like carbon steel, stainless steel can be protected against localized corrosion by being connected to a sacrificial anode. Both the anode and the construction to be protected must be immersed in the same electrolyte (water). The anode will supply a current, i.e. it will dissolve in the water. The current will protect the stainless steel. The same principle works very well for eliminating galvanic corrosion, as may occur if carbon steel caissons sacrifice against stainless steel seawater lift pumps and risers.



APPLICATIONS

1. The anodes are designed for protection in natural water with a resistivity of 600 Ohm. cm or lower. The resistivity of seawater is 30 Ohm.cm.
2. Tubular heat exchangers.
3. Seawater lift pumps. The anodes protect the steel caisson, the NiAl-bronze or stainless steel pump and the stainless steel riser (duplex or super duplex SS).
4. Stainless steel piping and pipelines.
5. The avoidance of galvanic corrosion. For example, corrosion of carbon steel caused by stainless steel, or, protection of stainless steel connected to titanium.
6. Protection of the outside of subsea ferritic/ martensitic or duplex stainless stainless steel pipelines.
7. Protection of stainless steel systems in

corrodium

coastal areas, where the chloride content may vary day by day from 100 mg/liter (river water) to 20.000 mg/liter (sea water). This depends on tidal influences and climatological influences such as wet or dry periods, seasons and such.

8. Protection of stainless steel sandbed filters in swimming pools.

Materials qualifying for the method of protection are stainless steel AISI 316L, ferritic/martensitic stainless steel, duplex stainless steel, super duplex stainless steel and 6% mo steel. In case of protection against galvanic corrosion, carbon steel, copper alloys and titanium qualify as well. Temperatures can vary between 5 and 80 °C.

PROPOSAL

For a design proposal and a quotation, we need the following information:

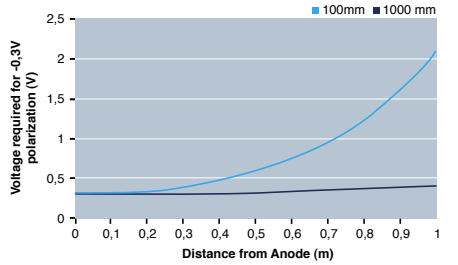
- A drawing, or dimensional sketch.
- A short description of the application. For example: Seawater lift pump with caisson diameter 1000 mm, to be used on a coastal platform (brackish water).
- The conductivity of the water. If used in coastal areas, indicate whether conductivity may vary due to tidal influences.
- The temperature. In case of heat exchanger, the temperature on both shell side and pipe side.
- The water pressure.

CORRODIUM BV

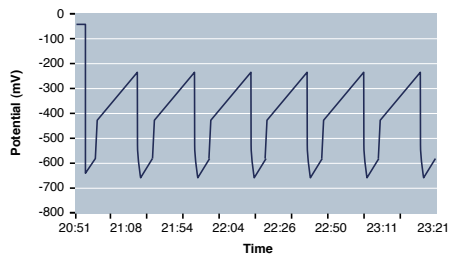
Founded in 1989, we are specialists in corrosion management and the optimisation of materials performance.
Our services include:

- Corrosion engineering and materials selection
- Failure analysis
- Inspection management
- Development of actively controlled sacrificial anodes
- Corrosion monitoring and instrumentation

Clients are active in oil and gas production, the chemical and food industries, as well as public services. We comply with the ISO 9001 standard and the VCA regulations on safety, health and environment.
Corrodium has been consulted as an expert witness in several legal cases.
We have a fully equipped in house laboratory for investigations involving metallography, electron microscopy, EDX analysis and corrosion testing according to various NACE, ASTM and DIN/ISO standards.
Corrodium is a member of NACE (National Association of Corrosion Engineers).
Combining corrosion expertise, with continuous innovations based on practical experience, Corrodium bv provides superior solutions in corrosion management and materials performance.



CP design model. Relation of the pipe diameter to the maximum anode distance for polarization of -300 mV. Brackish water (212 Ohm.cm).



Potential (mV Ag/AgCl2)

Corrodium bv

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