

# Designing Cathodic Protection for Ships

Specialists in corrosion protection since 1989



# Cathodic Protection

## with ICCP

Korrosionsgruppen AB is a specialist in cathodic corrosion protection for ships, both with sacrificial anodes and impressed current systems (ICCP). We have more than 30 years of experience in the design and delivery of cathodic protection, from small boats to large ships.

The system consists of a control unit, inert MMO anodes, and reference electrodes. The anodes can be linear, elliptical, or circular. Each system is designed to meet the specific requirements of the vessel and its operating environment. With the system, you can control the current flow, providing full control over the corrosion protection, even if the coating is damaged or when the vessel operates in water with varying salinity.



Cathodic protection with sacrificial anodes (galvanic protection) utilizes a spontaneous electrochemical process where anodes of less noble metals such as zinc, aluminum, or magnesium are attached to the protected object, such as a ship's hull. An electric circuit is created between the anode and cathode, causing a current to flow from the anodes to the hull. The hull then becomes the cathode and is protected against corrosion. As the current is emitted from the anodes, they gradually wear out – that is, they sacrifice themselves to protect the hull, hence the name sacrificial anodes.



# Design

## INPUT

The design of cathodic protection for ships follows the ISO 20313 standard. For the design process, it is important that the client provides drawings and data as the basis. We design for:

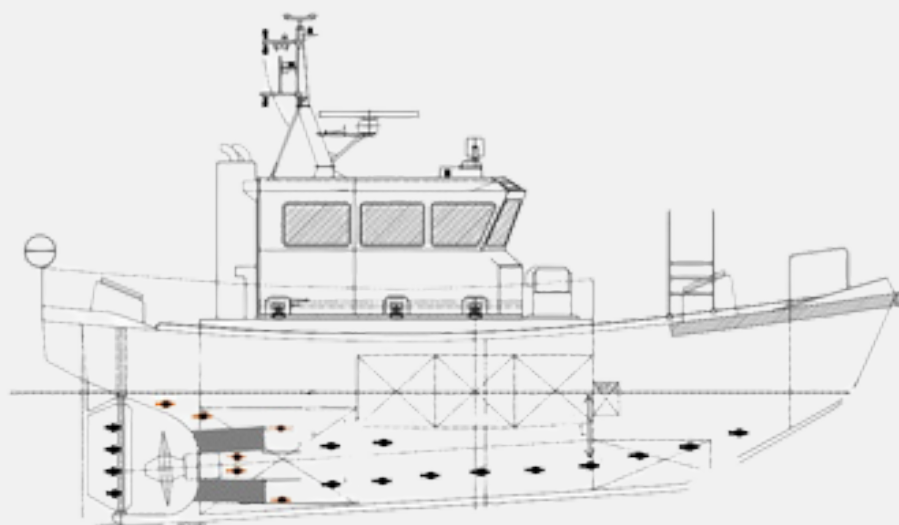
Hull  
Sea chests  
Rudder  
Propeller housing & Propeller

| <b>HULL</b>                        |  |
|------------------------------------|--|
| <b>Geography and conditions</b>    |  |
| <b>Type of vessel</b>              |  |
| <b>Zone</b>                        |  |
| <b>Length perpendiculars (PP)</b>  |  |
| <b>Width</b>                       |  |
| <b>Draft</b>                       |  |
| <b>Hull material</b>               |  |
| <b>Type and thickness of paint</b> |  |
| <b>Paint wear</b>                  |  |
| <b>Desired lifespan</b>            |  |
| <b>Desired service interval</b>    |  |

# Design

## INPUT

|                    |        |                   |        |
|--------------------|--------|-------------------|--------|
| <b>RUDDER</b>      |        | <b>PROPELLER</b>  | %      |
| Height             | meter  | Diameter          | meter  |
| Width              | meter  | Pieces            | st     |
| Pieces             | st     | <b>PROP. DUCT</b> |        |
| Paint thickness    | micron | Length            | meter  |
| <b>RUDDER FLAP</b> |        | Diameter          | meter  |
| Flap height        | meter  | Paint thickness   | micron |
| Width              | meter  | <b>SEA CHEST</b>  |        |
| Paint thickness    | micron | Sea Chest         | m2     |



# Design

## OUTPUT

The detailed design includes the following steps and results in the following drawings and specifications.

**Calculation of Current Requirement**

**System choice and anode types**

**Size of anodes**

**Drawing of component placement**

**Detail and installation drawings**

**Material specifications**

**Maintenance plan and description**

**Protection potentials/zones**

Standard documentation includes a drawing showing the placement of anodes, rectifiers, and reference electrodes (if applicable), along with explanatory texts and calculation data. Drawings of anodes, etc., are included.

We offer fixed prices for design based on the size of the hull, sea chest, or propeller. The standard documentation package includes basic drawings, but more detailed documentation can be provided for an additional fee.

# The Value



## Increased safety

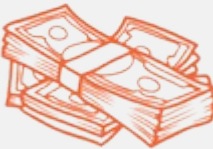
Prevents damage

Prevents weakening in structures



## Longer technical lifespan

Extends the life of the structure Reduces maintenance needs



## Economic savings

Lower maintenance costs

Fewer downtimes due to repairs



## Reduced environmental impact

Chemical-free corrosion protection

Reduced material and resource consumption

