MME Impressed Current Cathodic Protection (ICCP)
The prevention and monitoring of corrosion on the underwater hulls of ships and marine structures are part of the core competences of the MME Group. For this we offer intelligent solutions and supply fully digital Impressed Current Cathodic Protection Systems (ICCP) with high class monitoring options.

This system consists essentially of several Impressed Current Anodes, Reference Cells and a Power Controller Unit.

The danger of corrosion or deterioration of the metals used in the construction of modern ships has posed a problem to ship owners for many years. Of all the various corrosion protection systems used by the shipbuilding industry, ICCP is the most efficient with contact and monitoring solution, and on the longer run also cost effective.

One of our most recent developments are our high frequency controlled ICCP electric power units. The use of big and expensive transformers is not required anymore. Hence, much smaller and lighter power control boxes can be offered at a even more competitive prices.

The main advantages for the choice of ICCP compared to the conventional Cathodic Protection systems, using Sacrificial Anodes, are both technical as commercial, which are as follows:

**Technical:**
- Always the right level of protection, the system compensates for the coating-damage.
- The ICCP anodes are mounted flush in the hull which makes them less vulnerable.
- Hull protection can be monitored and checked whenever required or wanted.
- The option to monitor the condition and protection levels through Internet (MME Xchange tm).
- Automatic operation, requires minimal attention and demands only a little on crew time.

**Commercial:**
- Reduced maintenance costs, the system provides a life time protection.
- Extended docking intervals.
- Fuel savings/ higher speed, better hydro dynamic performance.
- Competitive prices.
- Several ranges to suit vessels of every size.
MME ICCP under extreme conditions

The Impressed Current Anodes, made from titanium with a solid Mixed Metal Oxide coating, cast in high impact resistant epoxy, provides a lifetime protection against corrosion under extreme conditions.

For instance our ICCP Systems have been successfully used on hopper dredgers and ice going vessels for many years. Controlled by MME reference cells the system always provides the correct level of protection.
Shaft Grounding Systems

The shaft grounding drains any current sent out by the ICCP system and/or the sacrificial anodes which may enter into the propeller shaft via the propeller. If undrained, the potential difference between the shaft grounding and the hull may cause stray currents in the propeller shaft bearings or gearboxes, which could lead to corrosion and subsequent premature failure. Generally each propeller shaft must be fitted with a grounding system.

The system consists of a set of silver brushes sliding over a copper slipringWalshed in with a silver strip. The silver brushes are pressed on the silver strip to ensure maximum contact with the least resistance and allow for optimal drainage of the current. The brush holders are mounted to the vessels’ hull via spindles which consist of two types:

- The electrically isolated spindle, brush holder and brush are connected to the power unit to monitor the shaft grounding system’s performance.
- The non-isolated assembly, only a bare metal spindle, is for draining the current to the hull.