

SHAFT GROUNDING SYSTEM SYSTEMS MK-II (NMR-SGS-MK-II) FOR SHIPS

To minimize current flow through the bearings and gears, most ships are fitted with a Passive Shaft Grounding (PSG) system, which electrically grounds the shaft through a mechanical slip ring assembly. As the bearings and seals are not perfectly round and concentric with the shaft, and because of the properties of the insulating oil film, the resistance between the shaft and hull varies as the shaft rotates. This change in resistance modulates the ICCP current flowing down the shaft and generates what is termed the extremely low frequency electric (ELFE) signature of the ship. This modulation of the current generates an electromagnetic wave in the region surrounding the ship. This signature can be detected hundreds of meters away from the ship and can be used to trigger naval sea mines or to monitor and identify particular ships and their movements. To control this ELFE, Naval Materials Research Laboratory (NMRL), Ambarnath has developed a microcontroller based active shaft grounding (ASG) system.

The Microcontroller based active shaft grounding (ASG) is developed to effectively minimize the voltage between the shaft and the hull which significantly reduces fluctuations in current between shaft and hull and therefore reduction of shaft rate extremely low frequency electromagnetic signature (SR ELFE) originating from rotation of shaft. ASG also protects propeller from corrosion.

Salient Features

- ❖ Shaft to hull potential substantially reduces fluctuations in current.
- ❖ Provision for monitoring shaft potential and current
- ❖ Provision for interconnecting with modular ACU and monitoring ASG parameters of ACU.
- ❖ Provision for data logging

Application

Reduction of ELFE signatures and also corrosion protection of ship Propellers.

