

Marconi Radar Systems

Naval Control Equipment

The Control Systems Department of Marconi Radar Systems Limited has been associated with naval equipment since the 1930's. Over the years, the department's activities have covered a wide range of control equipment for shipborne applications. Much of this has become standard equipment for the Royal Navy and many foreign navies.

The Department specializes in weapon servo and stabilization equipment, and in the design, development and production of many 'special to purpose' ships' systems and products.

Marconi Control Systems power servo drives have been used for numerous applications which include :

NAVAL GUNS including 4in, 4.5in Mk5 and 6, 6in, 3in and the new 4.5in Mk8

THE LAUNCHERS for the Royal Navy Ikara, Seaslug, Sea Dart and Seawolf missiles

THE DIRECTOR for the Seaslug missile

THE TRACKING AND ILLUMINATING RADAR for the Sea Dart missile and other radar aerial systems

THE A/S Mk10 anti-submarine mortar.

Other Systems for which the department is responsible include :
GYRO and MAGNETOMETER degaussing equipment used by the Royal Navy

AUTOMATIC VOLTAGE REGULATOR equipment for which sales have been world wide, particularly the successful standard Mk100 VR Series AVR

CATHODIC PROTECTION equipment for the Royal Navy and the navies of Holland, Iran, Argentina, Chile and others

STATIC FREQUENCY CHANGERS and INVERTERS which are being used increasingly to supersede rotating equipment

VARIABLE-SPEED A.C. DRIVES

VARIOUS other equipments include Motor Thermal Protection Units, Temperature Monitoring Equipment and 3-Term Control Systems for specialized requirements.

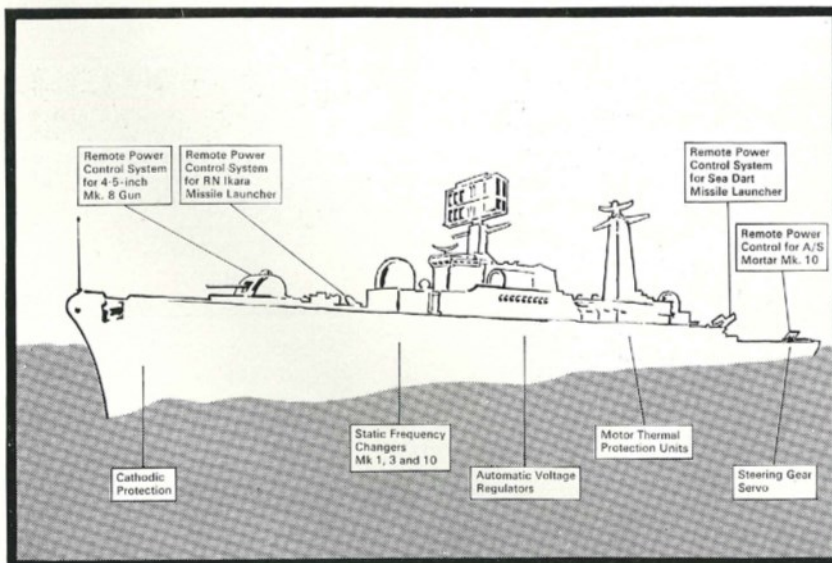
The Control Systems Department has, over the years, applied its expertise and skills to a very wide range of control problems of various types, and are well-qualified to undertake the design, development and production of any new control system requirement.

Power Servos

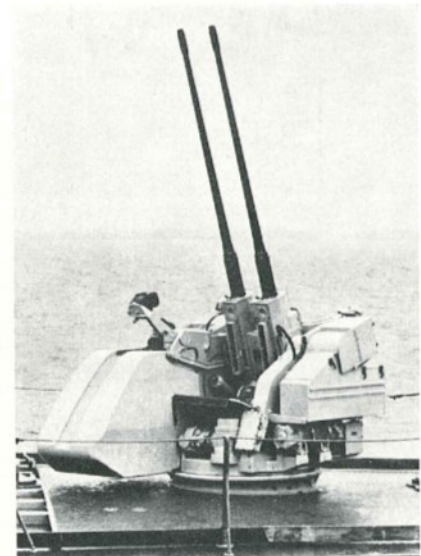
The Marconi Control Systems Department designs and manufactures Remote Power Control (RPC) systems for the launchers and mountings of the most modern weapon systems employed by the Royal Navy. Various types of RPC schemes have been produced, ranging from rotating power amplifiers (e.g. metadynes) as used on twin 30mm anti-aircraft guns and the A/S Mk10 Mortar, electro-hydraulic equipment for the 4.5in Mk6 gun and clutch servos for the Ikara missile, to the modern static power drives on the 4.5in Mk8 gun and the Sea Dart and Seawolf launchers. Private venture development is a continuous activity, improving present techniques and investigating new ideas for better RPC systems. The Department offers a high degree of expertise for cost-effective design, development and manufacture of Power Servo Systems for launchers, mountings and aerial turning gear.



Two anti-submarine mortar batteries.



The typical involvement of the Marconi Control Systems Department in a new generation destroyer.



The A32 twin 30mm anti-aircraft gun mounting (By Courtesy of BMARC Ltd)

Variable-speed A.C. Motor Control

The department has developed techniques for the control of a.c. machines to give them a variable-speed capability. Characteristics produced are similar to those of the separately-excited d.c. motor, but the use of more simple and robust a.c. machines, having no commutators and brushgear, offers advantages.

Typical applications are:

- Power servo drives
- Hoists, winches and capstans
- Pumps
- Air conditioning plant and fan drives



Type EC583 10kVA variable-speed a.c. controller.

The Type EC583 accepts an input of 440V, 60Hz, three-phase, and produces an output at the required motor voltage, 6 to 60Hz.

Variants are available to work to a rating of up to 350kVA with an a.c. or d.c. supply.

Standard Servo Modules

Series 1050

The Series 1050 servo modules employ integrated-circuit amplifiers and are designed to provide similar facilities to the present range of Standard Admiralty Transistor Modules. They are intended for applications which demand flexibility with minimum inter-unit wiring, and also for instrument servos where the number of units must be kept to a minimum.

The use of linear, integrated-circuit amplifiers provides improved reliability and performance at reduced cost.

The modules are housed in a 'C' Frame universal rack system designed to meet Ministry of Defence Shock and Vibration Specifications SES5 and BR2002/1964 (suitably shock-mounted). The units also meet DEF 133 Table N1.

Cathodic Protection System

The Marconi Control Systems Department has developed a new, versatile, and inexpensive Cathodic Protection System which is suitable for installation on vessels of 100 tons and above.

This new system supersedes the AEI/Morgan Cathodic Protection System which has been in service for several years. The electronic control equipment has been re-engineered to take advantage of the latest developments in both components and circuit techniques, with consequent savings in space and cost, and giving improved reliability.

The system is designed to provide complete protection against corrosion of a vessel's underwater hull. It is fully accepted by the Royal Navy as standard equipment for steel-hulled vessels, being considerably more effective than the systems employing only sacrificial anodes, which are used on the majority of ships afloat today. These systems offer only partial protection and the anodes have to be periodically replaced. Complete protection, as achieved with the Marconi system, ensures that the submerged hull remains smooth, preventing any loss in maximum speed and any increase in fuel consumption. Additionally, the need to dock at frequent regular intervals for hull cleaning is eliminated, thus greatly reducing the vessel's 'out of service' time.

The system is designed to full Ministry of Defence (Navy) specifications and can be installed during the shipbuilding phase or during a normal refit.



The new Cathodic Protection control cubicle.

Degaussing Equipment

The purpose of degaussing equipment is to make a vessel appear magnetically neutral, so that magnetic mines, which are operated by disturbances in the earth's magnetic field, are not activated by the passage of the ship.

The information given herein is subject to confirmation at the time of ordering.

Marconi Radar Systems Limited

A GEC-Marconi Electronics Company

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Using fixed coils fitted to the vessel's extremities, the degaussing system generates a magnetic field which will oppose and cancel any magnetic fields due to the vessel itself.

Two major types of degaussing equipment are in use - magnetometer and gyro. The reference information required to set up the magnetic field is obtained either from a magnetometer fixed to the masthead or from the gyro compasses, depending on the type of equipment.

The Department has designed and developed a gyro degaussing system which is used in Royal Navy submarines. More recent magnetometer degaussing equipment, supplied by the department, is intended for use on minesweeper or other vessels requiring a more effective degaussing system.

The magnetometer system includes extensive fault indication equipment, built-in test facilities and quick, easy repair procedures. Developing very little acoustic noise with no interference, the system exploits fully the advantages offered by integrated circuits.

Work has also been carried out on the design of a fixed degaussing range for use in the setting-up of degaussing systems.



A Marconi Degaussing equipment control cubicle.

Standard Admiralty Transistor Modules

A range of transistor modules has been developed, on Ministry of Defence (Navy) contracts, by Marconi Control Systems in association with the Admiralty Surface Weapons Establishment, to meet the need for standard units which can be used in the electronic section of control systems. The range is wide enough to cover the basic requirements of most control systems.

Further information on Naval Control Equipment can be obtained from the Marconi Control Systems series of data sheets.

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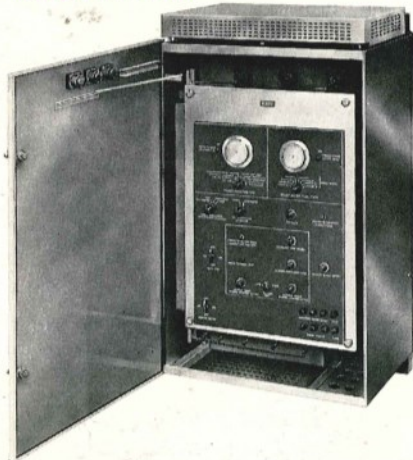
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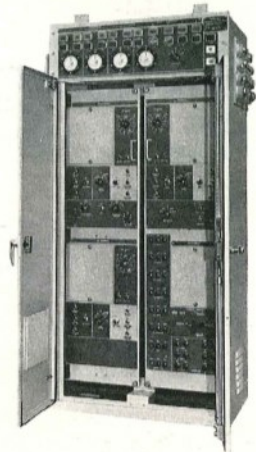
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