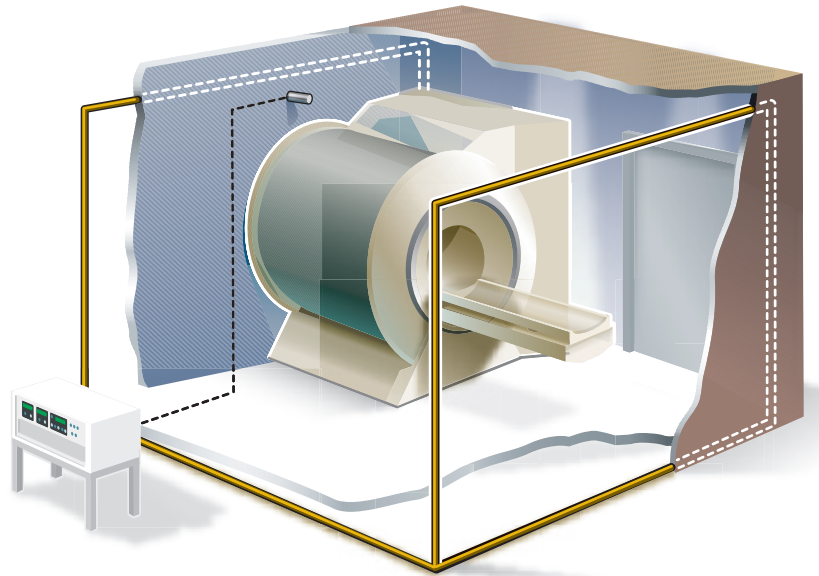


# Magnetic Active Compensation System (MACS<sup>™</sup>)

## Features:

- A high performance, reliable concept in environmental shielding for MRI systems
- Offers protection against fluctuations in magnetic fields caused by subways, transformers, elevators, and moving vehicles
- Uniformly protects from environmental AC/DC magnetic interferences over a wide frequency range
- Can reduce fluctuations in excess of 120 mG to less than 1 mG
- MACS negative feedback technology corrects itself even as the environment changes
- Compatible with all magnets, from 0.2T to 3T and higher



*Closed Magnet*

**ETS-Lindgren's Magnetic Active Compensation System (MACS<sup>™</sup>)** offers a maintenance-free, dynamic method for shielding MRI systems from low frequency environmental AC/DC magnetic interferences. While feed forward systems are less adept at changing with the environment, the MACS negative feedback technology corrects itself even as the environment changes.

All magnets are sensitive to abnormal fluctuations in environmental magnetic fields caused by moving vehicles, trains, elevators, electrical transformers, and other sources. Due to these interferences, many MRI site locations are rejected. Open, high field open, high field (1.5T) and super high field (3T and greater) can now be shielded with the MACS.

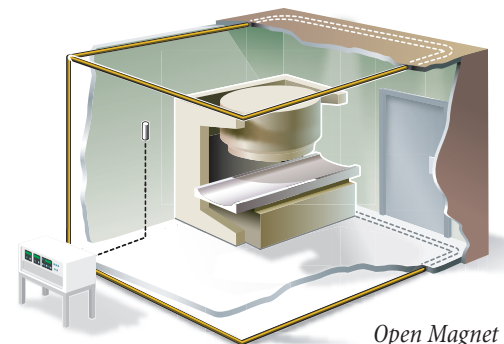
The MACS provides a uniform solution, at DC and through the low frequency spectrum, using a highly sophisticated electronic and magnetic compensation technology.

## Applications

Providing real time compensation of changes in the environmental magnetic field, the MACS allows MRI systems to be placed in locations previously rejected due to the presence of varying high magnetic fields. By reducing these fluctuations experienced by the MRI system, image quality is maintained and defective scanning sequences are virtually eliminated.

## Performance

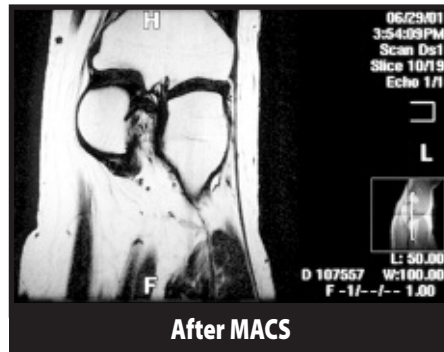
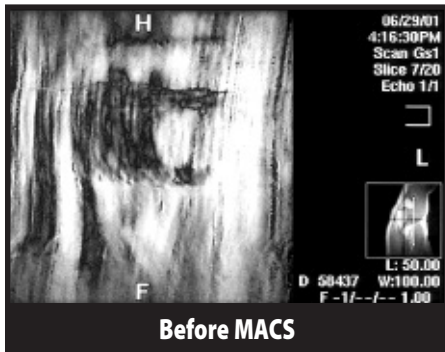
Using a set of Helmholtz coils, a feedback loop and 3-axis sensing magnetometer installed in the room, the MACS monitors



*Open Magnet*

the external magnetic field environment and drives current through the coils to create an equal, but opposite, magnetic field. This produces a net effect of near zero magnetic field fluctuation experienced by the MRI system. Magnetic field fluctuations in excess of 120 mG can be reduced to less than 1 mG at magnet isocenter.

# Magnetic Active Compensation System (MACS<sup>™</sup>)



The MACS reduces fluctuations on the MRI system, allowing for higher quality images (see before and after pictures to the left). The control/amplifier unit (above) measures 20" x 21" x 8.5".

## Maintenance Free Operation

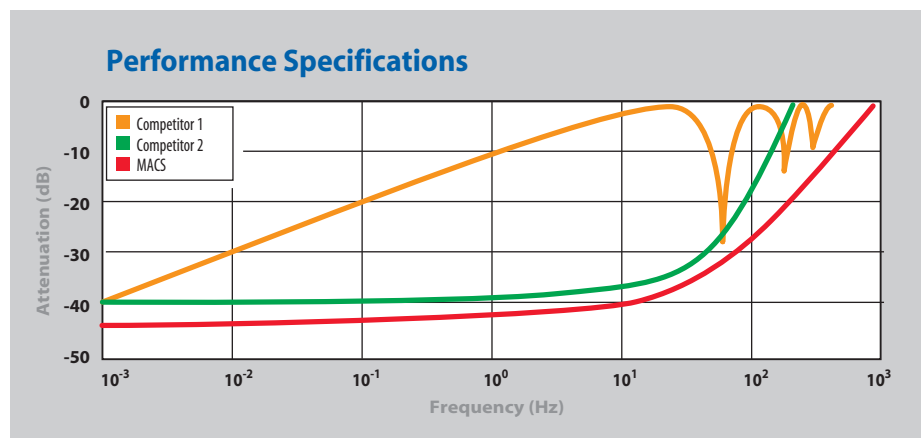
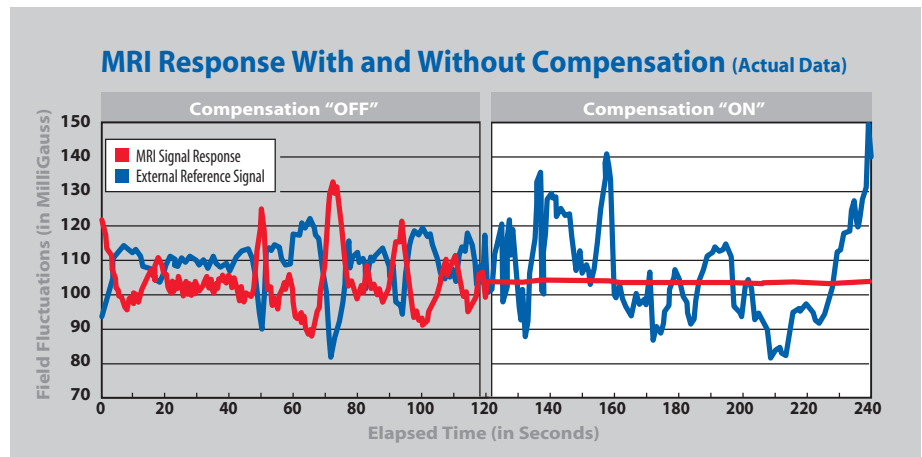
The MACS is designed to require no maintenance or adjustments following initial installation under normal operating conditions. Additionally, the system is designed for 24-hour operation.

## System Installation

The MACS design requires just 2 to 3 days for installation and calibration with support of the magnet vendor. The system can be installed on new MRI sites, or on existing sites. The entire system is located inside the MRI suite, eliminating the need for additional filtering. The control/amplifier unit must be secured in the forward end of the room while the sensing probe is positioned in an optimum, yet unobtrusive location, usually behind the magnet. Coils are installed in a neat and inconspicuous manner, ensuring that the intended appearance of the MRI suite is not compromised.

## Warranty

ETS-Lindgren's standard limited warranty covers parts and service for 1 year.



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