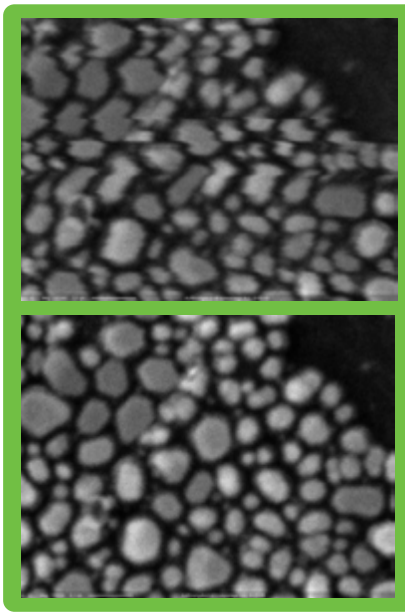
Magnetic field compensation

Effective and reliable shielding from low frequency magnetic fields for highly sensitive devices and applications such as electron microscopes, nanotechnology and biomagnetic examinations.

Disturbing influences are extensively neutralised with opposing fields with reversed polarity. Cable loops are laid around the work area to be protected and opposing fields are generated in real time using magnetic field compensation devices that continuously measure the actual electromagnetic value.
This method is an effective and cost-efficient alternative to expensive magnetic field shielding, for example with metal.

Besides natural magnetic fields that exist everywhere in the universe, the majority of problems encountered when operating sensitive devices arise from low-frequency magnetic fields that are caused by human activities, such as those emanating from electrical power cables, railways vehicles, elevators, etc. These fields occur as soon as electricity flows through a conductor. Without suitable shielding, they expand outwards in a circular form and are quite capable of passing through most materials unhindered.
Magnetic field compensation has established itself as the most cost-effective solution. With this method the magnetic field is continuously measured and a compensation device, which includes the necessary control electronics and power amplifier for the direct connection of compensation coils, generates an opposing field. The compensation coils can be made of coiled cables that are laid at the edges of the laboratory, or as a complete solution integrated in a self-supporting aluminium frame.



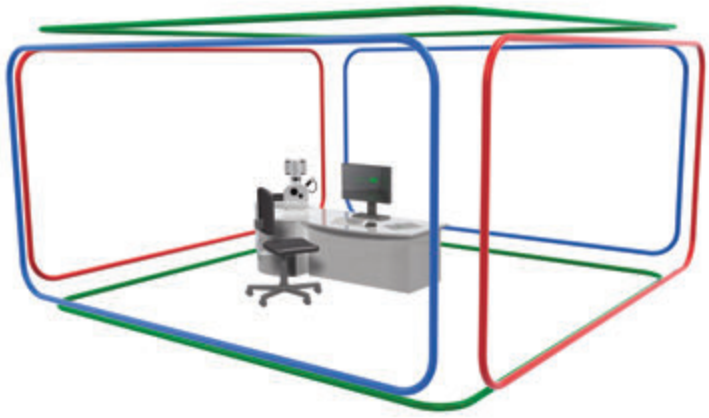
REM image without (above) and with (below) magnetic field compensation

Applications

- Image enhancement in electron microscopy (REM and TEM)
- Biomagnetic applications
- Compensation of mains frequencies (50/60 Hz) and harmonic waves
- Suppression of slow and stepped magnetic fields caused by vehicles, moving magnetic objects, elevators, etc.
- A special version for MRI applications is available

Bilz magnetic field compensation system

- 3 axis automatic real-time compensation of low frequency magnetic field disturbance
- Frequency range DC to 1.000 Hz (1kHz)
- Fluxgate magnetic field sensor with sub Nano Tesla resolution
- Controller mode: AC, DC, AD+DC
- 40 db typical suppression of 50 Hz disturbance
- Compensation coil connection capability
- Measured value and alarm display



Bilz magnetic field compensation using room coils

Integrated coil frame from Bilz for magnetic field compensation

For further information about our products and installation services please call to arrange a personal consultation.