MAGNETIC SHIELDING SOLUTIONS

Examples of sources that require shielding

With our long experience in both metallurgic and electromagnetic engineering we are able to offer a full range of magnetic shielding solutions and products from small components of a few millimeters to large multiple layer shielded rooms.

SOURCES

When very high reductions in the low magnetic frequency range are desired, for example for medical or defence applications, we can provide a customer specific solution to eliminate the negative influence of the source. Those examples of sources are listed below. The frequency of these magnetic fields is typically 50/60 Hz.

- Transformers
- Busbars
- (Power) cables
- Switch gears
- High power transport systems (electric trains, trams, etc)
- large rotating machinery (generators, electro motors, etc)
- Basically anything creating strong magnetic fields due to high currents

These sources usually require shielding due to sensitive equipment that is influenced in a negative way. We also shield hospital rooms where sensitive measurements are conducted nearby elevators. Such a large metal mass can influence sensitive measurement equipment as well.

SENSITIVE EQUIPMENT

Examples of commonly influenced medical recording techniques, sensitive equipment and sensitive signals are listed below, in chronic order.

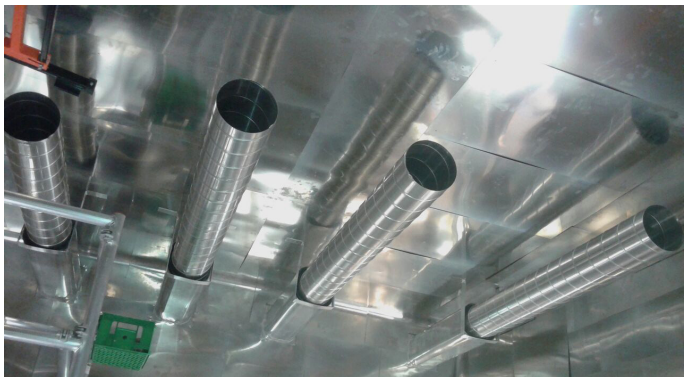
- MCG, MEG and MGG
- EEG, EOG, ECG, EMG (CMAP) and ERG scans
- SQUID or SERF magnetometers
- MRI and NMR spectroscopy
- Electronic article surveillance tags
- Electron microscopes
- PCB's
- Sensory nerve action potentials (SNAP)

PROJECT EXAMPLES

Holland Shielding Systems designs, produces and applies various custom made shielding products for any kind of magnetic electromagnetic problem. The majority of our magnetic shields are suitable for shielding in a large frequency range matching your expectations. Depending on the requirement and specification, shields can be made from Mu-ferro HD for excellent shielding in ELF and below. Its extreme permeability enables the achievement of major shielding efficiencies with a small amount of material and space required.

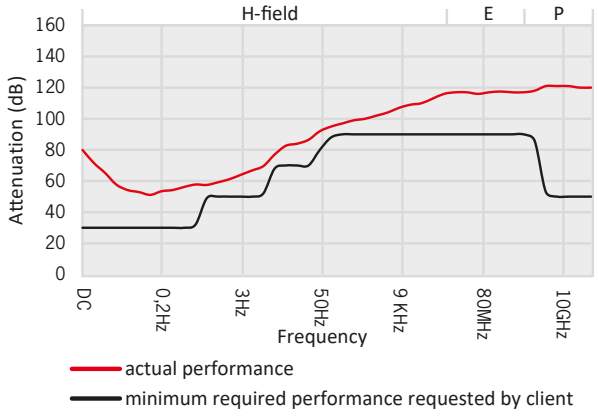
MAGNETICALLY SHIELDED FARADAY CAGE

A cage of Faraday with an enhanced low frequency range shielding capability is depicted below. The pipes constructed in the wall of the cage ensure good ventilation within the room while still maintaining its shielding performance.



Magnetically shielded Faraday cage with ventilation cylinders, during construction

The graph below depicts the performance of the cage from DC to 22 GHz. An extremely wide range performing cage. The cage is magnetically (H-field), electrically (E-field) and electromagnetically (P-field) compatible within this large frequency range.



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TRANSFORMER SHIELDING

The picture below shows three identical shielded isolation transformers. Such a transformer will be placed in close proximity of an electron microscope. Without the effective shielding the electron microscope cannot function properly. The shielding is designed and tested to attain a safe controlled transformer temperature.

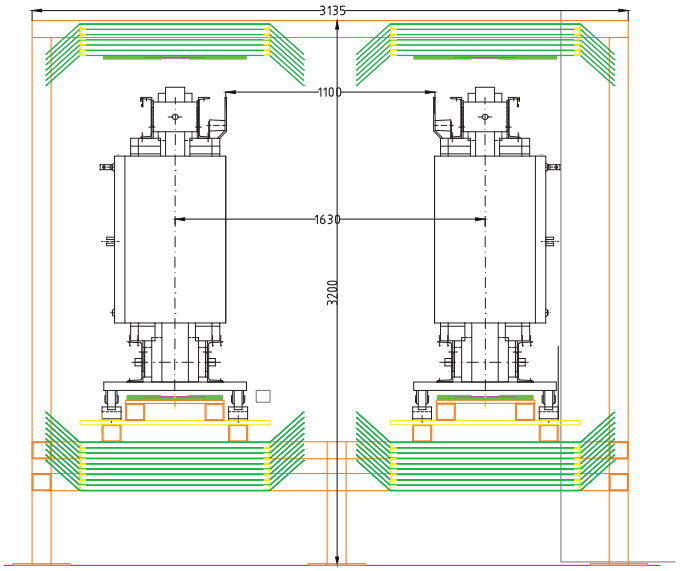
Shielded isolation transformers

MULTI-LAYER REDIRECTION CONSTRUCTION

In order to reduce strong low frequency magnetic fields generated by equipment at an upper floor in a building, multi-layer redirection constructions can be used to attain a high reduction. For example, a construction as depicted below.

Middle voltage transformer with multi-layer redirection construction

Depicted above is a middle voltage transformer with a magnetic shielding construction. We also shield isolation transformers and low- and high voltage transformers, in actuality any type of transformer. A drawing of an engineering design for the multi-layer shielding hats (green) of two transformers is depicted on the right side of this page.



Design of multi-layer shielding placed above and beneath transformer

We can realize shielding measures in any phase of a project, from the design stage to the final stage, and afterwards. In case of an entirely new engineering project we can conduct an in-house research to determine the best custom made shielding solution. We can visualize the field lines of entire magnetic spectra due to our extensive measuring equipment and software programs designed by our engineers.

ENVIRONMENTS

Typical environments of e.g. institutions, municipalities, corporations, governments and private homes experience problems where magnetic radiation sources intervene with sensitive equipment. More specific examples are listed below.

- Hospitals
- Laboratories (nanolab etc.)
- Rooms next to transformers, control cabinets, etc.
- Aluminium melting/production facilities
- Chloride electrolysis labs
- Schools and childcare centers
- Power plants

Please contact us in case your field of activity is different. We can ensure a room meets any (inter) national guideline or your specific requirements.

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