



BESHIELDING
BUSBAR | ENGINEERING | SHIELDING



PARTITIONS

Description of the problem

Shielding of dry-type transformers is often made difficult by the intense magnetic fields they produce. In particular, when they are located near sensitive rooms and in places with limited space, the installation of a high performance shielding system is difficult. Starting with the standard product, BEShielding s.r.l. has developed an innovative, localised transformer shielding consisting of a self-supporting partition to be installed near the transformer. The case presented shows the mitigation of magnetic fields generated by a transformer near a medical room.



Solution

Magnetic induction mitigation is achieved by applying magnetic shielding produced by coupling two different materials: material with high electrical conductivity and material with high magnetic permeability. The combination of the two materials — ferromagnetic and conductive — produces a shield with excellent shielding properties both when close to the shield, thanks mainly to the ferromagnetic component, as well as at a distance from the screen, thanks to the conductive component.

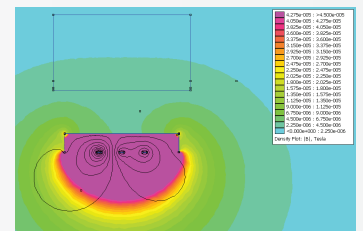


Figure 1 Effect of shielding displaying the magnetic induction levels in the area to be protected

Results

Shielding efficiencies are defined by measuring the shielding factor (SF) performed at the BEShielding S.r.l. research and development laboratory. The tests were carried out by measuring the magnetic induction values emitted by a 630 kVA resin transformer before and after the field mitigation intervention. The test setup and the results obtained are shown at the side.

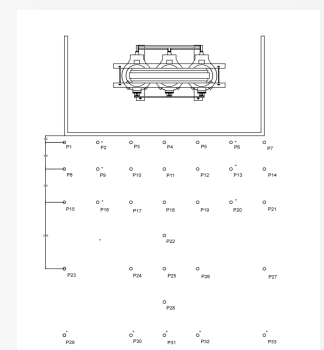


Figure 2 Test layout for determining the shielding factor



BESHIELDING
BUSBAR | ENGINEERING | SHIELDING



PARTITIONS

Risultati

The shielding factor trends indicate a significant reduction in the areas near the shield, decreasing as one moves away from the source. Near the wall bordering the transformer, the magnetic field value of about 100 μT is reduced to below 1 μT .

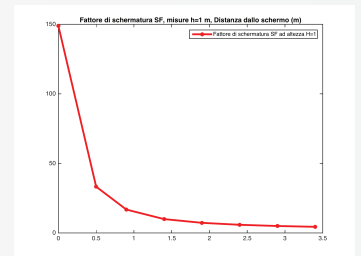


Figure 3 Development of the shielding factor as a function of the distance from the shield at a height of 1 m above ground.