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Development of ELF Passive Shielding Application Using Magnetic Aqueous Substrate

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Abstract : Public concerns on Extremely Low Frequency (ELF) Electromagnetic Field (EMF) exposure have been elongated since the last few decades. Electrical substations and high tension rooms (HT room) in commercial buildings were among the contributing factors emanating ELF magnetic fields. This paper discussed various shielding methods conventionally used in mitigating the ELF exposure. Nevertheless, the standard methods were found to be impractical and incapable of meeting currents shielding demands. In response to that, remarkable researches were conducted in effort to invent novel methods which is more convenient and efficient such as magnetic aqueous shielding or paint, textiles and papers shielding. A mitigation method using magnetic aqueous substrate in shielding application was proposed in this paper for further investigation. using Manganese Zinc Ferrite (Mn0.4Zn0.6Fe2O4). The magnetic field and flux distribution inside the aqueous magnetic material are evaluated to optimize shielding against ELF-EMF exposure, as to mitigate its exposure.

Keywords : ELF shielding, magnetic aqueous substrate, shielding effectiveness, passive shielding, magnetic material
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