Investigation of Possible effects of intermediate frequency magnetic fields

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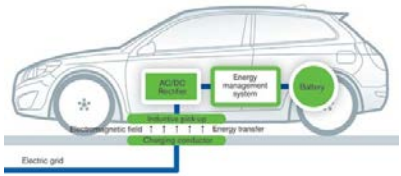
we aim to investigate the possible effects of IF-MF at 85 kHz range, which will be applied for charging EV. We expect that results contribute to risk evaluation of IF-MF.

Recently, high power Wireless Power Transfer (WPT) using intermediate frequency magnetic fields (IF-MF) is putting into practical use. However, few study was done about the biological and health effects of IF-MF.

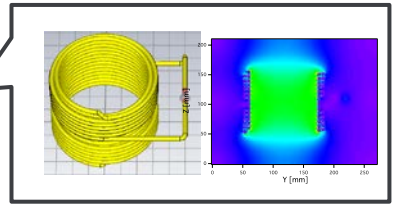


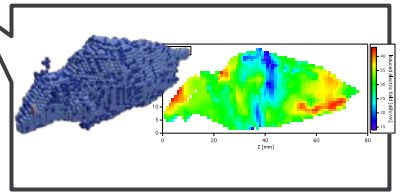
THE DOSIMETRY OF MF EXPOSURE

Calculation of magnetic flux density from inverter circuit and the coil structure

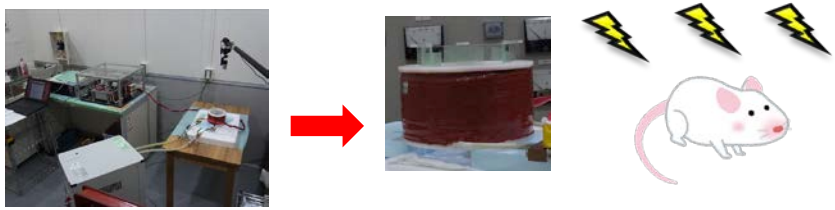
Calculation of internal electric field induced by incident magnetic field

Comparison with the basic restriction of ICNIRP





Exposure apparatus for mice



Biological experiments are now under going.

Endpoints are set on non-thermal effects such as;

- Toxicity on hematology and blood biochemistry
- Oxidative stress
- Behavioral analysis
- GeneChip (gene expression) analysis

Conclusions

- The development of the exposure apparatus, which can flow the sinusoidal current rated at 30 A and 87 kHz has been achieved.
- The electric field strengths induced by our developed apparatus are as follows.
  - ✓ The spatial peak and the whole body averaged values are 3.2 times and 1.0 times larger than the basic restriction level provided by ICNIRP occupational guideline, respectively.
- Exploring the possible biological effects are progressed.

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