B.4.5

# Introduction of mitigation technique to control magnetic field radiated by underground cables

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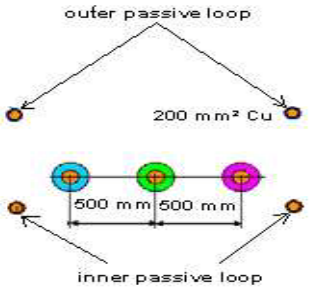
**Passive loop technique**

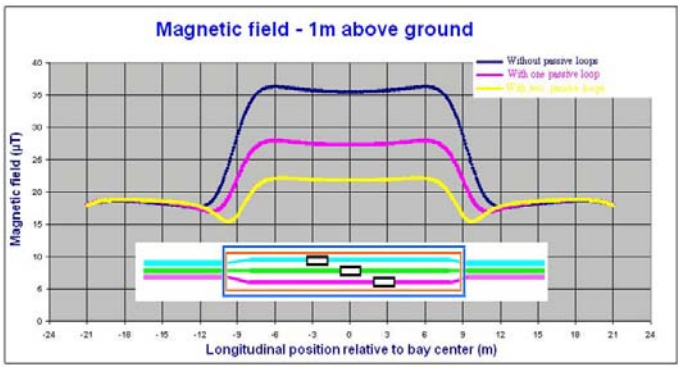
Passive loop technique consists to place one or several parallel compensation conductors shorted at their ends. These conductors form loops. The variation of electromagnetic flux due to the source creates an induced current in the loop. Thus, the induced current creates an induced magnetic field opposite to the magnetic field due to its source (with Faraday's law). The resulting magnetic field is attenuated.

The passive loop is of interest in singular parts of a cable route such as joint chambers. Specific features of this technology are: use of standard cables to build the passive loop, light cables easy to handle and install very limited impact on the civil work. It makes the use of passive loops an economically viable solution.

Author will present details about: influence of the number of passive loops and different arrangements of passive loops near the joint. Example:

- Trefoil configuration : Burial depth = 1.18m
- Flat configuration : Burial depth = 1.7m
- Nominal current of 1500A per phase.
- Voltage : 225kV
- Trefoil configuration interaxis of 290mm.
- Flat configuration interaxis of 500mm.
- Cross section of conductor : 2500mm² CU
- Cross section of compensation conductor : 240mm² CU




Isovalue of magnetic fields on a rectangular plane