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C3-203

CIGRE 2016

# HV Underground Cables Magnetic Field Mitigation Measures

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## SUMMARY

The non stopping growth of urban centers and increasing demand for electrical energy causes more high voltage lines and underground cables installed in cities. As a direct consequence, the generation of Magnetic Fields (MF) is increased due to the new power lines and cables. Magnetic Fields have raised concerns in the population for years by its association with possible health effects.
Before building new facilities it is necessary to assess whether these would meet the requirements of the regulations. Thus it is necessary to have tools that quantify the MF values emitted by the planned facilities.
In the laying of cables, two zones are identified. The first one is where the phases are regularly laid close to each other. The other area is where the joints are made. In this area is where the distances between phases are higher. In the latter, the magnetic field values are higher due to the increase of the separation.
In some circumstances it is necessary to reduce the field levels generated in the joints. To achieve this objective there are different techniques, such as increasing the distance to the point of interest or the implementation of more advanced mitigation techniques.
From a technical and economic standpoint, passive loops are an effective solution, their costs do not represent very high values and they do not require special training of operators for their assembly. These benefits require that the best solution for each particular case must be determined and analyzed by appropriate tools. By considering the main features in the most accurate possible way, a reasonable field mitigation value may be achieved.
In this paper, the results obtained by calculations and measurements of magnetic field are presented, considering the joints areas of underground cables and the application of mitigation techniques using Passive Loops (PL). Generated levels are studied and the effect of introducing passive loops with different characteristics is evaluated and compared.

## KEYWORDS

Magnetic Field, Mitigation Measures, Measurements, Simulation.

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