A B S T R A C T

Transient Analysis of Underground Cables

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Under transient conditions due to lightning strikes, switching surges or insulation failure, the sheath to earth voltage of underground cables could rise to unacceptably high levels. These high sheath voltages do lead to deterioration of the sheath and eventual failure of the cable.

Using the method of Modified Fourier Transform, the procedure for calculating the unit step response of an example cable system has been outlined. The cable system is viewed as being a multiconductor transmission line and hence the voltages on all conductors calculated.

During an intermediate step of the procedure, the propagation parameters of the cable system are calculated. They are used as a means of interpreting the final result i.e. the step response.

The response of the cable to any input could be obtained from the convolution of that input and the pulse response obtained from the step response of the cable. A basis has therefore been set for the transient analysis of underground cables.