

## 高电压技术

### 地下金属管道对变电站接地网接地电阻及其测量的影响

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#### 摘要:

城市变电站附近存在大量的地下金属管道, 会对变电站接地网的接地电阻及其地面电位分布、接地电阻的现场测试产生较大影响。用基于场路耦合的数值计算方法对变电站接地网和金属管道的散流分布、接地电阻和地面电位分布进行了计算, 分析了不同土壤环境下和金属管道是否有防腐层对接地网的接地电阻和地面电位分布的影响, 分析了地下金属管道对接地电阻现场测试的影响。结果表明, 当金属管道距离接地网越近和金属管道越长时, 对接地网的影响越大; 金属管道的防腐层能有效降低对接地网的影响; 地下金属管道对其沿线附近的地电位影响较大, 在现场测试接地电阻时应给以重视。

#### 关键词:

### Impacts of Underground Metal Pipelines on Grounding Resistance of Substation Grounding Grid and Its Measurement

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#### Abstract:

In modern cities, there are lots of underground metal pipelines near urban substations and the pipelines have evident impacts on grounding resistance and surface potential distribution of substation grounding grid as well as on field testing and measurement of grounding resistance. Using numerical calculation based on field-circuit coupling, the current spread distribution, grounding resistance and surface potential distribution of substation grounding grid and metal pipelines are calculated; the impacts of different soil environments and whether metal pipeline possesses anticorrosive coating on grounding resistance and surface potential distribution of substation grounding grid are analyzed; the impact of underground metal pipelines on field testing and measurement of grounding resistance are also analyzed. Analysis results show that the nearer the metal pipelines close to grounding grid and the longer length the metal pipelines possess, the more evident the impacts on grounding grid will be; the anticorrosive coating of metal pipelines can effectively reduce the impacts of metal pipelines on substation grounding grid; the impact of underground metal pipelines on surface potential along the pipelines is evident, so special attention should be paid to it during field testing and measurement of grounding resistance.

#### Keywords:

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