

特高压输电线路状态监测技术的应用

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摘要

中国正在建设第一条特高压交流输电工程晋东南—南阳—荆门1000kV特高压示范工程。输电线路的安全可靠运行在很大程度上决定着整个特高压输电系统的稳定和安全。为充分保障输电线路的可靠运行,有必要在特高压输电线路采用先进的状态监测技术作为补充。分析和总结了现有的输电线路状态监测技术,包括绝缘子污秽监测、雷电监测、环境监测、导线微风振动监测等在线监测技术,以及红外检测、紫外检测、超声波法检测、电场法检测等带电检测技术,对各种技术的优缺点及其在特高压线路中的应用给出了建议,建议在特高压线路中使用环境监测、导线微风振动监测、红外检测、紫外检测等成熟技术。

关键词 [输电线路; 特高压; 状态监测; 在线监测; 绝缘子; 高电压技术](#)

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Application of Condition Monitoring Technologies for UHVAC Transmission Lines

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Abstract

At present, China is building her first 1000kV UHVAC power transmission project from southeast Shanxi Province via Nanyang in Henan Province to Jingmen in Hubei Province. The stability and security of whole UHVAC power grid greatly depends on the secure and reliable operation of transmission lines, thus it is necessary to adopt advanced condition monitoring technology to adequately ensure the reliable operation of transmission line. The author analyzes existing condition monitoring technologies for transmission lines, including the on-line monitoring techniques such as insulator contamination monitoring, thunder and lightning monitoring, environment monitoring and conductor aeolian vibration monitoring, as well as the live-line monitoring techniques such as infrared detection, ultraviolet detection, detection by ultrasonic method and detection by electric field method; summarizes the advantages and disadvantages of above-mentioned monitoring and detection technologies; and it is suggested that to apply the mature technologies such as environment monitoring, conductor aeolian vibration monitoring, infrared detection and ultraviolet detection in UHVAC power transmission projects.

Key words [transmission line; UHV; condition monitoring; on-line monitoring; insulator; high voltage engineering](#)

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