

基于 k-means 聚类的变压器故障诊断方法研究

摘 要

电力变压器是电力系统中输变电的重要设备，其故障诊断方法是维护电力系统稳定的重要措施。基于 DGA 数据的电力变压器故障诊断方法能够及时发现变压器的潜在故障，而且还能对变压器正常运行中的故障进行处理，从而将变压器从常规维护的现状逐渐改变为在线监测，此举可以大大增强变压器的运行能力，有巨大的现实意义。在理解目前的变压器诊断方法的长处和不足之处的基础上，本文尝试将 k-means 聚类算法应用于油浸式电力变压器故障诊断，探索一种基于 DGA 数据的电力变压器故障诊断的新方法。

本文提出了基于 k-means 聚类算法的油浸式电力变压器故障诊断方法。运用此算法先建立模型，对数据样本的特性可能会对诊断结果产生的影响进行了具体分析，完善了故障诊断的具体过程。该诊断方法可以比较准确的输出诊断结果；具有较快的诊断速度，可以用于变压器的状态监测；能够解决在较小数据样本下的变压器故障诊断问题。

关键词：DGA;故障诊断；电力变压器；k-means

Abstract

Power transformer is an important equipment of power system transmission and transformation, and its fault discrimination is one of the important measures to maintain the stability of power system. The method of transformer fault diagnosis based on dissolved gas analysis (DGA) data can discover the faults of transformer in time. In addition, it can deal with the faults in the normal operation of the transformer, so as to gradually change the current situation of the transformer from routine maintenance to online monitoring, which can greatly enhance the operation ability of the transformer. It means a lot. On the basis of understanding the advantages and disadvantages of current transformer diagnosis methods, this paper attempts to apply k-means clustering algorithm to oil immersed power transformer fault diagnosis and explore a new method of power transformer fault diagnosis based on DGA data .

A fault diagnosis method for oil-immersed power transformer based on k-means clustering algorithm is proposed. Using this algorithm, a fault diagnosis model is established, the influence of the selection of characteristic variables on the diagnosis performance is analyzed, and the specific implementation process of the diagnosis method is given. The diagnosis method can output the diagnosis results more accurately; It has fast diagnosis speed, can be used for transformer condition monitoring, and can solve the problem of transformer fault diagnosis under small data samples.

KeyWords: Dissolved gas analysis; fault diagnosis; Power transformer; k-means

以上内容仅为本文档的试下载部分，为可阅读页数的一半内容。如要下载或阅读全文，请访问：

<https://d.book118.com/368100142074006120>