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基于频谱法与神经网络的航空起动发电机的故障检测与诊断

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Fault Detection and Diagnosis of Aero-Starter-Generator Based on Spectrum Analysis and Neural Network Method

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摘要 应用频谱法对航空直流起动发电机发电状态进行故障检测与诊断。采用对电机的电枢纹波电流信号进行频谱分析,提取该信号在频率域特征量,将频谱特征向量作为学习样本,通过训练,使神经网络能够反映频谱特征向量和故障类型的映射关系,从而达到故障检测与诊断的目的。电机故障实验和分析表明,与常规方法相比,频谱分析与神经网络相结合的方法进行实时检测和诊断具有简单、有效等优点。

关键词: 航空直流起动发电机 故障检测与诊断 频谱分析 神经网络

Abstract: This paper discusses the fault detection and diagnosis of Aero-Starter-Generator. Applying the method of Spectrum Analysis to the motor current to get the characteristics of this signal in frequency domain, and then using them as learning samples to train the network for realizing the mapping relationship between the fault and the spectrum characteristic, this method can be used for detection and diagnosis of the motor faults efficiently. The fault experiments show that the proposed method can detect and diagnose the faults of Aero-Starter-Generator easily, efficiently and in real-time.

Keywords: Aero-Starter-Generator fault detection and diagnosis spectrum analysis neural network

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