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损伤状态下变电构架可靠性分析的实用模型(PDF)

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Title: A practical model for reliability analysis of damaged framework of power transformer

作者: [张哲^{1; 2}](#); [张猛¹](#); [李天¹](#)

1. 郑州大学土木工程学院, 河南 郑州 450001;
2. 同济大学建筑工程系, 上海 200092

Author(s): [ZHANG Zhe^{1; 2}](#); [ZHANG Meng¹](#); [LI Tian¹](#)

1. School of Civil Engineering, Zhengzhou University, Zhengzhou 450001, China;
2. Department of Building Engineering, Tongji University, Shanghai 200092, China

关键词: [损伤](#); [可靠性](#); [惯性矩](#); [响应面法](#)

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摘要: 按照结构形式对常见的变电构架进行分类,根据其中受损杆件的不同损伤类型,建立了截面面积损伤率和截面惯性矩损伤率之间的相关关系表达式,并以此来修改损伤杆件的单元刚度矩阵.在随后的结构可靠度分析中,采用响应面法和Monte Carlo法与有限元程序结合,使构件截面几何参数产生大量不同损伤水平的样本,从而得到不同损伤水平下各类变电构架结构的响应及其可靠度指标的变化规律,所得结论可供变电构架的安全监控参考.

Abstract: The usual power transformations frame were classified by their structural styles and the corre lativity expressions between the member' s section area damage rate and section inertia moment damage rate were established, and based on this, the element stiffness matrixes of damaged members were modified.In the subsequent finite element analysis of the structure, combining the response surface method and Monte Carlo method, a large number of samples were generated to smiulate geometric parameters of the member under different damage level, and the characteristics of structure reliability were gotten, which can provide re ference to structures safe monitoring.

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作者简介:张哲(1977-),男,讲师,博士生,主要从事钢结构和工程防灾研究.E-mail:zzhe@zzu.edu.cn
