

表面与界面工程

磁阻探头系统腐蚀速率解析及在大气腐蚀中的应用

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摘要 磁阻探头技术是一种新的腐蚀检测技术,该技术使用范围广,可获得腐蚀速率的定量表征。基于信号降噪技术和相关的数值分析,提出了新的磁阻探头(IRP)数据处理的积分过滤算法(IFA)。并建立一套完整的磁阻探头腐蚀数据处理环境,该环境基于作者最新提出的范式腐蚀数据标记语言。数据处理环境良好的用户界面大大简化了磁阻探头的数据处理,促进了数据的共享。本工作将IRP用于大气腐蚀早期行为的研究,根据测试结果从多方面验证了解析方法的可靠性及适应性。计算结果完全反映了实测曲线随时间变化的所有特征,与自然环境大气腐蚀结果的对比证明了计算结果的准确性。

关键词 [大气腐蚀](#); [磁阻探头](#); [数值分析](#); [计算平台](#)

分类号

Numeric analysis of inductive resistance probe and application in atmospheric corrosion

Abstract

Inductive Resistance Probe (IRP) is a new corrosion-monitoring technique for corrosion rate quantitative evaluation of iron-based metals and alloys in various environments. However, its built-in data processing and analysis offer limited capability to obtain corrosion information. A new Integration Filter Algorithm (IFA) was proposed to process data collected by IRP measurement system. A web-enabled computer software with an excellent graphic user interface (GUI) was developed for easier data processing and sharing among users and user groups. The reliability and suitability were proved theoretically and by experimental results. The atmospheric corrosion measurement with IRP is presented to demonstrate the consistence of calculated corrosion rate with the measured rate. The result indicates that the proposed IFA algorithm plus data processing environment is an excellent alternative of the built-in data processing procedure.

Key words [atmospheric corrosion](#); [inductive resistance probe](#); [numerical analysis](#); [computer software](#)

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