实时监控下土石坝碾压质量全仓面评估

Compaction quality evaluation of the entire rolled unit of earth dam based on real-time monitoring

中文关键词：土石坝施工　碾压　质量控制　质量评估　实时监控　神经网络模型

英文关键词：Earth dam construction　compaction　quality control　quality evaluation　real- time monitoring　artificial neural networks

基金项目：

作者	单位
刘东海	天津大学 建筑工程学院，　天津 300072
王光烽	天津大学 建筑工程学院，　天津 300072

中文摘要：

　　采用常规监理旁站方式监控土石坝碾压参数以及事后试坑取样检测的质量管理手段，往往有较大的人工误差 依托土石坝施工质量实时监控技术，　获得了施工仓面任意位置处的碾压参数值(碾压速度　激振力　碾压遍数和压实厚度）在分析碾压参数与压实质量标准(干密度或压实度）之间相关性的基础上，采用三层前向式 ANN 模型，建立碾压参数和压实质量标准之间的非线性映射关系，并提出了全仓面碾压质量评估的具体流程，获得仓面任意位置处的压实度以及全仓面的碾压质量达标率,该方法可有效避免以有限个试坑检测样本评价整体仓面碾压质量的片面性，为现场施工质量控制提供了新的途径.

英文摘要：

　　Site supervision of roller compacting parameters and pits sampling are conventional ways for the quality control of earth dam construction. However, personal errors and slips of quality management may often appear. By using real- time quality monitoring technology of earth dam construction, the real- time compaction parameters at any position of the working area including rolling speed vibration force, rolling passes and compacted thickness can be collected. Based on the correlation analysis between compaction parameters and quality index (dry density or compaction degree), the nonlinear mapping relationship between input (compaction parameters) and output (quality index) was established using an three layers feed-forward artificial neural networks model, and a process of compaction quality evaluation of the entire rolled working unit was suggested to estimate the compaction degree at any position and the proportion of the acceptable area. This method can effectively avoid the incorrect assessment for the rolling quality of the entire working unit according to limited observations of pit sampling.

查看全文　　查看/发表评论　　下载PDF阅读器