

T型导轨翘曲变形矫正的载荷-行程模型 Load-stroke Model for Straightening the Warpage of T-rail

周磊 余忠华

浙江大学

关键词: T型导轨 载荷 行程 翘曲 矫正

摘要: 根据弹塑性力学理论,分析了T型导轨翘曲矫正过程中所经历的弹性加载、弹塑性反弯和卸载回弹这三个变形阶段,推导了各个阶段的矫正载荷、弯矩和行程间的关系,给出各变形阶段的载荷-行程关系式,从而建立T型导轨翘曲变形矫正的载荷-行程模型。利用该模型,可根据导轨的初始翘曲挠度快速、准确地计算出相应的矫正行程。为验证该模型的正确性,以T89/B型导轨为例进行了实验对比分析,其结果表明该理论模型与实验所得出的矫正行程间的相对误差在10%以内,该模型是切实可行的,可为T型导轨全自动翘曲矫正机的开发提供理论支持。 Three deformation stages of straightening T-rail's warpage, including elastic deformation, elastic-plastic deformation and elastic unloading springback, were analyzed according to the elastic-plastic mechanics theory, the load-stroke expressions of three deformation stages were gained through deriving relationships among load, bending moment and stroke, and then the straightening load-stroke model was established. By using the model, the straightening stroke could be calculated directly and accurately according to the initial deflection. In order to verify the model presented, taking T89/B guide rail for example, the straightening experiment was conducted. Comparing the calculation strokes by model with experimental results, the relative errors are less than 10%. It showed the presented model was practical. It will give theoretical support to the development of automatic machines for T-rail's warpage straightening.

[查看全文](#) (请使用Adobe Acrobat 6.0版本浏览) [返回首页](#)

[引用本文](#)