

A Simple Low-Cost 2-D Optical Measurement System for Linear Guideways

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Abstract : In this study, a simple 2-D measurement system based on optical design was developed to measure the motion errors of the linear guideway. Compared with the transitional methods about the linear guideway for measuring the motion errors, our proposed 2-D optical measurement system can simultaneously measure horizontal and vertical running straightness errors for the linear guideway. The performance of the 2-D optical measurement system is verified by experimental results. The standard deviation of the 2-D optical measurement system is about 0.4 μm in the measurement range of 100 mm. The maximum measuring speed of the proposed automatic measurement instrument is 1 m/sec.

Keywords : 2-D measurement, linear guideway, motion errors, running straightness

Conference Title : ICIT 2014 : International Conference on Industrial Technology

Conference Location : Istanbul, Türkiye

Conference Dates : January 27-28, 2014