8-13-2012

A Dynamic Model of a Belt Driven Electromechanical XY Plotter Cutter

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DETC2012-71004

Technical Publication

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Abstract

Currently, models for XY plotter cutters specific to industrial and arts and crafts applications are not publicly available. This paper mathematically models the XY motion control for commercial plotter cutter. In this particular application, the Y motion is controlled by media feed and the X motion is controlled by a gantry arm. A dynamic electromechanical model consisting of a governing system of differential equations for the gantry arm is developed and simulated using Matlab. The model will be experimentally verified using a PID control scheme implemented on an Arduino microcontroller. Once the model is developed, it will be used to decrease development time and optimize performance parameters.

Session: MR-3-1 Modeling and Dynamics