

ECONOMICAL HIGH ROBUSTNESS AND PRECISION LINEAR GUIDE

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Rezumat. *Mediul de afaceri modern cere sisteme de producție care propun o utilizare facilă, sunt flexibile, au productivitate ridicată, fără mentenanță sau una redusă și care pot fi amortizate în timp scurt. Lucrarea de față descrie o soluție pentru un sistem mecanic automat, care poate genera o mișcare rectilinie de precizie, de o manieră economică, fără mentenanță, capabil să funcționeze în mediu puternic contaminat cu particule fine de praf și pulberi.*

Abstract. *Today's business environment demands production systems that are easy to use, flexible, yield great output, require little to no maintenance and provide great return of investments in short periods of time. This work focuses on providing a solution for a linear guide that is economical, light weight, precise and maintenance free. The guide comes within the scope of developing an automated linear axis that may be used in a heavily air borne contaminated environment.*

Keywords: Linear guide, flexure, maintenance free, high accuracy.

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1. Introduction

Production machines have historically been built out of long-lasting materials with many decades of use in mind. These machines are expensive, making them a risky investment, cover their costs over long periods of time, provide great risks of rapidly becoming technologically obsolete and generally require large factory floor footprints. Industry 4.0 brings new meanings to fabrication technologies, focusing on flexibility and performance rather than longevity and absolute quality. The new paradigm promises fast responses to change, enabling the industry to better follow an ever-increasing market dynamic. New machines are based on ultra cost efficient materials, such as polymers and construction steels and take advantage of highly complex electromechanical subassemblies that compensate for lack of either mass or rigidity or even both. Additive manufacturing can provide significant benefits by allowing the generation of lighter, stiffer and more robust mechanical bodies. The outcome are lighter, smaller, lower cost machines that eliminate the risks normally associated with classical production machines.

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