

APPLICATIONS OF PNEUMATIC MUSCLES DEVELOPED AT THE FESTO REGIONAL RESEARCH AND TRAINING CENTRE OF BRAȘOV

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Abstract. *Compressed air is one of the most important sources of energy in industry, pneumatic actuations tending to hold an increasing share in the conception of modern industrial systems. At present, due to the development of new pneumatic components and systems assemblies of high complexity can be achieved, many of them with applicability in robotics. Such a component is the pneumatic muscle, increasingly deployed in actuation systems, particularly in the field of industrial robots. The paper presents some of the results of research conducted at the Festo Regional Research and Training Centre (FRRTC) at Transilvania University of Brașov.*

Keywords: Pneumatic muscle, robotics, pneumatic drives

1. Introduction

Compressed air is one of the most efficient means of actuation and automation of manufacturing systems. Its deployment in actuations goes back as far as 2300 years, and at present knows a strong trend of implementing in an increasing number of industrial applications.

The continued development of pneumatic actuations has evolved from utilisation of individual components to that of complex automation systems. The developed systems included in addition to classical pneumatic structures also mechanical, electronic and sensorial elements. Figure 1 presents the evolution in time of pneumatic automation constructive solutions [1].

The increasing range of compressed air industrial applications is due to its advantages, like easy generation and storage, nonflammability and minimum explosion risk, low-maintenance efforts, etc. Another important advantage offered by compressed air is the clean working environment, rendering it eligible for environment-friendly processes, as *e.g.* those in food, electronics or pharmaceutical industry.

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