

Methodology for the Analysis of Energy Efficiency in Pneumatics Systems

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Abstract : The present article presents a methodology for the improvement of the energy efficiency in pneumatic systems through the restoring of air. In this way, three techniques of expansion of a cylinder are identified: Expansion using the air of the compressor (conventional), restoring the air (efficient), and combining the air of the compressor and the restored air (hybrid). The methodology starts with the development of the GRAFCET of the system so that it can be decided whether to expand the cylinder in a conventional, efficient, or hybrid way. The methodology can be applied to any case. Finally, graphs of comparison between the three methods of expansion with certain cylinder strokes and workloads are presented, to facilitate the subsequent selection of one system or another.

Keywords : energetic, efficiency, GRAFCET, methodology, pneumatic

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