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Autore	Rufe Alfred
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Sommario/riassunto

This text explains the use of compressed air for energy storage and efficient pneumatic applications. Chapters cover the elementary physical and engineering principles related to compressed air, including compression and expansion characteristics, adiabatic, polytropic, and isothermal phenomena, and energy content within a given volume. The author also discusses the advantages and drawbacks of pneumatic technology and presents innovative ways to increase the energetic efficiency of pneumatic actuators. A key highlight of the book is the introduction of a method to enhance energetic efficiency by incorporating expansion work alongside constant pressure displacement. The author presents an analysis of various cylinder assemblies where energy efficiency is notably improved compared to conventional pneumatic actuators. The book serves as a primary reference for mechanical engineering students and as a handbook for engineers designing efficient pneumatic devices. Key Features: Fundamental and advanced information about actuators and their pneumatic applicationsFocus on energy efficiency testingSystematic chapter order for effective learning progression, with a working example to support comprehensionReferences for further readingAppendices providing additional insights and resources Readership Mechanical engineering students and engineers working on pneumatics.