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| Nota di contenuto | Cover; Title Page; Copyright; Contents; Introduction; Notations and Acronyms; 1: General Considerations; 2: Reliability; 3: Hydraulic Fluid and its Conditioning; 4: Hydromechanical Power Transformation; 5: Power Metering in Hydraulics; 6: Power Management in Hydraulics; 7: Architectures and Geometric Integration of Hydraulically-supplied Actuators; Bibliography; Index; Other titles from ISTE in Systems and Industrial Engineering - Robotics; EULA; 1.1. Power transmission in aircraft; 1.2. Primary and secondary power transmission functions for actuators; 1.3. Hydraulic power actuation 2.1. Risks and risk acceptance2.2. Response to failure; 2.3. Redundancy; 2.4. Feared events and failure rates in actuation; 2.5. Fundamentals of reliability calculation; 2.6. Short glossary of technical terms pertaining to reliability; 3.1. Needs and constraints; 3.2. Fluid conditioning; 3.3. Monitoring and maintaining the fluid in working conditions; 3.4. Energy phenomena caused by the fluid; 4.1. Hydromechanical power transformation; 4.2. Functional perspective; 4.3. Technological shortcomings; 5.1. Power metering principles; 5.2. Power-on-Demand; 5.3. Metering by hydraulic restriction 5.4. Impact of restriction configuration and properties on the metering |

function5.5. Servovalves; 6.1. Power distribution; 6.2. Providing power; 6.3. Protecting; 6.4. Managing the load; 7.1. Introduction; 7.2. Arrangement of actuation functions; 7.3. Architecture and routing of hydraulic power networks; 7.4. Integration of components and equipment; 7.5. Integration of actuators in the airframe; 1.1.1. Needs and requirements for secondary power and power flows; 1.1.2. Actuation functions; 1.1.3. Actuation needs and constraints; 1.2.1. Primary functions; 1.2.2. Secondary functions 1.2.3. Signal approach and power approach1.2.4. Types of actuators; 1.3.1. Units and reference values; 1.3.2. Energy transport by a liquid; 1.3.3. Historical evolution of power and pressure use; 1.3.4. Potential advantages and disadvantages of hydraulic technology; 1.3.5. Overall hydraulic circuit architecture; 2.2.1. Resistance to failure; 2.2.2. Tolerance to failure; 2.2.3. Examples; 2.3.1. Static redundancy; 2.3.2. Dynamic redundancy; 2.5.1. Variables used in reliability calculation; 2.5.2. Generic failure rate models; 2.5.3. Reliability of element associations 3.1.1. Opportunities and constraints in hydrostatic power transmission3.1.2. Actual hydraulic fluid; 3.1.3. Physical properties; 3.2.1. Fluid in sufficient quantity; 3.2.2. Pressurization and charging; 3.2.3. Filtration; 3.2.4. Thermal management; 3.2.5. External leakage collection; 3.3.1. Fluid quantity; 3.3.2. Cleanliness; 3.3.3. Pressurization - depressurization; 3.3.4. Examples; 3.4.1. Hydraulic resistance; 3.4.2. Hydraulic capacitance; 3.4.3. Hydraulic inertia; 3.4.4. Speed of sound in the hydraulic fluid; 4.3.1. Energy losses; 4.3.2. Compressibility of the hydraulic fluid 4.3.3. Wall deformation

Sommario/riassunto

"This book is the first of a series of volumes that cover the topic of aerospace actuators following a systems-based approach. This first volume provides general information on actuators and their reliability, and focuses on hydraulically supplied actuators. Emphasis is put on hydraulic power actuators as a technology that is used extensively for all aircraft, including newer aircraft"--Page 4 of cover.
