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4.5.2 Compliant Systems for Airfoil Shape Adaptation4.5.3 The Belt-Rib Airfoil Structure; 4.6 Extending Coupling to the Actuator System: Compliant Active Systems; 4.6.1 The Need for a Coupled Approach; 4.6.2 Solid-State Actuation for Solid-State Deformability; 4.6.3 Challenges and Trends of Structure-Actuator Integration; 4.7 A Powerful Distributed Actuator: Aerodynamics; 4.7.1 The Actuator Energy Balance; 4.7.2 Balancing Kinematics by Partially Recovering Energy from the Flow; 4.7.3 Active and Semi-Active Aeroelasticity; 4.8 The Common Denominator: Mechanical Coupling; 4.9 Concluding Remarks
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Sommario/riassunto

Adaptive structures have the ability to adapt, evolve or change their properties or behaviour in response to the environment around them. The analysis and design of adaptive structures requires a highly multi-disciplinary approach which includes elements of structures, materials, dynamics, control, design and inspiration taken from biological systems. Development of adaptive structures has been taking place in a wide range of industrial applications, but is particularly advanced in the aerospace and space technology sector with morphing wings, deployable space structures; piezoelectric device