1. Record Nr. UNINA9911006502103321

Autore	Babenko Viktor V
Titolo	Boundary layer flow over elastic surfaces and combined method of drag reduction / / Viktor V. Babenko, Ho Hwan Chun, Inwon Lee
Pubbl/distr/stampa	Waltham, Mass., : Elsevier, 2012
ISBN	9781283634724 1283634724 9780123948212 0123948215
Edizione	[1st ed.]
Descrizione fisica	1 online resource (634 p.)
Altri autori (Persone)	ChunHo Hwan LeeInwon
Disciplina	620.1/064 620.44 620.1064
Soggetti	Boundary layer Frictional resistance (Hydrodynamics) Fluid dynamics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover; Boundary Layer Flow over Elastic Surfaces and Combined Method of Drag Reduction; Copyright Page; Contents; Preface; List of Symbols; Indices; Lower; Upper; Abbreviations; 1 Interaction of the Free Stream with an Elastic Surface; 1.1 Introductory Remarks; 1.2 Basic Types of Coherent Vortical Structures arising in the Flow about a Body, and Methods of their Control; 1.2.1 CVS Types; CVSs in a Boundary Layer; CVSs in the Flow over a Curvilinear Surface; CVSs Generated in Cavities on a Body Surface; Transversal CVSs; Longitudinal CVSs; Tornado-shaped CVSs CVSs Generated in Front of or behind an ObstacleTransversal CVSs; Longitudinal CVSs; CVS at Corners of a Body; CVSs in Longitudinal Flow about a Body; CVSs in Flows about Wings; Flow about a Profile at an Angle of Attack; CVSs at Tips of Obstacles and Wings; CVSs on a Triangular Wing; CVSs behind an Oscillating Wing; CVSs in the Flow between Lattices of Profiles; CVS about High-drag Bodies; CVS

Generated in Internal Flows; CVS on Boundaries of Submerged or Near-wall Jets; CVSs at Non-stationary (Forward, Rotary) Movement of a Body; CVSs in Geophysical Problems; 1.2.2 Methods of CVS Control Methods of CVS Control in a Boundary LayerMethods of CVS Control on Curvilinear Surfaces; Methods of CVS Control in Cavities; Methods of Controlling CVSs Generated behind a Prominence; Methods of CVS Control in Corners; CVS Control Methods in Longitudinal Flow about a Body; Methods of Controlling CVSs Arising at Flows on Wings; Methods of CVS control for flow about a profile at an angle of attack; CVS control on the ends of ledges and wings; CVS Control on a Triangular Wing; CVS Control by means of a Fluctuating Wing; Methods of CVS Control on High-drag Bodies
Methods of CVS Control in Internal FlowsMethods of CVS Control in Submerged and Near-wall Jets; 1.3 Coherent Structures in a Turbulent Boundary Layer; 1.4 The Flow over Elastic Surfaces; 1.5 Experimental Studies on the Characteristics of Elastic Plates; 1.6 Experimental Investigations of Coherent Vortical Structures in a Transitional Boundary Layer on the Flow over a Rigid Plate; 1.7 Distribution of Disturbing Movement across the Thickness of a Laminar Boundary Layer over a Rigid Surface; 1.8 Physical Process of Laminar-Turbulent Transition of a Boundary Layer over a Rigid Plate
1.9 Hydrobionic Principles of Drag Reduction1.10 Experimental Investigation of Coherent Vortical Structures in a Transitional Boundary Layer over an Elastic Plate; 1.11 Distribution of Disturbing Movement on the Thickness of a Laminar Boundary Layer on an Elastic Surface; 1.12 Receptivity of the Boundary Layer to Different Disturbances; 1.13 The Boundary Layer as a Heterogeneous, Asymmetric Wave-Guide; 1.14 Control Methods of the CVSs of a Boundary Layer; 1.14.1 Experimental Investigation of a Flow of the Localized Hollows
1.14.2 Concentrated and Distributed Methods of Formation of Longitudinal Vortical Systems in a Boundary Layer

Sommario/riassunto

While other methods of drag reduction are well-known in marine R&D and ship design environments worldwide, compliant coating drag reduction remains less well-known and poorly understood. This important book presents cutting-edge techniques and findings from research sources not generally accessible by Western researchers and engineers, aiding the application and further development of this potentially important technology. Beginning with an introduction to drag reduction that places the authors' work on elastic surfaces and combined techniques in context, the book moves on to provide