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Autore	Hirschel Ernst Heinrich
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Nota di contenuto	Introduction -- Properties of Three-Dimensional Attached Viscous Flow -- Equations of Motion -- Boundary-Layer Equations for Three-Dimensional Flow -- Boundary-Layer Integral Parameters -- Viscous Flow and Inviscid Flow Connections and Interactions -- Topology of Skin-Friction Fields -- Quasi-One-Dimensional and Quasi-Two-Dimensional Flows -- Laminar-Turbulent Transition and Turbulence --

Viscous flow is usually treated in the frame of boundary-layer theory and as a two-dimensional flow. At best, books on boundary layers provide the describing equations for three-dimensional boundary layers, and solutions only for certain special cases. This book presents the basic principles and theoretical foundations of three-dimensional attached viscous flows as they apply to aircraft of all kinds. Though the primary flight speed range is that of civil air transport vehicles, flows past other flying vehicles up to hypersonic speeds are also considered. Emphasis is put on general three-dimensional attached viscous flows and not on three-dimensional boundary layers, as this wider scope is necessary in view of the theoretical and practical problems that have to be overcome in practice. The specific topics covered include weak, strong, and global interaction; the locality principle; properties of three-dimensional viscous flows; thermal surface effects; characteristic properties; wall compatibility conditions; connections between inviscid and viscous flows; flow topology; quasi-one- and two-dimensional flows; laminar-turbulent transition; and turbulence. Detailed discussions of examples illustrate these topics and the relevant phenomena encountered in three-dimensional viscous flows. The full governing equations, reference-temperature relations for qualitative considerations and estimations of flow properties, and coordinates for fuselages and wings are also provided. Sample problems with solutions allow readers to test their understanding. .
